MSU-ILIGAN INSTITUTE OF TECHNOLOGY
Andres Bonifacio Avenue, Tibanga
9200 Iligan City, Philippines

SCHOOL OF GRADUATE STUDIES

RESEARCH BIBLIOGRAPHY

A.Y. 2008-2009

Foreword

Over a span of 27 years since 1981, when we had our first graduates in Master of Teaching Technology, a total of 693 manuscripts in the form of special projects, theses and dissertations, covering thirty six (36) degree programs were submitted by the students as a requirement for graduation. All of the titles, together with the abstracts and other details, are compiled in this Research Bibliography – a concrete evidence of the scholarly efforts of our graduate students through more than two decades of existence of MSU-IIT School of Graduate Studies.

The manuscripts, in hard copies, are currently archived for reference at the MSU-IIT Main Library, the School of Graduate Studies and the respective Departments.

For a student in search of a research topic, this bibliography can help in a number of ways. It readily informs the student of past researches conducted in the Department, and as such, allows identification of similar research areas that may be of interest. This encourages continuity of the research and helps enhance the strength of the Department in the concerned area of study. Conversely, the student is able to consider researches that have not been done within the Department, but whose study must be undertaken to respond to the needs of time.

We wish to express our gratitude to our graduate student custodian in the person of Ms. Cheryl C. Encabo and SGS Student Assistant Mr. Ian G. Trenia, for encoding and compiling this work.

We are also grateful to the College Coordinators who have exerted time and efforts in further improving this compilation.

Above all, we are thankful to the MSU-IIT administration under Chancellor Marcello P. Salazar and Vice Chancellor For Academic Affairs Arnulfo P. Supe for their full support particularly in the publication of this Research Bibliography.

JERSON N. OREJUDOS
Dean, School of Graduate Studies

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COLLEGE OF ARTS AND SOCIAL SCIENCE (CASS)

Master of Arts in English Language Studies (MAELS)

001
ABONALES, Therese P. 2002. The Door and Other Stories: Finding the Real in the Unreal. (GT: MAELS), 90pp.

A story is a creation that lets readers know what it is like to be alive in the writer's world. It is a creation that lets readers put on the writer's lenses and sees the world through these lenses. (Clayton, 2000)

This paper aims to bring readers to this writer's world, which may seem full of the unreal but actually carry with them the real, which is too often taken for granted. To aid readers in understanding the stories by this writer, an analysis of stories with the element of

the unreal, written by established writers, serves as a preparatory essay. These unreal stories fall under one or two of these categories, as defined in this paper: surrealism, Kafkaesque, science – fiction, fantasy and magic realism.

To show how the seemingly unreal stories actually show what is real, the *real* is defined. It refers to the unseen existence of particular settings, dresses, and characters, and more important, situations that ordinary people are in, it is timeless, universal and most important, true.

The analysis forms the first part of this paper. The second part consists of an essay on the creative process of this writer, and five stories that show the real in the unreal.

002
ARDIENTE, Maria Flordeliza A. 2008. Correlation Between Some Selected Variables and the Reading Proficiency of the Grade IV Pupils of Aurora East District, Aurora, Zamboanga del Sur, School Year 2006-2007. (GT: MAELS), 92pp.

This study attempted to determine the correlation between some selected variables and the reading proficiency of the Grade Four Pupils of Aurora East District, Aurora Zamboanga del Sur, School Year 2006 - 2007.

By and large it was found out that the competence of the teacher to teach reading matters much to the academic performance of the pupils.

Also, the more desirable the attitudes of the pupils towards reading, the lesser reading problems they have and the higher their reading proficiency level would be.

Home, school, and community related problems altogether, somehow affect the reading proficiency of the pupils.

Reading problems in this study are found to have a high positive correlation with the reading proficiency of the pupils. Pupils who have lesser reading problems are more likely to achieve higher reading proficiency level.

This study recommends that there must be strong collaboration among teachers, community and the pupils as well to achieve high levels of proficiency in reading.

003
CAGAANAN, Judith S. 2001. Learning Strategies in Feedback Processing Their Effects on the Content and Form of Learner's Compositions. (GT: MAELS), 250pp.

This study looked into the effects of processing strategies in dealing with teacher's written feedback on the content and form of students' compositions. Furthermore, it tried to find out the contribution of repertoire of feedback-handling strategies on the attitude of

learners towards teacher feedback.

Some fifty (50) college freshmen students enrolled in the BS-Biology program of MSU-Iligan Institute of Technology, during the second semester of the academic year 1998-1999 were the subjects of this study. These students composed the two sections of English 2 (Freshman English II), which were assigned to the researcher for experiment. The experimental and case study methods of research were utilized in this study. One group, randomly chosen as the experimental group were mainly instructed to use whatever strategies they normally employed in dealing with the teacher's written annotations. In the case study, one student to represent as a sample for each group was chosen to allow a thorough investigation of the students' performance on the individual level.

The findings of this study revealed that feedback-handling strategies had a positive effect on the content and form of students' compositions. The effect of these strategies on the attitude of students towards teacher feedback was likewise positive.

004

CAPUNO, Gemma Grace D. 2006. Linguistic Competence of the Fourth Year Students of MSU-IIT Integrated Developmental School, AY 2004-2005. (GT: MAELS), 73pp.

This study was conducted to determine the linguistics competence of the fourth year students of MSU-IIT Integrated Developmental School, AY 2004-2005.

It utilized two sets of questionnaires: one for the respondents' socio-educational background, and another for their grammatical/linguistics competence, which consisted of 200 items duly tested and tried out for validity and reliability prior to their administration to the entire population of the IDS.

The qualitative-quantitative method of research was used to describe and interpret the data. The results show that: a) generally, the female respondents performed better than the male ones, b) those with public elementary background performed better than those with private elementary background, c) readers of the books and magazines and watchers of English televisions programs and listeners of English radio programs did better than those who were not, and d) parents' combined monthly income and educational background could be instrumental to the respondents' linguistics competence. On the whole, the respondents' performance in the most aspects of the test clustered in the satisfactory level.

This study recommends that an action research on the effectiveness of an approach to teaching of functional grammar be conducted, and that in revising the English syllabus, the aspects where the respondents were deficient be given more weight. Further, it recommends that the so-called traditional method, which places emphasis on drills and grammatical structures, should be integrated in the communicative approach to teaching English as a second language.

005

CARREON, Merceditha D. 2006. English Lexical Borrowings in the Sebuano Opinion Sections of Selected Local Newspapers in Iligan City: Categories, Patterns, and Morphemic Structure Changes. (GT: MAELS), 92pp.

This study analyzed the categories, patterns, and morphemic structure changes in the English lexical borrowings found in the opinion sections of three selected local newspapers in Iligan City: *Lanao Mail, Mindanao Scoop,* and *The Philippine Post.*

After the English lexical borrowings were identified, encoded, and cross-checked by a panel of experts, these were classified according to lexical categories and patterns of borrowing and the frequency was determined using the frequency and percentage tests. The morphemic structure changes observed were also studied.

Out of 27,100 words used in the opinion sections of the three newspapers, only a total of 677 English lexical borrowings were found. From these, the study reveals that there are more nouns (582 or 85.97%) than verbs (55 or 8.12%), more verbs than adjectives (40 or 5.91%), no adverb borrowings, and that there are more word-level borrowings (426 or 62.63%) than phrase-level ones (251 or 37.37%). Aside from this, the study also shows that there are affixations and indigenization to some of the borrowed words.

This study concludes that: a.) English lexical borrowings in the opinion section of three newspapers seem not so extensive since there are only 677 borrowings out of the 27,100 words used, b.) only affixations and indigenization are present, c.) most borrowings are direct borrowings, d.) writers tend to borrow more nouns than verbs, more verbs than adjectives, e.) there are no adverb borrowings probably because the Sebuano language is very rich with adverbs and adverbial modifiers, and f.) there are more word-level borrowings than phrase-level ones possibly because the lexicon is the most visible part of the language, thus the word is the most easily borrowed.

Finally, the recommendations made are for: a.) researches about the Sebuano language to be conducted which would, in some way, help in the realization of the Cebuano's long-dreamed standardization of their language, and for b.) similar researches to be made which would: i.) examine borrowings from other languages to have a broader picture of the Sebuano language's lexicon, ii.) compare the borrowings in Sebuano and Tagalog write-ups including all sections in the newspapers, iii.) study the morphological rules on affixations involving borrowed English words/phrases, iv.) examine the mostly borrowed semantic domains, and v.) analyze borrowings in relation to the articles' level of formality/informality.

006
DE LA PEÑA, Lyllan Gay B. 2006. Exposure to Modern Technology: Its Impact on the Reading Comprehension of the Freshmen of the College of Arts and Social Sciences, MSU-IIT, AY 2003-2004. (GT: MAELS), 107pp.

This study aims to determine the effects of modern technology specifically cellular phones, compact discs, computer games, the Internet and television, to the reading comprehension of the freshmen of CASS, MSU-IIT, AY 2003-2004.

The descriptive method of research is used with the questionnaire as its data gathering tool. The respondents involved 150 students. Simple frequency and percentage were in the study. Test of hypotheses were done using chi-square tools.

The salient findings of the study include the following. First, among the modern technology facilities, the respondents were very much exposed to cellular phones, compact discs, the Internet and television but were only moderately exposed to computer games. Second, the respondents had very poor literal level of reading comprehension.

They were also fair in interpretive and critical levels. As to creative and appreciative levels, the respondents were mostly on the satisfactory and fair levels of reading comprehension.

Furthermore, exposure to modern technology facilities like cell phones, compact discs, computer games, the internet and television was found to be significantly related to students' literal, interpretive, creative and appreciative levels of comprehension.

As recommendations, parents and teachers should emphasize to the students the wise use of modern technology facilities so that enhancement of their skills especially in reading will be promoted while the teachers should recognize the needs for the students to improve their different levels of reading comprehension.

007
DINORO, Angeline P. 2003. Folk Christianity in the Stories of Nick Joaquin. (GT: MAELS), 133pp.

Man, since the birth of civilization, has interacted with the mystery of challenge and response. He has projected the ever-present conceptions of man and his gods. He has continually and equivocally exercised his own way of religion and become conscious of a certain form of worship.

This study significantly identifies the different Catholic Christian elements, folk Christian syncretic form and the indigenous religious elements that Nick Joaquin employed in his stories. Furthermore, this study will establish a Filipino consciousness of himself, of his reason and of his religiosity.

This paper shows how Nick Joaquin extensively uses elements of folk Christianity in his works – how he represents Philippine folk Christianity in his works, how he identifies the indigenous religious elements that are fused with folk Catholic Christianity in his five short stories and a novel, and how he employs these elements in depicting folk Christianity as it exists in the Philippines.

This paper utilizes several approaches to textual interpretation as well as theories and assumptions. Cultural Poetics – New Historicism in America and Cultural Materialism in Great Britain – views history as one of the many discoursed such as politics and

sociology. Another approach and theory to literary analysis is the post colonialism theory under the practices of Cultural Studies. Thinkers and proponents of post colonialism believed that their past and present are intricately interwoven. Likewise, postcolonial writers were able to articulate their feelings, concern and assumptions about the nature of reality in their particular culture (Bressler 265) in their writing.

The five short stories and a novel by Nick Joaquin selected for this study present elements of folk Christianity in the Philippines that are unique of their own forms, as they have undergone several societal and cultural dynamism of acculturation, assimilation, hybridation and syncretism. The stories of Nick Joaquin as literary texts are able to dramatize the religious culture of the Filipinos.

008
DUMALAGAN, Flordeliza M. 2001. A Comparative Study of Surigaonon, Kamayo-Hinatuan, and Kamayo-Bislig Verbal Affixes. (GT: MAELS), 122pp.

This study is aimed at analyzing and describing the verbal affixes of Surigaonon, Kamayo-Hinatuan, and Kamayo-Bislig in order to establish similarities and differences in their verbal inflection.

This paper limited its informants to three (3) from each area under study. Tsuchida's list of pre-tested verbal sentences with Cebuano language as the language of elicitation was used as the main data-gathering instrument. Ramos' analysis of the structure of Tagalog verbs was used as the model for the study.

The study revealed that Surigaonon, Kamayo-Hinatuan, and Kamayo-Bislig, like most of the other Philippine languages exhibit a syntactic phenomenon, in which certain verbal affixes require the use of a common article *ang* or *ing* as a basic constituent element in their utterance to mark the focus of the sentence. The study also revealed that basically, Surigaonon, Kamayo-Hinatuan, and Kamayo-Bislig inflect for focus and aspect and these they employ the same procedure in verbal affixation in the action, objective, instrumental, and locative-benefactive focus. Prefixation is more commonly used than infixation and suffixation. Other features that have been found to affect verbal inflection are plurality and reciprocity of action, though only to a limited extent.

009
ECHAVEZ, Nancy Q. 2000. The Structural Features of Spoken Philippine English of MSU-IIT. (GT: MAELS), 96pp.

This paper aimed at discovering the structural features of spoken Philippine English of the **MSU-IIT CASS** faculty members. The features were categorized under phonology, morphosyntax and lexicon. It also tried to determine the significant differences in phonology with respect to the social parameters, gender, teaching, experiences, educational background and first language. This study is descriptive and contrastive in nature and the data were gathered using the naturalistic inquiry approach. To discover the structural features, frequency counts and percentages were used and to determine the significant differences, statistical formulae were employed.

After a careful analysis of the data, the study showed that in phonology, there were phoneme substitutions; there was distinctive shifting of stress; the intonation was formulaic and the rhythm was syllable-timed. In the morphosyntax, there were distinctive word and sentence constructions, which "deviated" from the grammar rules of standard American English. And in lexicon, recurring English and Sebuano expressions were found in the corpus. Moreover, significant differences in phonology with respect to the social parameters considered, surfaced. The substantial language was apparent in the speech of each respondent.

010
EUBANAS, Rizza C. 2008. A Case Study of the Strategies in Term Paper Writing of Ten English II Students of the Mindanao State University-Iligan Institute Of Technology AY 2003-2004. (GT: MAELS), 144pp.

The research study aimed to find out the strategies of good performing and poor performing students during the planning stage of their term paper writing, and the effects of these strategies on their written outputs.

The good performing and the poor performing students made use of the following strategies: freewriting, teacher and peer consultation, incorporation of teacher suggestions, going to libraries and internet cafes, further data gathering, reading of reference materials in school and at home, clustering, ladders, outlining, reading sample paper, self-reward or self motivation, and notetaking. The good performing students made extensive use of the strategies than the poor performing students thereby, resulting in better compositions. In addition, during the preliminary stages of term paper writing, the students showed little appreciation of their writing task. But towards the end, three of the respondents showed a positive perception towards term paper writing. The students also learned from each other through the use of an important strategy which is peer critiquing.

It is therefore recommended that students should be encouraged to use writing strategies and they should be taught how to properly use them. In addition, writing classes should devote more time to actual writing and that students should be encouraged to do it regularly. In addition, proper documentation and mechanics should also be taught to students and peer learning should also be utilized.

011
LIM, Cecile Antonette O. 1999. The Sebuano Verbal Taboos and Euphemisms Among the SET Students of MSU-IIT, Iligan City. (GT: MAELS), 176pp.

The study entitled "The Sebuano Verbal Taboos and Euphemism Among the SET students of MSU-IIT, Iligan City" attempted to determine the Sebuano verbal taboos and their corresponding euphemism among 355 School of Engineering Technology students enrolled at MSU-Iligan Institute of Technology. It further characterized the value system of the respondents as manifested by their use and avoidance of Sebuano verbal taboos, their choice of euphemisms, and their perception towards verbal taboos and taboo users. In

addition, the study examined the morphological process involved in the formation of Sebuano euphemisms. Data were gathered using questionnaires on socioeconomic status, on the Sebuano words uttered and not uttered, and on the perceptions towards verbal taboos and taboo users. The data were analyzed using frequencies, ranking, percentages, the chi-square test of heterogeneity or independence, and Cramer's v-coefficient.

Gender emerged as the only variable in which significant differences were established. The differences that exist in male and female language imply demarcated social roles for men and women. Sebuano words related to sexual activities and sexual organs were highly tabooed suggesting society's rigid view on sex. These instances demonstrate the relationship between language and society. As to the value system inferred, the respondents appeared to manifest positive values. These values, however, need to be reinforced by all sectors of society. In the formation of Sebuano euphemisms, the respondents affirmed man's creative use of language.

012
MARQUEZ, Nida B. 2008. Factors Affecting the Reading Comprehension of the Third Year Students of Aurora National High School, Aurora Zamboanga del Sur School Year 2006-2007. (GT: MAELS), 91pp.

This study attempted to determine the factors affecting the reading comprehension of the Third Year students of Aurora National High School during the School Year 2006-2007. It tried to look into the following variables, mothers' educational attainment, attitudes of the students towards reading and the perception of the students on their teachers' competence in teaching reading.

Generally, it was found that the reading comprehension of the students is dependent on the mothers' educational attainment, attitudes of the students towards reading and the perception of the students in the teachers' competence in teaching reading.

This study recommends that parents should guide and encourage their children to read and to provide them reading materials at home to supplement their knowledge. They should also do their part in motivating their children to learn. They have the responsibility to provide proper guidance and assistance so that their children will develop good study habits.

The teachers should also employ appropriate teaching strategies or techniques. They should not put too much pressure on students during the teaching-learning process in the classroom or on teaching reading; instead they should motivate them and make classes more fun, non-threatening and stimulating so that learners will develop interest and love for reading.

The policy makers should supervise and monitor the implementation and sustainability of DepEd programs and provide learning facilities to the students. The

teachers will be sent to seminars to be updated of the new innovations in the teaching of reading.

013

MOLINA, Maridette E. 2005. An Assessment of the English Writing Proficiency of Selected College Freshman Students of MSU-Iligan Institute of Technology SY 2002-2003. (GT: MAELS), 94pp.

This study purported to assess the writing proficiency of 309 college freshmen enrolled at the College of Arts and Social Sciences (CASS), College of Business Administration (CBA), College of Education (CED), and College of Sciences and Mathematics (CSM) in MSU-IIT, school year 2002-2003.

The following are the important findings of the study:

1. The over-all writing proficiency level of the respondents was "good".
2. In the five components of writing, the respondents obtained a "very good" rating in content and vocabulary, "good" to "very good" in mechanics, "good" in content, and "fair" in language use.
3. There was no significant relationship between the respondents' writing proficiency and each of these variables: perception about writing compositions and writing experiences.
4. A significant relationship existed between the respondents' writing proficiency and each of these variables: gender, SASE score, and college enrolled in.

The study recommends that a regular assessment of the students' writing proficiency be conducted in order to compare the trends in the students' writing performance and to provide language teachers input for designing instructional materials that truly develop the students' writing skills and address the students' writing problems.

014

PERALTA, Onnah Pierre P. 2008. Towards a Theory of Women in the Agamaniyog Folktales. (GT: MAELS), 214pp.

This study aimed to develop a substantive theory on the women characters in the Agamaniyog folktales through the use of the Grounded Theory method.

The analysis of the women characters entailed constant comparison, labeling and categorizing and revealed three related concepts.

First, women characters are of two main types such as the good and the bad

women. They can also be of three subtypes: the princesses, ba'is and non-royal women. Each subtype has categories. For example, the princesses can either be well-intentioned or envious while the ba'is can be strong-minded or wicked. The non-royal women are of six kinds: kind non-royal, wise non-royal, easily-led non-royal, lazy non-royal, wicked non-royal and envious non-royal.

Second, all good women characters found themselves in favorable circumstances at the end of the stories. On the other hand, most of the bad women characters found themselves in unfavorable circumstances at the end of the stories.

Third, women characters showed that they may value all or any of these: goodness, wealth, marriage and revenge.

It is recommended that further studies be conducted that would lead to a formal theory on women characters in folktales and a comparative study on women characters in Agamaniyog and other Asian folktales .

015
PILAPIL, Cherry Ann G. 2008. Television Watching Its Relationship to the Reading Comprehension of the Children Ages 10-11 Years Old of PH-634 Baptist Conference (CDSP). (GT: MAELS), 85pp.

This study aimed to determine the relationship of television watching of PH-634 Baptist Conference CDSP children ages 10-11 years old to their reading comprehension. Fifty-two children served as respondents of this study. Data on the children's television watching were gathered using a survey questionnaire, while the data on the children's reading comprehension was obtained through a researcher-made test. The selected passage for the reading comprehension test was subjected to readability test using DALE-CHALL formula.

Results show that the subjects' comprehension had no significant relationship to the number of choices of TV programs that they watched. Also, the results show that there is no significant relationship between frequencies in television watching in reading comprehension of the children. However, it was found out that there is a significant relationship between the length of hours and reading comprehension of the respondents.

016
PIZARO, Arthur P. 2002. Language Across the Social Spectrum: The Structure and Use of the Gay Language in Iligan City. (GT: MAELS), 159pp.

This study is a descriptive – analytic research on the structure and use of the gay language in Iligan City. It attempted to look into how the words of the gay language are formed both in isolation and in sentences as well as the social dimensions affecting its use.

Four sets of data gathering instruments were used in this study to elicit data from gay language speakers in six different domains where the gay language is believed to be actively used. A two – fold analysis – linguistic and sociolinguistic – was conducted. The data were presented into four parts.

Employing twenty-five sounds, the gay language in Iligan City is Sebuano based and a product of various word formation processes such as substitution, addition, borrowing, use of acronyms, iteration, germination, deletion, metathesis, onomatopoeia, use of names of popular places and personalities, coining and combination of any of the aforementioned processes.

The gay language in Iligan City is no longer an exclusive language of the gays; rather, it is already widely spoken by those whose gender preferences may be lesbians and even straight males and females regardless of profession, age and educational attainment. It actively operates across the young and across friendship levels specifically in causal conversations, gossiping, giving compliments and greetings as well as in informal gatherings. It is spoken not only in the home, beauty parlors, and disco houses but also on school campuses and in offices.

Personal interest motivates the speakers to use this language. While some feel anxious about not being accepted and unsure about not being understood, many feel happy, fulfilled, satisfied, and comfortable in being able to express themselves in gay language.

017
PURGANAN, Rosemarie B. 2000. Learning Strategies of Some BSIED Students: Their Effects on Vocabulary Learning and Listening Comprehension. (GT: MAELS), 64pp.

This study identified the range and variety of learning strategies employed by the student respondents. It looked into the effects of strategy training on students' academic tasks considered in the study. Specifically, it provided answers to the six (6) problems raised in the study.

Some 74 BSIED freshmen students under the DITE program enrolled during the first semester of SY 1999-2000 were the subjects of the study. The subjects are enrolled in two specializations, namely; Industrial Arts (IA) and Drafting (DT). The IA majors comprise the experimental group taught with learning strategies; while the DT majors comprise the control group that continued with the traditional method of teaching English I.

The methods sued were both descriptive and experimental using as tools a questionnaire and a pretest/posttest activity. The data gathered were treated using the following statistical tools: percentage, means, chi-square (X^2), standard deviation, Z-test and T-test.

One of the significant findings in the study was that there was a positive effect of the strategy training on the experimental group. Some of the variables had significant results/findings pertinent to the study.

Therefore, this study concluded that integrating learning strategies with the students' lessons is necessary for them to develop skills in listening and vocabulary building. Moreover, the study will provide an input to designers of classroom learning materials that are tailored to the needs of the students, materials that consider the students'

academic and family backgrounds.

018

RODIL, Saturnina S. 2000. Sawang and Other Stories with a Critical Introduction on the Creative Process. (GT: MAELS), 164pp.

       This paper is about creative writing and the creative process. The task is to write five short stories and to give a critical introduction on the creative process: the latter is discussed not only in the context of writing fiction but also in the general context of the arts. The discussion is divided into four parts: first, the exploration of the role of the unconscious analytical process; second, the understanding of the conscious analytical process and how it is related to the unconscious; third, the exploration of some helpful insights relevant to the writer in her own creative process; and fourth, a glimpse into the writer's own creative process in relation to the writing of the five short stories.

       The five short stories presented here are: (1) *The Sense of the Flesh;* (2) *Red;* (3) *Sawang;* (4) *Bits of Angel's Wings,* and (5) *The Love of Eric.* The short stories do not share a common theme. Three of the main characters are women and two are men. The setting are all in the Philippines including the hills where the New People's Army operated just right after Martial law and the American period in the Sulu Islands.

019

SEXON, Minda C. 2007. Bantayanon: A Lexical Comparison and Sociolinguistic Description. (GT: MAELS), 312pp.

       The study entitled "Bantayanon: A Lexical Comparison and Sociolinguistic Description" attempted to describe Bantayanon, the code used in Bantayan Municipality, Bantayan Island, Cebu. It tried to determine the relationship of Bantayanon to its neighboring languages particularly Sebuano of Carcar, Cebu; Hiligaynon of Dumangas, Ilo-ilo; Samar-Leyte of Carigara, Leyte; and Masbateño of Masbate City. This study compared the lexical items of the languages involved and conducted mutual intelligibility tests between Bantayanon and each of the other four languages under study. It further described Bantayanon through the sociolinguistic profile of the Bantayanons in terms of the languages they have access to, the languages they use in the different social domains and different linguistic situations, and the Bantayanons' perception of their language.

       Compared with the other Visayan languages, Bantayanon emerged as another Visayan variety. It is the mother tongue of the Bantayanons. The Bantayanons use it in all of the identified social domains and linguistic situations although they are multilinguals. There are some differences in their language choice based on gender, age, educational attainment, and their school. Yet, their being Bantayanons prevails. With the description of Bantayanon, the Bantayanons showcased one of God's greatest gifts to mankind---the gift of language.

020

TECSON, Mary Jean A. 2000. The Occurrence of Lexical Borrowing in Selected

Television Programs and Its Role in the Intellectualization of Filipino. (GT: MAELS), 167pp.

This research aimed at describing and analyzing the status of lexical borrowing, its role and use, in the verbal interaction of newscaster, hosts and interlocutors in television programs.

The data reveal that the elements which are more frequently used than others are the following in the order of their frequency: nouns, verbs, adjectives, adverbs, conjunctions and prepositions. The data also show that there is a significant difference in the frequency of borrowing of technical and non-technical vocabulary. Out of 1, 010 borrowed vocabulary items, the technical vocabulary comprise 592 which constitute 59% while the non-technical vocabulary comprise 418 which constitute 41% of the total data.

The phonological changes that occur in technical and non- technical borrowing are substitutions of [s] and [y] for [ʃ], [b] for [v], [m] for [n], [p] for [f], [s] for [z], [o] for [∂], [a] for [e] and [a] for [ǽ]. The morphological changes that occur in the technical and non-technical borrowings are: affixation, partial reduplication and total reduplication.

The data show that borrowing is part and parcel of the verbal interaction of newscaster, hosts and interlocutors. They resort to lexical borrowing to designate new concepts and changes brought about by advances in science and technology, to provide speakers with the appropriate word for a particular context, to provide the speakers with greater resources to use language in various domains and to enhance the speakers' prestige.

021
WU, Chang C. 2001. Reading Comprehension Difficulties in English of Grade V Pupils of Lanao Chung Hua School Iligan City, SY 2000-2001. (GT: MAELS), 88pp.

The purpose of this study was to find out the English comprehension difficulties of grade five pupils of Lanao Chung Hua School for the school year 2000-2001.

Data on the personal profile of the 27 respondents were obtained through a survey questionnaire. Data on pupils' reading comprehension levels were obtained through a standard process of teacher-made reading comprehension test.

Results using the SPSS .05 showed a significant relationship between the respondents' reading comprehension performance and the following learning strategies employed: the main idea, context clues, reading for details and visual information.

Furthermore, results showed that most of the respondents exhibited favorable performance on literal, interpretive and critical level of comprehension, while for application and creation level, almost half failed to make them.

It was recommended that 1) the teachers must teach learning strategies in their language lessons and encourage learners to use these strategies in their reading tasks; 2) the instructional; designers should develop instructional manuals and incorporate learning

strategies to develop the learners' reading skills; 3) the school administration should provide students a variety of reading materials; 4) the parents should help their children in developing their application reading skills; 5) regular meeting must be done for teachers and parents to discuss the progress of children in their reading skills, and 6) the school administration should require students to speak English classes, Mandarin during Chinese classes and Hokkien during recess.

Master of Arts in Filipino (MA Fil)

001
ARNOCO, Joyce C. 2008. Ang Preferensya sa Ispeling sa Filipino ng mga Estudyanteng nasa Kolehiyo ng Iligan Medical Center College, Iligan City. (GT: MA Fil), 127pp.

Pangunahing layunin ng pag-aaral na alamin ang preferensya sa ispeling ng mga estudyante sa wikang Filipino at upang magawa ito, inalam kung 1) Ano ang preferensyang ispeling ang ginagamit ng mga estudyanteng kolehiyo ng Iligan Medical Center College; 2) Ano ang preferensyang ispeling ng mga respondente batay sa kanilang kurso? 3) Ano ang preferensyang ispeling sa Filipino ng mga respondente batay sa kasarian? 4) Ano ang preferensyang ispeling sa Filipino sa mga respondente batay sa kanilang etnikong kinabibilangan? 5) Mayroon bang makabuluhang pagkakaiba sa preferensya ng ispeling sa Filipino batay sa a) kurso b) kasarian c. etnikong kinabibilangan 6) Ano ang kanilang mga dahilan sa napiling mga preferensya?

Gamit sa pag-aaral ang paraang palarawang pamaraan. Masusing sinuri at inalisa ang mga preferensya sa ispeling ng mga salita sa wikang Filipino ng mga estudyante ng Iligan Medical Center College sa wikang Filipino.

Sa pag-aanalisang ginawa sa mga natipong datos, inilahad ang mga sumusunod na resulta ng pag-aaral: 1) Sa pangkalahatan, ang 1987 na ispeling na paraan ng pagbaybay ng mga salita sa wikang Filipino ang pinili ng mga respondente sa tatlong ispeling varyant na pinagpilian; pumapangalawa dito ang pagbabaybay batay sa 2001 Revisyon o ang baybay makabago; at pumapangatlo, ang baybay Ingles o tahasang panghihiram; 2) Sa anim na kolehiyo na kabilang sa pag-aaral, consistent ang mga respondente sa pagpili ng baybay batay sa 1987 Ortografiyang Filipino bilang varyant ng ispeling; 3) Ang preferensya ng mga respondenteng babae at lalaki ay magkatulad, ang baybay batay sa 1987 Ortografiyang Filipino pa rin ang pinili nila; 4) Batay naman sa etnikong kinabibilangan ng mga respondente, maging Sebuano/ Bisaya at Maranao man, pareho ang lumabas na preferensya—ay ang baybay na batay sa 1987 Ortografiyang Filipino pa rin; 5) Walang makabuluhang pagkakaiba sa preferensya sa ispeling ang mga respondente ayon sa kasarian at etnikong kinabibilangan; 6) Ang tatlong pangunahing dahilan sa pagpili ng preferensya ayon sa mga respondente ay ang mga sumusunod: a) Mas mabuti kung tunog Filipino talaga, b) Nakakalito ang bagong ispeling, c) Mas magandang basahin kung nasa orihinal na Ingles. Sumunod naman ang tatlong pangunahing midyum na nakaimpluwensya ng mga respondente: a) telebisyon, b) aklat/teksbuk, c) internet.

Tahasang masasabi na batay sa pag-aaral, hindi pa handa ang mga respondenteng gumamit ng ispeling na batay sa 2001 Revisyon ng Alfabetong Filipino. Malinaw na ipinakita ng mga datos na gusto ng mga respondente ang baybay na batay sa 1987 Ortografiyang Filipino sa mga salitang Filipino.

002
ASARI, Julie Ann C. 2005. Mga Tunggaliang Sikolohikal at Sosyolohikal ng mga Tauhang Bakla sa Ilang Piling Maiikling Kwento. (GT: MA Fil), 176pp.

Ang pag-aaral na ito na pinamamagatang "Mga Tunggaliang Sikolohikal at Sosyolohikal ng mga Tauhang Bakla sa Ilang Piling Maiikling Kwento" ay may layuning pumili ng sampung (10) maiikling kwento mula sa aklat na Ladlad: An Anthology of Philippine Gay Writings Book 1 and 2 na kinapapalooban ng mga pangunahing tauhang bakla. Sinuri dito ang nararanasang tunggaliang sikolohikal at sosyolohikal na nangyayari sa kanilang sarili, pamilya, kaibigan, mangingibig, at sa lipunang kanilang ginagalawan. Gumawa rin ng talahanayan na nagpapakita ng buod ng mga sinuring sampung (10) maikling kwento (pahina 95 at 96).

Sa ginawang pagsusuri at pag-aanalisa ng mga kwento, ang mga bakla ay dumanas ng mga problema sa sarili, sa pamilya, sa kaibigan, sa mangingibig, at sa lipunan bilang kabuuan. Nagpakita lamang na ang mga pamilyang Pilipino ay hindi pabor sa anak na bakla. Ang hindi pagtanggap ng pamilya sa mga pangunahing tauhang bakla ay pangunahing problemang dala nila. Ang mga kaibigang bakla ay pareho ang dinanas na problema kaya naiugnay nila ang nararamdaman nito na walang paninira at negatibong kritisismo. Ngunit, ang mangingibig ay ginamit lamang ang pera at sekswal na kaligayahan ng mga pangunahing tauhang bakla. Hindi lahat ng mangingibig ay masama dahil inalagaan, pinahahalagahan at minamahal nila ang isa't isa.

Sa halos lahat ng kwento, ang mga tauhan ay iniladlad ang kanilang pagiging bakla, may ilan na hindi tulad nina Ricky at Nigel. Ang mga tauhang baklang ito ay natakot na ilantad ang kabaklaan dahil sa kaguluhang pangkalooban o inner turmoil, kuryusidad, takot na kutyain at negatibong reaksyon ng lipunan. Ang pangkalahatang pananaw ng lipunan, partikular sa bansang Pilipinas, ay kaaway, pinsala, perhuwisyo at pahamak ang mga bakla.

Ang panlipunang pananaw sa mga bakla ay kalaban at pinsala ngunit may ilan ding nagpakita ng simpatiya, pag-unawa at pagtanggap kahit kaunti lamang ito.

Ang sikolohikal na pananaw ng mga tauhang bakla ang nagtulak sa kanila na maging bayolente. Tulad ng kwentong Lalaki, ang paghihiganti sa mangingibig ay likha ng pangit na karanasan na dinanas ng pangunahing tauhan. Ito ang tinatawag na psychathenia, ang "any of variety of mental disorders involving irrational obsessions and fears".

003
CADILE, Ian Cris L. 2007. Biya, Inilog: Ang Register ng mga Sabungero. (GT: MA Fil), 243pp.

Ang pag-aaral na ito ay naglalayong (1) ilarawan ang uri ng komunikasyong nagaganap sa sabungan; (2) kilalanin ang register na ginagamit dito; at, (3) alamin kung sa anong pagkakataon ito ginagamit sa pagsasabong. Ang pag-aaral ay nakasentro lamang sa Baroy Sports Arena ng Poblacion, Baroy, Lanao del Norte, at sa mga lugar kung saan inaalagaan ang mga manok - panabong na isinasabong sa nabanggit na sports arena. Ginamit sa pag-aaral ang pamaraang indihenos o pangkatutubo. Ginamit ang pagtatanung-tanong o pag-intervyu, pagmamasid, at iba pang kultural na pamamaraan bilang pangunahing mga istratehiya. Ang mga tiyak na katanungang sinikap hanapan ng kasagutan ay ang sumusunod: (1) Anong tiyak na register ang ginagamit sa sabong lalo na sa mga aspetong (a) pag-aalaga ng manok, (b) parte ng katawan ng manok, (c) kulay ng manok, (d) mga tao sa sabungan, (e) mga bagay na ginagamit sa sabungan, at sa (f) iba't ibang uri ng taya? (2) Sa anong mga pagkakataon ito ginagamit? (3) Sa anong paraan nakikipagkomyunikeyt ang mga sabungero sa sabungan? (4) Paano at kailan ginagamit ang di-berbal na komunikasyon sa larangan ng pagsasabong? Natuklasan sa pag-aaral ang mga sumusunod: (1) Ang pangalan ng manok ay batay sa kulay ng balahibo at paa nito, batay rin sa hitsura, edad, lahi ng manok at sa kilos ng mga manok sa ibabaw ng royda; (2) May iba't ibang tawag sa mga taya na binibitawan ng mga sabungero sa loob ng sabungan; (3) May iba't ibang tawag sa mga kagamitang ginagamit sa pagsasabong; (4) May iba't ibang tawag sa mga sabungero batay sa papel na kanilang ginagampanan sa loob at labas ng sabungan; (5) May iba't ibang katawagan sa perang ginagamit sa loob ng sabungan; (6) Ang iba't ibang bahagi ng sabungan ay may kanya-kanyang pangalan; (7) May mga salita sa derby na hindi ginagamit sa ordinaryong sabong; (8) Berbal at di-berbal na komunikasyon ang ginagamit ng mga sabungero sa loob at labas ng sabungan; (9) Karaniwang ginagamit ng mga sabungero ang kulay, oculesics, kinesics, at objectives na uri ng di-berbal na komunikasyon; (10) Ang berbal at di-berbal na komunikasyon ay ginagamit ng mga sabungero sa pagpapalahi, pag-aalaga at pagkokondisyon ng mga manok - panabong, sa ordinaryong sabong at sa derby. Napatunayan sa pag-aaral na may tiyak na register ang mga sabungero para sa iba't ibang aspeto ng larong sabong. Ganoon din, ginagamit nila pareho ang berbal at di-berbal na komunikasyon mula sa pag-aalaga ng mga manok- panabong hanggang sa aktwal na laro. Sa kabuuan, ang sabungan ay isang mikro lipunang may sariling identidad sa pamamagitan ng register nito na iba sa ibang speech community.

Ang pag-aaral na ito ay isang pagsusuring sosyo-kultural sa labindalawang maiikling kwento ni Marcel M. Navarra. Tatlong pangunahing suliranin ang hinanapan ng sagot. Ang mga ito ay 1) Anu-anong mga paniniwala at kaugaliang Sebwano ang ipinalulutang sa labindalawang kwento ni Marcel Navarra? Anu-ano ang paksa ng mga ito? 2) Paano ipinakita sa mga kwento ang mga paniniwala at kaugaliang ito? 3) Anu-anong mga elemento ng maikling kwento ang ginamit ng may-akda upang ipakita ang kulturang Sebwano?

Layunin ng pag-aaral na 1) alamin ang mga pangunahing paniniwala at

*kaugalian*g Sebwano sa *labindalawang* kwento, 2) paano nito pinagtingkad o pinaganda ang kwento, at 3) ilantad ang kulturang Sebwano sa kabuuan ng mga kwento. Ibinatay sa pilosopiya ni Rene Alba, isang antropologo at sosyolohista ang mga paniniwala at kaugaliang Sebwano na sinuri sa labindalawang kwento.

Lumabas sa pag-aaral na mayroong limampu't anim na mga piling paniniwala at kaugaliang Sebwano ang napapaloob sa labindalawang kwento. Ang mga ito ay ang sumusunod: 1) Nasa kamay ng magulang ang karapatang magdesisyon sa mapapangasawa ng anak; 2) Ang tatay ang siyang makapangyarihang pinuno ng tahanan; 3) Pag-inom ng *tuba*; 4) Pag-istambay ng mga kalalakihan sa tindahan; 5) Mama at Papa ang pantawag sa ina at ama; 6) Loloy ang karaniwang pantawag sa mga Sebwanong bata o binatilyo; 7) *Intawon*, *mabudhion, ingrato, at mananap*- mga karaniwang ekspresyon ng mga Sebwano; 8) Bisaya ang popular na magasing Sebwano; 9) Tiya at Tiyo - mga salitang paggalang na ginagamit para sa mga matatanda kahit hindi kamag-anak; 10) Pag-akyat-panaog sa bahay ng kaibigan; 11) *Bay at Kid* ang tawagan ng magkaibigan; 12) *Paglamaw;* 13) *Iyo*-ginagamit ng mga Sebwanong pantawag sa nakakatanda; 14) *Magtungko sa banggira;*
15) Pagkain ng *lugaw;* 16) *Pagtughong ng dukot;* 17) Ang pagbawal ng pagkain ng prutas kapag hindi pa kumakain ng kanin; 18) *Dong*-pantawag sa bata o binatilyo; 19) Paggamit ng *onas;* 20) Ang tatay lamang ang dapat mag-aari ng *Sundang;* 20) Pagkain ng *binuyok*; 21) Pagtatahi kung gabi; 22) Paggamit ng *langkay;* 23) *Paggamit ng gaayng palwa;* 24) Paggamit ng Nigo; 25) *Pagpungko* sa tabi *tadyaw o banga;* 26) Paggamit ng *kulon;* 27) Pagngangalit ng ngipin; 28) *Pagbaligya sa ubang abot;* 29) Pag-aalay sa *tughang;* 30) Pagtinambid sa pag-upo; 31) Paggamit ng *kabo nga bagol;* 32) Pagpapalit ng hunsoy; 33) Paggamit ng *paya;* 34) Ang manok pabayloan ug mais; 35) *Paggamit ng linaksing bunot;* 36) Pagkain ng *lagutmon* at gulay; 37) Pagkain ng *pulos* kamonggay; 38) *Pagbahug sa pahatan;* 39) Bangkil karaniwang ekspresyon; 40) Pagtulos sa *hawanan;* 41) Paninigarilyo gamit ang dahon ng *lomboy;* 42) Paggamit ng *banga;* 43) Pag-inom ng *tuba;* 44) *Pagnudnod sa opus;* 45) Paggamit ng banig na buli; 46) Pagpangluwa sa kinal-angan sa kawayan; 47) *Manoy, Ingko at Titi*- paggalang na katawagan sa mga matatanda; 48) Pagtatanim; 49) paggamit ng *sako;* 50) Pangungumpisal 51) Pagrorosaryo; 52) *Pangilaba* sa mahal na Birhen; 53) *Inutaw* na damit; 54) *Pugaran ng manok;* 55) Marunong mangatwiran; 56) Anting-anting at mahika. Ipinakita ang mga kaugalian at paniniwalang ito sa pamamagitan ng pamagat, katauhan, diyalogo, ekspresyon, tagpuan o lugar, simbolismo, alegorya o talinghaga at mga tayutay. Malawak ang paksa ng mga paniniwala at kaugalian. Ang mga ito at panliligaw at iba pang gawain, pamilya, personal, pamahiin, pananampalataya, pagkain at kalikasan. Ang mga elemento ng maikling kwento ginagamit ng awtor upang ipakita ang mga paniniwala at kaugaliang sebwano ay sa pamamagitan ng 1) tauhan, 2) diyalogo 3) pamagat 4) banghay (sa suliranin at paglutas nito) at 5) tagpuan (pagbanggit ng tiyak na lugar at kapaligiran).

Ipinahihiwatig ng kasalukuyang pag-aaral na mayaman sa paniniwala at kaugalian ang mga Sebwano. Ang kulturang Sebwano ay bumabalot sa labindalawang *sugilanon* ni Navarra. Naririnig, nadarama at nakikita ang daigdig ng Sebwano sa bawat kwento. Mahusay ang awtor sa pagmanipula ng mga salita at banghay upang dalhin ang mambabasa sa Sebu. And mga ito ay maaring magpaganda sa mga katutubong panitikan tulad ng maikling kwento sa bisa sa asal, damdamin, at isip dahil sa hatid nitong realismo o pagkamakatotohanan.

Iminumungkahi na ipagpatuloy pa ang pagsusulat at pagsunod hinggil sa mga kulturang lokal upang mapalawak ang ating kaalaman sa mga natatanging katangian ng iba pang pangkat/tribong Pilipino.

005
DATUIN, Michelle V. 2004. Pagsasalin sa Filipino ng mga Piling Kwentong Bayan ng Tribung Bukidnon para Instruksyunal Materyal. (GT: MA Fil), 153pp.

Ang pag-aaral na ito na pinamamagatang "PAGSASALIN SA FILIPINO NG MGA PILING KWENTONG BAYAN NG TRIBUNG BUKIDNON PARA INSTRUKSYUNAL MATERYAL" ay naglalayong makapagsagawa ng paglilikom at pagsasalin ng 10 piling kwentong bayan ng tribung Bukidnon para gawing instruksyunal materyal. Sa bawat kwentong isinalin ay may mga katanungan upang magamit ng mga mag-aaral at mga guro para sa pagsasanay. Sinikap ng pag-aaral na ito na mabigyang kasagutan ang mga sumusunod na katanungan:

1. Gaano katumpak ang pagsasalin sa wikang Filipino ng mga kwentong bayan ng tribung Bukidnon ayon sa mga sumusunod na tuntunin:

   a.   kawastuang panretorika,

   b.   katumpakan ng pagsasalin ayon sa gamit ng mga patalinghagang pananalita;

   c.   kalinawan ng salin, at

   d.   katangiang pampanitikan?

2. Angkop ba ang mga pagsasanay na binuo ayon sa mga sumununod na kraytirya?

   a.   tiyak, maikli, at may sapat na kahirapan upang hamunin ang kakayahan ng mag-aaral,

   b.   may kaangkupan sa kwento, nagbibigay ng pagkakataon para sa malayang pagpapahayag, at gumagamit ng mga pananalitang iba kaysa sa nasa aklat,

   c.   nakalilinang ng kakayahan makapagtimbang-timbang, may sapat na kalinawan at iisang kahulugan, nakapupukaw ng pag-iisip at nakagigising ng kawilihan, at nagbibigay ng pagkakataon sa mag-aaral na maiugnay ang binasa sa sariling karanasan.

Paraang palarawan ang ginamit sa pag-aaral na ito. Ang pagtiyak sa katumpakan ng pagsasalin at ng mga pagsasanay para sa instruksyunal materyal ay ibinatay sa mga kraytiryang binuo ni Hufana sa kanyang tesis (1996). Ang pagtiyak sa katumpakan ng pagsasalin ay ginawa ng limang valideytor na bihasa sa wikang Filipino at sa wikang Binukid. Ang pagtiyak naman sa katumpakan ng mga katanungan ay ginawa rin ng tatlong

valideytor na bihasa sa paggawa ng pagsasanay.

Ayon sa resulta ng ginawang validasyon ng mga valideytor, ang pagkakasalin sa wikang Filipino ay may kabuuang mean na 2.78 na nangangahulugang tumpak ang pagsasalin. Ang kawastuan panretorika ay may weighted mean na 2.72, katumpakan ayon sa gamit ng mga patalinghagang pananalita ay 2.64, kalinawan ng salin ay 2.84 at katangiang pampanitikan ay may weighted mean na 2.92.

Ang validasyon naman ng mga katanungang pampagsasanay na binuo para sa bawat kwentong isinalin sa Filipino ay may kabuuang mean na 2.46 na nangangahulugang angkop ang ginawang katanungan bilang pampagsasanay. Ang mga katanungang binuo ay may tiyak, simple at may sapat na kahirapan upang hamunin ang kakayahan ng mag-aaral, angkop sa mga kwento, nagbibigay ng pagkakataon para sa malayang pagpapapahayag, gumamit ng ibang pananalita kaysa nasa aklat, nakalilinang ng kakayahang makapagtimbang-timbang, malinaw, nakapupukaw ng pag-iisip, nakagigising ng kawilihan, at nagbibigay ng pagkakataon sa mag-aaral na maiugnay ang binasa sa sariling karanasan.

Mula sa resulta ng ginawang pag-aaral, ito ang mga nabuong rekomendasyon: (1) Magkaroon ng mas malawak at malalim na pagsusuri sa mga kwentong bayang nalikom mula sa tribung Bukidnon; (2) Gawan ng validasyon ang bawat kwentong naisalin nang hiwa-hiwalay upang makita ang tiyakang resulta sa pagsasaling ginawa; (3) Ang mga pagsasanay sa bawat kwentong isinalin ay maaring gamitin o ipasubok sa klase sa hayskul; (4) Palawakin din ang saklaw ng pangangalap ng mga panitikang oral hindi lamang sa tribung Bukidnon kundi sa iba pang tribo; (5) Sa mga gurong nagtuturo ng panitikan, isama sa pag-aaral ng panitikan ang mga kwentong ito upang magkaroon ng kaalaman ang ibang mga tao tungkol sa tribung Bukidnon. Sa mga kabilang naman sa tribung Bukidnon ay makilala ang sarili nila at maipagmamalaking may sarili silang panitikang naiiba kaysa sa ibang tribo o lahi; (6) Sa mga nagbabalak na gumawa ng kaugnay na pag-aaral ay dapat magkaroon pa ng mas masaklaw na riserts sa larangang ito ng panitikan. Ito'y upang matipon ang mga yamang ito at maidagdag sa ating pambansang panitikan; at (7) Sa larangan ng pagsasalin, magkaroon ng ganitong uri ng pag-aaral upang mapalawak pa ang uri ng mga akdang salin.

006
DUGMOC, Marjorie R. 2005. Ang Oral na Literaturang Kamayo: Larawan ng Kulturang Bisliganon sa Mangagoy. (GT: MA Fil), 183pp.

Ang tesis na ito na pinamamagatang, "Ang Oral na Literaturang Kamayo: Larawan ng Kulturang Bisliganon sa Mangagoy" ay naglayong kolektahin ang mga oral na literaturang Kamayo ng mga Bisliganon at alamin ang kultura na makikita sa kanilang mga kwentong bayan, awiting bayan, at karunungang bayan. Ang mga nakolektang oral na literaturang Kamayo ay mula sa labintatlong (13) distrito na sakop ng Mangagoy, Bislig.

Ginamit sa pag-aaral naito ang paraang interbyu, deskriptibong paraan sa paglalahad, at snow ball sampling sa pagkuha ng mga respondente na sasagot sa tseklist na naglalaman ng iba't ibang kulturang Kamayo na nakuha ng mananaliksik sa iba't ibang uri

ng oral na literaturang Kamayo. Gumamit ng tseklist upang matukoy kung ang mga kulturang naitala ay sinusunod pa o hindi sa kasalukuyan.

Sa ginawang interbyu, nakalikom ng isang daan at labinlimang (115) oral na literatung Kamayo. Ang mga nalikom na oral na literaturang Kamayo ay isinalin sa Filipino ng isang propesyunal na Kamayo at batay sa ginawang balidasyon ng limang balideytor ay lumabas ang kabuuang resulta na 2.78 na nagpapahiwatig na ang ginawang pagsasalin ay tumpak.

Lumabas din sa resulta ng ginawang pag-aaral na ang mga Bisliganon ay mayaman pa rin sa mga kultura. Ito'y pinatunayan ng animnapu't dalawang (62) kuturang nakuha mula sa iba't ibang oral na literaturang nalikom.

Lumabas din sa pag-aaral na ang limang pangunahing kulturang sinusunod pa sa kasalukuyan ng mga Bisliganon ay ang mga sumusunod: 1) Pagmamahalan at pagiging malapit ng mag-anak, may malakas na pananalig sa Diyos, at magiliw kung tumanggap ng bisita; 2) May pagpapahalaga sa payo at utos ng magulang ang mga anak at mapagmahal sa kanilang lugar; 3) May paniniwalang mahalag ang pakikipagkapwa; 4) Tapat kung umibig sa minamahal, masipag, at ang paniniwalang maglagay ng barya sa bawat haligi ng itinayong bahay, at 5) Makikita pa rin ang kalabaw sa sakahan. Ang mga nabanggit na kaugalian at paniniwala ay presentasyon lang sa napakaraming kaugalian at paniniwala ng mga Bisliganon.

Mula sa animnapu't dalawang (62) kulturang nakuha, apatnapu't lima (45) rito ay sinusunod pa rin sa kasalukuyan. Ito ay patunay lamang kung gaano pinahahalagahan ng mga Bisliganon ang kanilang kultura.

Ilan din sa mga kulturang matatagpuan sa Bislig ay naiimpluwensyahan ng pagsusulputan ng makabagong teknolohiya, pagkakaroon ng mataas na pinag-aralan, pagpasok ng dayuhan, pagma-migrate, inter-marriages, media, pag-unlad ng wika, kalakalan, at panghihiram ng ibang kultura. Dahil din sa mga nabanggit at ang pagkamatay ng matatanda nang native Bisliganon kung kaya't ilan sa mga kulturang Bisliganon ay unti-unti na ring nawawala.

Mula sa isinagawang pag-aaral ay nakabuo ng mga rekomendasyon: 1) Patuloy na pangangalap at paglilikom ng mga oral na literatura sa iba't ibang sulok ng Pilipinas nang sa gayun ay maidokumento at maabutan pa ng susunod na henerasyon; 2) Patuloy na pagsasalin sa wikang Filipino ng mga oral na literatura upang maunawaan ng karamihan; 3) Patuloy na pagsusuri upang mapahalagahan ang kultura ng isang lugar; 4) Magkaroon ng kasunod na pag-aaral tungkol sa wikang Kamayo; 5) Hikayatin ang pamahalaan na pondohan ang ganitong uri ng pag-aaral; 6) Pagdaragdag ng sabdyek na Panitikang Pilipino sa lahat ng kurso; 7) Pahalagahan ang panitikan, oral man o hindi; at 8) paglagay nito sa VHS, CD, at DVD ng sa gayun ay mapreserba at mapangalagaan.

007
IJAN, Melba B. 2005. Mga Piling Kwentong Bayan ng mga Manobo sa Comota, Agusan del Sur at Kibawe, Bukidnon: Salamin ng Kulturang Alaala ng Kahapon. (GT: MA Fil), 107pp.

Nakasentro ang pag-aaral na ito sa pagdokumento, pagsasalin sa wikang Filipino ng mga piling kwentong bayan ng mga Manobo mula sa orihinal nitong wika at ang paglalahad o pagpapakita ng mga kulturang napapaloob sa mga piling kwentong bayan ng mga Manobo.

Ang mga tiyak na katanungan upang matamo ang mga layuning nabanggit ay ang sumusunod: (1) Tumpak ba ang ginawang pagsasalin batay sa panretorikang katumpakan, panggramatikang katumpakan, kalinawan ng salin, at katangiang pampanitikan? (2) Anu-ano ang mga kulturang Manobo na makikita sa kanilang mga kwentong bayan? (3) Alin sa mga kulturang ito ang pinapraktis pa ng mga Manobo hanggang sa kasalukuyan? (4) Alin naman sa mga kulturang ito ang hindi na nila pinapraktis? (5) Alin sa mga kulturang ito ang pinapraktis pa rin ngunit may mga bakas ng pagbabago? (6) Anu-ano ang mga dahilan ng pagbabagong ito sa buhay ng mga Manobo?

Deskriptibong pamamaraan sa uring interbyu, pagmamasid, pagsisiyasat at analisis ang ginamit na metodo sa pag-aaral. Mula sa isinagawang pag-aaral, natuklasan ang mga sumusunod: sa ebalwasyon ng salin ng mga kwentong bayan ng mga Manobo mula sa orihinal sa wika papuntang Filipino, tumpak na tumpak ang pagkakasalin dahil ang kabuuang mean nito ay 2.62. Natuklasan rin na 3 ang nasa aspetong intelektwal, 20 ang nasa aspetong ispiritwal, sa aspetong moral ay 18 at nasa aspetong sosyal ang maraming kulturang naitala.

Batay sa natuklasan nabuo ang sumusunod na mga kongklusyon: (1) Magaganda at katangi-tangi ang mga kwentong bayan ng mga Manobo. Mapapansing nagpapakita at naglalarawan ito sa tunay na kultura at pag-uugali ng isang Manobo na bihirang makita sa ibang uri ng panitikan. Sa mga kwentong bayang ito ay nabibigyan ng ideya at konsepto ang mga mambabasa kung ano ang tunay na pagkatao ng Manobo. Mula dito ay maibibigay na sa kanila ang respeto at pantay na pagtingin na matagal na nilang hinahangad, (2) Marami pa rin sa mga kulturang makikita sa kwentong bayan ng mga Manobo ang kasalukuyang taglay at pinapraktis nila; (3) Gaya ng wika ang kultura din ay nagbabago at umaayon din sa takbo ng panahon. Pareho ng nangyari sa kultura ng Manobo, mayroong nagbago at mayroon ding tuluyan nang hindi pinapraktis dahil hindi na naaayon sa panahon. (4) Isa ang edukasyon sa naging dahilan ng pagbabago sa kulturang Manobo. Maging ang malakas na pagpasok ng teknolohiya sa lahat ng sulok ng Pilipinas ay nakapag-ambag at nakakaimluwensya rin nang malaki sa buhay at pag-uugali ng lahing ito. At ang walang tigil na pagpapalawak ng pwersa ng ilang grupo ng relihiyon sa bansa ang nagiging mitsa ng unti-unting paglawak ng kulturang Manobo.

Mula sa kongklusyon ng pag-aaral, ito ang ibinibigay na rekomendasyon: (1) Pagtuturo ng mga panitikang rehiyunal sa lahat ng antas sa hayskul; (2) Pagsasa-aklat ng mga piling kwentong bayan ng mga lumad sa bansa upang maipaunawa sa lahat ng mga pag-aaral ng panitikan ang mga kulturang taglay ang mga ito; (3) Paglulunsad sa mga pamantasan ng mga exposure trips at immersion sa mga lugar na pinagmumulan ng foklor; (4) Magkaroon pa ng ibang pag-aaral sa ibang folkor ng mga Manobo, tulad ng kanilang folksongs, bugtong, salawikain, at ritwal chants; at (5) Pagsasapelikula sa ilang kwentong bayan ng mga lumad sa ating abnsa, tulad ng kanilang mga epiko upang lalo itong mapahalagahan ng sambayanang Pilipino.

008

MANUEL, Mary Ann C. 2005. Mga Balyung Pilipino sa mga Aklat Binhi I Hanggang Binhi VI na Gamit sa MSU-IIT Coop Academy Lungsod ng Iligan. (GT: MA Fil), 163pp.

Ang pag-aaral na ito ay isang deskriptibong pananaliksik na nilapatan ng moralistikong pagdulog ng panunuring pampanitikan upang tuklasin ang mga balyung Pilipino na napapaloob sa mga aklat sa Binhi I hanggang Binhi VI na gamit sa MSU-IIT Coop Academy. Nilayon nito na sagutin ang sumusunod na katanungan:

1. Anu-ano ang mga balyung Pilipino sa napapaloob sa mga kwento sa aklat pambata sa Filipino mula sa greyd 1 hanggang greyd 6 ng MSU-IIT Coop Academy?
2. Anu-ano ang dimensyon ng mga Pilipino batay sa DepEd ang napapaloob sa kwento mula sa mga aklat na ito?
3. Paano nagkaiba ang mga balyung pamprimarya sa pang - intermedya?

Nasiyasat ang mga kasagutan sa mga inilahad na suliranin sa pamamagitan ng masusing pagsusuri sa labing walong (18) piling kwento sa aklat sa Binhi I hanggang Binhi VI .

Lumabas sa pagsusuri na ang mga balyung napapaloob sa Binhi I hanggang VI ay pinangungunahan ng balyung **pagpapahalaga sa pamilya** na sinasaklawan ng dimensyong sosyal kung saan dito makikita ang pinakatampok na balyu. Ang balyung paggalang o respeto, pagpapahalaga at pagmamahal sa pamilya ay limang beses na ipinapakita sa mga kwento sa Binhi I hanggang VI. Napabilang din dito ang a) pagmamalasakit sa kabutihan ng lahat, b) pagkakaisa ng pamilya, c) responsableng pagmamagulang, d) kooperasyon, e) pananagutan panlipunan, f) mabuting pakikipagkapwa at ang g) respeto sa karapatang pantao. Pumapangalawa ang balyung **personalismo** sa dimensyong moral na pinakatampok sa mga balyu. Ang mga balyung ito ay : a) pagmamalasakit sa iba o kapwa at b) ang karapatan sa kapwa, sa binitiwang salita at sa tungkulin na pawang makikita nang apat na beses sa mga kwento; at ang mga balyung c) pagkamatulungin o pagtutulungan at d) paggalang sa nakakatanda / magulang na inulit naman nang tatlong beses. Ikatlo ang balyung **awtoritayanismo** sa kabuuang pagsusuri. Ito ay sumasaklaw sa dimensyong ekonomik at dimensyong politikal na parehong may pinakamababang bilang ng mga kaugnay na balyung itinampok. Pumapaloob sa dimensyong ekonomik ang mga balyung: a) pagtitipid, b) makatarungang paggamit ng mga likas na yaman at c) pagkakaroon ng etika sa gawain o pagkilos ng tamang desisyon sa larangan ng pagtatrabaho para sa kapakanan ng lahat. Samantala, ang balyung pagmamahal sa bayan, pagkabayani at pagbibigay - halaga sa kultural na pamana ay ang mga balyung itinampok sa dimensyong politikal.

Sa kabuuan, lumalabas na nagkakaiba ng mga balyung Pilipino na napapaloob sa antas primarya at antas intermedya sa mga balyung binibigyang diin. Pinahahalagahan sa **antas primarya** ng elementarya ang balyung personalismo sa moral na dimensyon. Samantala, pinapahalagahan naman sa **antas intermedya** and dimensyong sosyal kaugnay sa pagpapahalaga sa pamilya. Lumalabas din sa pagsusuri na hindi gaanong natalakay ang mga balyung awtoritaryanismo sa primarya man o intermedya.

009

PADOGDOG, Daisy T. 2007. *Ako, Babae, Ibang Daigdig* at Iba pang Tula ni Joi Barrios. (GT: MA Fil), 237pp.

Pinamamagatang *Ako, Babae, Ibang Daigdig* at Iba Pang Tula ni Joi Barrios ang pag-aaral na ito. Nilayon ng pag-aaral na tuklasin mula sa mga piling tula ni Joi Barrios, isang feministang makata, ang uri ng lipunang nais niyang isulong para sa mga kababaihan. Sa pagtupad sa layunin, hinanapan ng kasagutan ang sumusunod na katanungan: (1) Anong larawan at tungkulin ng mga kababaihan sa lipunan ang hinubog ng mga institusyong tulad ng tahanan/bahay, paaralan, simbahan, komunidad, pamahalaan at midya ang makikita sa mga tula ni Joi Barrios? (2) Anong larawan at tungkuling pangkasarian at pangjender ang masasalamin sa mga akda ng makata? (3) Anong mga pagkiling sa jender ang nararanasan ng mga kababaihan sa lipunang patriyarkal ang ipinakita sa tula? at (4) Anong uri ng lipunan para sa mga kababaihan sa tula ni Joi Barrios ang nais niyang isulong? Paano ito ipinakita/inilarawan ng makata? Mahalaga ang pag-aaral na ito para sa lahat, ma-lalake man o ma-babae, edukado man o hindi dahil magiging daan ito sa pagkakaroon nila ng bukas na isip para sa pagbabago at lumikha ng mga panibagong ideyolohiya ng pagkakapantay-pantay sa pagitan ng dalawang kasarian. Ang feminismong radikal ang teyoryang naging batayan ng pag-aaral na naglalayon ng isang panlipunang pagbabago para sa kababaihan. Tinumbok nito ang patriyarkiya bilang dahilan ng pagiging api at pakakaroon ng mababang katayuan ng mga kababaihan sa lipunan. Disenyong kwalitatib ang ginamit sa pag-aaral sa tulong ng pamaraang deskriptibo o palarawan. Sinuri ang 25 mga tula ni Joi Barrios sa pamamagitan ng pag-aanalisa ng nilalaman ng mga ito batay sa panlipunang fenomenon na humuhubog sa mga kababaihan na ipinakikita sa tula.   Inimbestigahan ang papel ng mga institusyong panlipunan, ang papel pangkasarian at pangjender at ang pagkiling sa jender na tinalakay ng may-akda sa tula. Batay sa masusing pagsusuri sa mga piling tula ni Barrios natuklasan ng mananaliksik ang sumusunod: (1) May mga larawan/restriksyon ang kababaihan sa lipunan na hinubog ng mga institusyong panlipunan; (2) May mga tungkulin/katangian ang babae bilang babae at pagkababae. Bilang babae, tinutukoy nito ang biyolohikal/pisikal na tungkulin o katangian**.** Tinutukoy naman ng pagkababae ang panlipunan o kultural na tungkuling itinakda ng lipunan; (3) May mga pagkiling laban sa pagkababae na matatagpuan sa mga tula tulad ng marjinalisasyon; istiryutipo; dobleng-pahirap; diskriminasyon; at karahasang verbal, pisikal at emosyunal; at (4) Isinusulong ni Barrios ang isang lipunang may pagbabahaginan; pantay-pantay na oportunidad; pagkilala at pagpapahalaga sa papel at kontribusyon ng kababaihan sa lipunan; pagtatakwil sa karahasan laban sa kababaihan; at non-sexist na sosyalisasyon. Sa mga natuklasan sa pag-aaral, nabuo ang sumusunod na konklusyon: (1) May papel ang iba't ibang intitusyong panlipunan sa pagkakaroon ng di-pantay na pagtingin sa mga babae at lalake; (2) Ang biyolohikal/pisikal na tungkulin/larawan ng babae ang naging batayan sa pagtatakda ng tungkuling panlipunan nila; (3) Ang pagkiling laban sa kababaihan ay bunga ng papel-panlipunan na itinakda ng sistemang patriyarkal; at (4) Hinihikayat ni Barrios ang lipunan sa pagtataguyod ng pantay na pagtingin para sa babae at lalake.

010

QUILAB, Marina G. 2008. Ang Kombersasyong Kaswal ng mga Estudyante sa CASS. (GT: MA Fil), 200pp.

Layunin ng pag-aaral ang suriin at analisahin ang kaswal na pagpapalitan ng usapan ng isang grupo ng mga estudyante sa CASS, MSU-IIT. Inilarawan ang usapang naganap at, kinilala (1) ang mga *speech acts* na makikita sa *utterances* ng mga *interlocuto*r, (2) sinikap na maunawaan kung paano nagsisimula at nagtatapos ang kanilang usapan, at (3) binigyang pansin kung ano ang mga hudyat ng pagpasok sa pag-uusap ng mga kalahok sa usapan.

Deskriptibong analisis ang ginamit na paraan sa pag-aaral. Kinunan ng rekording ang aktwal na usapan ng isang grupo ng mga estudyante na nag-uusap sa Rotonda ng CASS bilding. Gamit *ang MP3 digital*, hindi napansin ng grupo na inirekord na ang kanilang usapan.

Sa mahigit tatlumpung (30) minutong rekording ng usapan ay natuklasan ang sumusunod: May mga pagsasapawan ng *utterances* sa loob ng parehong turn at may mga pagko-*chorus* ding nangyari o iyong sabay-sabay na *utterances* ng mga *interlocuto*r sa isang pagkakataon. Ang wika na ginamit sa usapan ay Bisaya-Cebuano at nagkaroon lamang ng ilang *code-switching* at *code-shifting* sa dalawang wikang Tagalog at English. May iilang termino rin silang ginamit sa usapan na naging makabuluhan dahil na rin sa komon nilang pagpapakahulugan sa mga nabanggit na salita. Lumalabas din na *informal* ang paraan at istilo ng pag-uusap dahil sa mga salitang ginamit sa pagpapahayag.

Maraming anyo ng *speech acts* o kahulugang pangkomunikatibo ang lumabas sa bawat pahayag ng mga *interlocutor*. Nangunguna rito ang pagtatanong, pagsang-ayon, pagkainis, pagpapaliwanag, pagtataka, pagkokompirma, pagbibigay-suhestyon at pagkukwento. Nakita ring may mga pahayag na nasa anyo ng pagtatanong subalit may iba pang kaugnay na kahulugan ang mga ito, tulad ng pagtataka at pagkabigla o pagkagulat. Ang pagtatanong ang pinakadahilan upang mabuksan ang bagong paksa ng pag-uusap. Sa pagtatanong at paggamit ng mga ekspresyon madalas naipapakita ang hudyat ng pagpasok sa usapan at pagsisimula ng usapan. Nasa *preclosing* at *closing* ang paraan nila sa pagtatapos ng usapan.

May mga pahayag o pagtugon ang mga *interlocutor* na wala sa anyo ng pahayag subalit ito ay nabibigyan ng kahulugan ayon sa konteksto ng pahayag at paksa ng pag-uusap. May mga pagkakataon ding ang kahulugan ng mensahe ay wala sa salitang binibigkas kundi sa kung paano ito inihayag sa mga pag-uusap. Ang isang kaswal na pag-uusap ay nagpapakita ng walang pangingiming pagsabad sa usapan ng mga *interlocutor* na nagpapakilalang sila ay malapit sa isa't isa.

Ang prosodi o pagiiba-iba ng tono ng pagbigkas ay nagpapabago sa kahulugan ng salita kahit pareho ang anyo nito. Ang paggamit sa mga *non-verbal* na pagpapahayag ay lalong nakatutulong upang maintindihan nang maayos ang mensaheng inihatid ng nagsasalita sa kanyang tagapakinig.

Sa kabuuan ay higit na nagiging aktibo, tuluy-tuloy at masigla ang usapan kung parehong alam ng mga ispiker ang wikang ginagamit, parehong lebel ng edad sila, magkatulad ang pinagmulan at halos magkatulad ang hilig nila sa buhay.

011
REQUINO, Perlita M. 2005. Mga Panultihong Cebuano: Salamin ng mga

Pagpapahalagang Moral. (GT: MA Fil), 269pp.

Pangunahing layunin ng pag-aaral na **Mga Panultihong Cebuano: Salamin ng mga Pagpapahalagang Moral** ang suriin at iklasipika ang mga panultihong Cebuano batay sa moral at makataong mga virtyu ni Ester Esteban, awtor ng librong **Education in Values.** Ang mga virtung ito ay binubo ng **katatagan o lakas ng loob** *(fortitude)*; **pagkontrol sa emosyon** *(temperance)*; **katarungan** *(justice)*; at **pagkamaingat sa pag-iisip at paggawa** *(prudence).*

Sinuri at inuri-uri rin ang mga panultihon batay sa mga valyu na nakapailalim sa bawat virtyu – **katatagan o lakas ng loob** na binubuo ng 10 valyu o pagpapahalaga – pasensya, sigasig, pagiging konsistent, matatag na disposisyon, sikap/tiyaga, hangaring makapaglingkod, katapatan, kasipagan, at hinahon; **pagkontrol sa emosyon** – simplisidad, pagkamasayahin, optimismo, katipiran, kontrol sa sarili, kadisentihan, kalinisan, pagiging totoo, pagiging mapagbigay, at pagkamahabagin; **katarungan** – walang kasinungalingan, sikap, responsibilidad, kaayusan, pagkamaalalalahanin, at kahustuhan/kalubusan; at **pagkamaingat sa pag-iisip at paggawa** – sariling pagpasya, kontrol sa sarili, pagwawari, pagpapakumbaba sa gawain, kadaliang matuto, paglingon sa nakaraan, pagkamaingat, at antisipasyon sa hinaharap.

Bukod sa mga virtyu at valyu/pagpapahalaga, unuri-uri rin ang mga panultihon ayon sa gamit nito sa lipunan – paalaala, puna, payo, pampalakas-loob, papuri, pampalubag-loob at babala.

Sa pag-aanalisa sa nakolektang 240 panultihon mula sa 24 na mga impormante na nakatira sa Syudad ng Iligan, Munisipalidad ng Linamon at Tubod at Osamiz ay natuklasan sa pag-aaral na (1) may mga patuloy na nag-iingat ng mga panultihon sa Iligan at mga karatig-pook; (2) ang virtyu ng **pagkamaingat sa pag-iisip at paggawa** ang nakakuha ng may pinakamataas na dalas ng bilang sa apat na mga virtyu; (3.a) **pagkamaingat** ang valyu o pagpapahalagang nangunguna sa ilalim ng virtyu ng **pagkamaingat sa pag-iisip at paggawa**; (3.b) sa ilalim ng virtyu ng **pagkontrol sa emosyon**, nangunguna ang valyu o pagpapahalagang **kontrol sa sarili**; (3.c) **kasipagan** ang valyu o pagpapahalagang nakakuha ng mataas na puntos sa ilalim ng virtyung **katatagan** o **lakas ng isip** at **kagustuhan**; at (3.d) dalawang valyu o pagpapahalaga ang nakakuha ng patas na bilang na siyang nanguna sa virtyung **katatagan** o **lakas ng isip** at **kaayusan**; (4) may mga panultihong ipinahayag gamit ang iba't ibang imahen subalit parehong-pareho ang ibig sabihin; (5) may mga panultihong nag-overlap sa parehong valyu o pagpapahalaga at gayundin sa virtyu; at (6) nanguna sa dami ng bilang ang **pagbibigay - paalala** bilang gamit ng panultihon.

Sa mga natuklasan sa pag-aaral, ibinatay ang sumusunod na mga implikasyon – (1) Marami pang mga panultihon ang maaari pang makolekta sa iba't ibang lugar sa Iligan at mga karatig-pook kung saan may mga katutubong tagapagsalita ng Cebuano; (2) Ang mensahe ng mga nakolektang panultihong Cebuano ay pangkalahatan o universal. Pangingibabaw ng isip sa larangan ng pagdedesisyon ang dapat na taglayin ninuman. (3) Maaaring isalin ang mga panultihong Cebuano sa Wikang Filipino na hindi masisira ang mensaheng nakapaloob; at (4) Malaking tulong ang mga panultihon sa pagpapanumbalik ng magagandang kaasalan o gawi ng mga tao.

Inihahain ang sumusunod na mga rekomendasyon ayon pa rin sa mga natuklasan sa pag-aaral – (1) Upang masalamin at makilala ang pagkalipi o pagkatao ng mga naunang henerasyon, iminumungkahi na magsagawa pa ng ibayong pananaliksik ng mga panultihon sa Syudad ng Iligan at mga karatig - pook at isalibro ang mga ito bilang pagpreserba; (2) Isalin ang mga panultihong makokolekta pa sa wikang nauunawaan ng malaking bilang ng mga mamamayang Pilipino; (3) Ipagamit sa mga eskwelahan ang nalikom na mga panultihon; (4) Pasiglahin ang paggamit ng mga panultihon sa pangunguna ng mga magulang sa tulong ng eskwelahan at mass media; (5) Gamitin ang mga panultihon sa pamumuna ng gawi o asal na hindi kanais - nais; (6) Gamitin ang valyu ayon sa Department of Education, Culture and Sports (DECS) sa pagsusuri ng mga panultihon; (7) Mangolekta ng mga panultihon ng iba pang etnikong grupo sa Mindanao; at (8) Bigyang pansin ang mga telenobelang kinahihiligan sa kasalukuyan ng mga manonood at suriin ang mga valyu o pagpapahalagang inihahatid nito.

012
TACLINDO, Mary Jean S. 2006. Antuka: Larawang Buhay ng mga Higa-unon. (GT: MA Fil), 221pp.

Nilayon ng pag-aaral na pinamamagatang **Antuka: Larawang-Buhay ng mga Higa-unon** na mapreserba ang katutubong panitikan sa pamamagitan ng pangongolekta ng mga antuka ng mga Higa-unon upang analisahin ang mga ito at salaminin ang larawan at lipunang Higa-unon. Tinangkang sagutin ang mga sumusunod na mga katanungan. (1) Anu-ano ang mga antuka ng mga Higa-unon? (2) Anong mga paksa ang nakapaloob sa mga antukang na ito? (3) Anong larawan ng lipunan at kulturang Higa-unon ang masasalamin sa kanilang mga antuka? at (4) Ano ang kahalagahan o gamit ng mga antukang na ito sa kanilang pamumuhay o lipunang ginagalawan?

Pagdulog na mimetic ang ginamit sa pagsusuri ng mga antuka. Tiniyak na mga katutubong Higa-unon lamang ang kinunan ng mga datos. Ang mga impormante ang nagbigay-pahayag tungkol sa larawan ng mga antuka kaugnay sa kanilang lipunan, kultura, kaugalian, at paniniwala. Ang mga impormante ay nagmula sa mga lugar ng Can-ayan at Impasug-ong na matatagpuan sa Bukidnon at sa Rogongon na nasa Iligan City.

Sa pangongolekta ng mga datos, ginamit ang pamaraang indejenus (indigenous) kung saan nagsagawa ng pagdalaw-dalaw sa lugar, pagmamasid, at pakikihalubilo sa tribo. Nagsagawa rin ng interbyu sa mga impormante para sa mga pagpapaliwanag sa antuka.

Ang sumusunod ang naging resulta ng pag-aaral: (1) May 149 na nakolektang antuka, 35 mula sa Can-ayan, 49 sa Impasug-ong at 65 mula sa Rogongon; (2) Nahati ang mga antuka sa walong paksa astronomikal objek/penomenong pangkalikasan; bahay/bahagi ng bahay; kagamitan/gamit; hayop/laman-dagat; pananampalataya (paniniwala/ga-mit); tanim/puno/damo; tao/bahagi ng tao; at iba pa. (3) Ang mga antuka ay may mga paksa ayon pagkakasunud-sunod: kagamitan/gamit; tanim/puno/damo; hayop/laman-dagat; tao/bahagi ng tao; bahay/bahagi ng bahay; astronomikal objek/penomenong pangkalikasan at iba pa; at pananampalataya (paniniwala/gamit). Naiklasipika ang mga antuka sa (a) lugar; (b) ekonomiya; (c) pamilya at katawagang pampamilya, at (d) relihiyon at mga paniniwala; at (4) Mahalaga ang mga antuka dahil maaari itong gamitin upang ipabatid at mapanatili ang mga pagpapahalagang nakapaloob dito tulad ng pagpapahalaga sa (a) pagtutulungan at pagkakaisa; (b) paniniwala at pagmamahal sa Dakilang Lumikha; (c)

babae; (d) karunungan, at (e) kalusugan. Ginamit din ang mga antuka bilang pampatalas ng isipan at pampalipas-oras.

Ang sumusunod ang naging konklusyon: (1) Marami pa ring mga antuka ang iniingatan ng lipunan ng mga Higa-unon na nasa Can-ayan, Impasug-ong, at Rogongon; (2) Iba't iba ang paksa ng mga nakolektang antuka; (3) Masasalamin mula sa mga antuka ang larawan ng lipunan at kulturang Higa-unon; at (4) Kababakasan ng mga pagpapahalaga ng mga Higa-unon ang kanilang mga antuka.

013
TUNDAG, Fidelfa K. 2007. Mga Katawagang Kultural ng mga Higa-unon: Isang Panimulang Pagtutumbas sa Cebuano at Filipino. (GT: MA Fil), 258pp.

Nilalayon ng pag-aaral na makalikom ng mga kultural na katawagan sa iba't ibang kategorya ng wikang Higa-unon at pagtutumbas nito sa wikang Cebuano at Filipino. Layunin ding alamin ang varyant o mga varyant ng nasabing katawagan. Sa pagsasakatuparan ng layunin ay sinikap na masagot ang sumusunod na mga katanungan: (1) Anu-ano ang mga katawagang Higa-unon para sa sumusunod na kategorya? a) bahagi ng katawan ng tao; b) bahagi ng bahay; c) kagamitan sa bahay; d) panghalip na panao; e) katawagang pangkamag-anakan; f) gulay, prutas at iba pang uri ng pagkain; g) uri ng hayop/ibon; h) mga katawagang astronomikal/uri ng panahon; i) mga ritwal, diyos, diyosa at ispiritu; j) mga kulay; k) mga bilang; l) pera; m) mga salitang nagsasaad ng kilos; n) mga araw sa loob ng isang linggo; at o) iba pang katawagan. (2) May varyant ba sa mga katawagang Higa-unon ng Impasug-ong at Rogongon? (3) Anu-ano ang katumbas ng mga katawagang ito sa wikang Cebuano at Filipino? Sinakop sa pananaliksik ang Impasug-ong, Bukidnon at Rogongon, Iligan City na tirahan ng mga Higa-unon. Ginamit ang paraang deskriptibo o palarawang indihenos gamit ang pagdalaw-dalaw at pag-interbyu upang makalikom ng mga katawagan at pagtutumbas nito sa wikang Cebuano at Filipino. Umabot sa 923 ang kabuuang katawagang Higa-unon ang nalikom. Maraming katawagan ng Impasug-ong ang may varyant at ang Rogongon ay mayroon ding varyant. May ilang termino ng Impasug-ong na hindi iisang salita lamang ang katumbas sa Rogongon. Umabot sa 9% terminong Higa-unon ang katulad ng ispeling at kahulugan sa wikang Filipino at 10% naman ang sa Cebuano. Mayroon ding mga terminong Higa-unon ang hiniram mula sa banyagang wika. Nabuo ang sumusunod na kongklusyon: 1. Maraming katawagang Higa-unon ng Impasug-ong na nasa iba't ibang kategorya ang may varyant maliban sa ilang kategorya. 2. Marami-rami rin ang mga katawagang Higa-unon ng Impasug-ong ang katulad ng ispeling at kahulugan sa wikang Cebuano at Filipino. 3. Ang mga katawagang nabibilang sa kategoryang ritwal, diyos, diyosa at ispiritu ay walang katumbas sa Cebuano at Filipino.

Master of Arts in Sociology (MA Socio)

001
ARQUISAL, Amabelle B. 2007. "Turi Among Selected Meranao Women Residing in Iligan City". (GT: MA Socio), 177pp.

This paper is a qualitative study about *turi* (female circumcision) among Meranao Muslim women in Iligan City, Lanao del Norte. To determine certain sources of explanation for pervasiveness of the practice, the study identified terms used when referring to turi, and description of beliefs. The essence of *turi* was examined by identifying and describing the methods used. Perceived consequences on health, social relationships and self- concept were explored. Sixteen snowball chosen key informants were interviewed from November 2006 to February 2007.

Pag-*Islam* and *turi* are the Meranao terms which the respondents used to refer to female circumcision. Most of them believed that *turi* is a form of baptism of a girl child into the Islamic faith. *Turi* traces its origin to the patriarchal stage of Ibrahim (or Abraham according to Christian Holy Scriptures). Majority of the informants and their female family members practiced the ritual *turi* on account of two categories of reasons- religious and ethno-traditional. It is either or both the mother and the grandmother respondents who made decision involving *turi*. The age bracket 2 to 9 years old when most of the respondents underwent *turi*. The same is true to most females in Muslim-dominated areas of Lanao del Sur and Lanao del Norte. Various materials were used in performing the *turi* ritual, each of which symbolizes a particular purpose or function in the ritual. Majority of the respondents experienced the used of needle in the turi rite. Ablution, magic chants, and prayers were done before, during, and after the ritual. *Kandori* is offered to the *magtuturi* (practitioner) in gratitude for her performance. Certain prohibitions were imposed on the subject of *turi*, such as for staying home for 3 to 4 days.

Turi is perceived to have no adverse effect on health nor on social relations within the family. In terms of self-concept, *turi* has not altered the way respondents viewed themselves, although a few expressed happiness after having undergone *turi*.

One implication of the findings on the study emerges from the shift in the terms used by the respondents, that is, from *turi* to pag-*Islam*. This modification implies that the concept of *turi* is evolving from ethno-traditional to religious. This, however, requires further study.

002
CASUGA, Lyecel S. 2005. Organizational Transformation: The Case of the Compassion International Child Development Projects in Iligan City (1986-2004). (GT: MA Socio), 152pp.

This is a case study of the organizational transformation of Compassion International Child development projects in Iligan City from 1986-2004. Primary data were taken from key informant interviews, focus group discussions, and participant observations. Secondary data were taken from minutes of meetings, manuals and documents.

The changing policies and approaches in child development intervention at the main office of Compassion international (CI) in Colorado affected the local projects in Iligan as explained by the concept of the Social Structure- repercussions happen upon introducing a new element to the structure of interconnected networks (Panopio 1995).

David Korten's (1986) concept of three generations of development approach is used to differentiate the project transitions. In Generation 1, the organizational structure was informal; program was focused on spiritual aspect only. In generation 2, the structure was formalized and formal school education was the means of holistic intervention. In generation 3, the structure was standardized and the program addressed the four aspects of child development.

The benefits of the recipients shifted from mainly monetary aid to developmental opportunities. Participation of parents and recipients changed from being spectators in Generation 1 and 2, to being involved in decision-making in Generation 3. Relationship among recipients, among parents, and staff toward recipients was established and became closer in Generation 3. Projects started to link with other organizations in Generation 3.

003
MAJORENOS, Grace S. 2005. Gender Role Differentiation Among Women and Men Farmers in the Ngo' Sustainable Agriculture Program in Upper Pugaan, Iligan City, Southern Philippines. (GT: MA Socio), 354pp.

This study explores gender role differentiation among women and men farmers of an NGO-based Sustainable Agriculture program in Upper Pugaan, Iligan City, Southern Philippines.

Primary data were drawn from a sample of purposely chosen key informant respondents consisting of twenty-four (24) couples (24 wives and 24 husbands) from Upper Pugaan areas who are farmer beneficiaries of Hope for Change, Inc.' Sustainable Integrated Gender-responsive Area Development program (SIGRAD). The main instrument used for gathering primary data was the questionnaire, which contains close and open-ended questions. Focus group discussions were also conducted to enhance the findings of the study.

Findings of the study showed that women in Upper Pugaan areas are either part-time or full-time farmers and are actively involved in resource management. They are major contributors to the household economy, both through their remunerative work on farms and through the unpaid work they traditionally render at home and in the community.

With regard to differential access to and control over resources, benefits, and opportunities, women's access to and control over economic resources, opportunities, and benefits is limited. However, there is an apparent shift toward egalitarianism.

Constraints prevailed among women vis-à-vis men concerning access to and control over economic resources, benefits, and opportunities in the household, farm, and community because of structural (demographic, economic, and institutional), geophysical, and socio-cultural factors. These factors can facilitate, constrain or both towards maximum participation and equal access and control of women and men.

On the whole, although there are factors that impede women's full participation, the study shows that the facilitating factors seemingly predominate to maximize women farmers' potentials towards egalitarianism that will eventually improve women's status and

conditions. After all, women and men are partners in development work towards sustainable agriculture and development.

004
MENDOZA, Myrma Jean A. 1992. Patterns of Role Conflict Among Marginal in Iligan City and Marawi City. (GT: MA Socio), 196pp.

The study aimed at finding out if children of Muslim-Christian marriages have experienced role conflicts in six areas of social life, namely: religion, food, mode of dressing, dialect, ethnic group identification, and marriage perspective. It was conducted in the cities of Iligan and Marawi, with 155 marginal children, as respondents, most of whom are students.

The data obtained through the questionnaire were subjected to chi-square to differentiate the two sets of respondents in their responses to these questions:

1) Do marginal in Iligan and Marawi experience conflicting parental expectations in religion, food, mode of dressing, dialect, ethnic group identification, and marriage orientation?

While both groups experience role conflicts, a significant difference is noted with more Iligan marginal having a higher proportion of role conflicts in religion, food, ethnic identification, and marriage perspective than Marawi marginal. Presence of role conflict is lower in the areas of mode dressing as shared by both groups.

2) In what instances do role conflict occur? Religious occasions such as Ramadhan and Christmas, day of worship (Friday and Sunday), visitation of Muslim relatives, visitation of Christmas relatives, and social gatherings are situation of role conflict common to both groups in most social areas, except in religion.

3) What are the ways role conflicts is made known to the marginal?

Iligan and Marawi marginal alike reported similar ways as to how their parents made their expectations known to them. That is, mainly verbal and often reinforced with actions.

4) How often the marginal experienced role conflict?

The two groups report the occurrence of role conflict on a weekly basis in all social areas.

5) What are the feelings of marginal when subjected to role conflict?

Majority of marginal in the study felt sad and confused when subjected to parental conflicting expectations in most social areas.

6) Who has the final say in their role conflict situation?

The fathers of marginal from the two cities always make the final decision in the different social areas in this study.

7) How do marginal assess the seriousness of the role conflict?

Assessment patterns, which come in three types, are common to the marginal respondents. Role conflicts in religion and marital orientations are viewed as serious problems, role conflict in mode of dressing and dialect are not a problem, and role conflict in ethnic group identification is perceived to most Marawi marginal as not a problem while their counterparts in Iligan are undecided of their assessment.

8) What are the copings mechanisms used by marginal in dealing with role conflict?

The foremost coping mechanisms used by the two groups are compromise and consistency in obeying a parent. Compromising to their parents' different expectations is used in the areas of religion, food, mode of dressing, and ethnic group identification. Consistency in the following only one parent is used in marriage and dialect.

These findings have implications for theory building in family, socialization, culture, ethnic group identification, majority-minority relations, role conflict, and marginality. Also, the same results have practical applications for family welfare.

005
MONTEMOR, Elsa D. 2004. The Labrador Agrarian Reform Community in Polanco, Zamboanga del Norte. (GT: MA Socio), 136pp.

This study entitled "The Labrador Agrarian Reform Community in Polanco, Zamboanga del Norte" was conducted in Barangay Labrador, an Agrarian Reform Community (ARC). It made use of the interview method using guide questions; Focused Group Discussions (FGD's), and Participatory Rural Appraisal (PRA) tools in data gathering.

The findings of the study are true only to the area being studied. Data show that all respondents are married and have children ranging from 3 to 4. Farming is the major occupation of the respondents and they cultivate an average area of one-fourth to one-half hectare of land, which give them an income of Php 5,000 to Php 15,000 per year. This has been the cultivation of the farmer prior to the Comprehensive Agrarian Reform Program (CARP) implementation. The other sources of income, such as livestock production, give them an income of 5,001 to 15,000 per year.

Land reform took place in the area since 1972, under the Operation Land Transfer (OLT) program of the Philippine government. However the area has been launched as ARC in 1993. CARP covers it because of the presence of big landholdings under the ownership of Realize and Martinez.

On the aspect of ARC experiences, DAR led in the implementation of the CARP in Barangay Labrador, Polanco, Zamboanga del Norte. It conducted series of meetings, listing of ARB's, and parcellary survey as preliminary activities for ARC launching.

Data show that landowners were hesitant regarding distribution. Primarily, they did not want that their lands be distributed to tenants and did not accept the land valuation given by the Land Bank of the Philippines. Amortization scheme was not finalized since it was affected by the landowner's decision not to give the lands. Said decision could be inferred from their actions of non-appearance at the local DAR office for the settlement of land ownership.

Most of the respondents are active in the organization, the Labrador Farmers Agrarian Reform Cooperative (LAFARINCO) as manifested in attendance to meeting and seminars facilitated by DAR or any government agencies.

The government agencies, such as the Department of Agriculture (DA) helped through the provision of livelihood projects such as hog raising and cut flower production, and the Department of Trade and Industry as well as the Land Bank of the Philippines (LBP) through financial assistance.

The non-governmental organizations in the locality served as facilitators and were responsible in organizing and strengthening of the organizations within the barangay.

On the aspect of benefits acquired from ARC implementation, the farmer organizations accessed financial assistance and farm facilities such as thresher, tractor, solar dryer and rice mill; physical infrastructure such as irrigation, road rehabilitation, spill way; health services; potable water system; sanitation services; and electrification services from the government agencies.

Despite the benefits given by the ARC program, agrarian reform beneficiaries continue to face problems that greatly affect them. One major problem is on land issue, where it is mainly attributed to persistent hesitation of landowners' to land valuation; turtle-pace implementation of CARP wherein DAR lacks political will in implementing it. The other problem is on economic and financial aspect. Results of the focused group discussion showed that ARB's faced the problem on limited access to credit facility, high interest rates among traders and usurers, limited access to production capital, low and inadequate income, indebtedness, high cost of production and cheap prices of agricultural products and insufficient irrigation facility. Other problems encountered by ARB's include: difficulty in producing quality foods for the family, difficulty in sending their children to school and difficulty in buying medicine for the sick member of the family.

006
PONCE, Sulpecia L. 1992. Patterns of Social Mobility Among Maranaos in Iligan City. (GT: MA Socio), 187pp.

This study is an attempt to document the changes in the patterns of social mobility among a random sample of 414 Maranaos in Iligan City. Mobility is here taken as an inter-generational movement in selected status characteristics such as occupation, education and income. Fathers and children are compared with respect to these status characteristics, and the differentials established by the use of statistical tests (tau and gamma). A negative and

significant correlation shows the extent of mobility among the Maranao children.

The following research objectives guided this study:

1. To compare the occupational ranks, educational attainment and income of a sample of respondents and their fathers.

2. To determined whether there is a relationship between occupational ranks, educational attainment and current income among children and fathers.

3. To determine the factors affecting the occupational and educational attainments of respondents. More specifically, it points out which of the following factors significantly influence the children's occupational and educational attainments, namely:

    a. Paternal status factors: father's occupation, education, income
    b. Personal status factors of children: age, sex, first job, income at first job, birth order, degree obtained.

4. To determine the factors perceived by Maranao children as having the most influence on their occupational choices.

After analyzing the data, the author found out that the sample was upwardly mobile in occupation, education and income relative to its fathers. Tau and gamma indicated inverse correlations between the father and children's characteristics. Of these three indexes of mobility, followed by income, then by education.

The author also discovered a dual or two directional mobility trends in the occupation of the respondents' entry into salaried/professional occupation of the respondents. The other trend was the occupations (upward movement). The other trend was the occupational inheritance (horizontal movement) of children whose fathers were in the business patterns in Maranao society followed the universal principles of social stratification as observed in the west.

Results of this study further showed that the respondents' current occupation was significantly related to their birth order (showing highest mobility among first-borns), first job and current income.

Respondents' education was also found to be related directly to their age, jobs (either first or current), income and birth order, which suggested more upward movement among the eldest as compared to middle-borns and youngest children.

Other findings of this study pointed out to that career choices of children tended to be influenced more by their personal decision than by lineage actors and parental influences.

Form these findings, the author drew some implications to policy making and research, it called upon a similar study on other Muslim groups to provide a broader perspective and more solid data on the dynamics of social mobility in a minority setting.

007

SANI, Maylanie S. 2008. Sports Participation Among M'ranao Female Students in Mindanao State University, Marawi City. (GT: MA Socio), 181pp.

This study focuses on sports participation of female M'ranao students in Mindanao State University, Marawi City. Specifically, it is aimed at determining the nature, level, and factors of sports participation among selected M'ranao female students in the Mindanao State University (MSU), Marawi City. The sample survey was employed with 100 female M'ranao student respondents from two Colleges - College of Social Sciences and Humanities (CSSH) and College of King Faisal Center for Arabic and Islamic Studies (KFCIAAS) in the main campus of MSU. Findings revealed that a great majority from CSSH and KFCIAAS like sports. The reasons cited include health benefits, amusement and recreation, gain friends, stress relief, development of one's skill, and enhance awareness about sports. In addtition to this, findings also revealed that through a confirmatory factor analysis, M'ranao indigenous culture related to family norms and dress code, religious beliefs and misconceptions, physiological beliefs, financial aspect, and local government are the perceived influencing factors in sports participation of the M'ranao female students. Nevertheless, the inequalities experienced by M'ranao women, to some extent, vary from the difficulties encountered by Muslim women in other countries as determined by their indigenous culture, religious beliefs, and other perceived influencing factors.

008

SEBIAL, Laureen S. 2001. Gender Division of Labor Among Tomato Farmers in Barangay Luna, Claveria Misamis Oriental. (GT: MA Socio), 152pp.

This study explores the patterns of gender division of labor among tomato farmers in Barangay Luna, Claveria, Misamis Oriental. The key informants constitute a purposive sample of ten (10) couples (ten wives and ten husbands). The main instrument used is the questionnaire, which contains open-ended questions. Information concerning the geographical profile of the community has been concerning through secondary data from the Municipal Planning and Community Development of Claveria, Misamis Oriental.

The situation seems to indicate that for the ten (10) households, the gender division of labor increases in complexity as the production process moves forward.

This study asserts that the Barangay Luna women tomato farmer respondents play continuous roles from the maintenance of human resources to household maintenance to farming, typifying the multiple burdens of women in agriculture. The women and men have equal access to resources. As to control over these resources, there is a movement toward egalitarianism.

009

TAMPOS, Dolores S. 2004. The Socio-Historical Study of Changing Characteristic of Gagmay'ng Simbahanong Katilingban in Josefina, Zamboanga del Sur.

(GT: MA Socio), 167pp.

This is a socio-historical study of the changing characteristic of *"Gagmayng Simbahanong Katilingban"* in Josefina, Zamboanga del Sur.

The sources of data were both primary and secondary. The primary data were taken from key informant interviews, focus group discussions and participant observation. The secondary data were taken from journals, a manual, minutes of meetings and evaluation reports.

The GSK is described as it evolved in the following stages: before 1975 (The Early Missionary Effort of the Columban Missionary); 1975 to 1985 (The Initial Organization of GSK); 1985 to 1994 (The Beginning of the Organization of GSKs); and 1995 to 2003 (The Later Evolution of GSKs).

The study shows that the character of GSK in Josefina, indicates in the participation of members in the decision-making process, their level in social awareness and capacity in critical thinking, and their participation in church activities, underwent a series of changes, influenced by perspective of the animators, the catalytic agents' methods and strategies of organizing, and the programs implemented and activities undertaken in the GSks.

Active participation in the GSK had contributed to the personal and social growth and transformation of the people. This is shown in the transformation of the members in their personal family life, interpersonal relations, and livelihood.

This study hopes to provide a basis for grounding liberation theology in the concrete experiences of the people.

Master of English Language Studies (MELS)

001
AGBAYANI, Juvy M. 2006. Instructional Materials in English 1 (Study and Thinking Skills) for College Freshmen at Camiguin Polytechnic State College. (SP: MELS), 128pp.

This special project aimed to produce some instructional materials for English 1 (Study and Thinking Skills) to be used at Camiguin Polytechnic State College.

The development of these instructional materials was guided by the views and theories of language and language learning, needs survey results from students, English and non-English teachers, the mission and objectives of Camiguin Polytechnic State College (CPSC), and the objectives of English 1 as recommended by CHED.

The instructional materials that were developed consist of three lessons. Each lesson incorporates the four-macro skills of reading, writing, listening and speaking to help develop the communicative goals of students. Activities include academic tasks such as

summarizing, paraphrasing, note-taking and other communicative functions such as explaining, generalizing, defining, narrating, and describing which were identified by English and non-English teachers.

A grammar lesson is included in each set of lessons to help students perfect or straighten their language. Grammar is also taught within meaningful or communicative contexts.

The project ends with recommendations for the materials to be used, evaluated and improved and for the whole set to be completed.

002
BICBIC, Cecille W. 2007. Creative Writing Digest. (SP: MELS), 161pp.

The theory of language learning in communicative language teaching includes: activities involving real communication; carrying out meaningful tasks; and using language, which is meaningful to the learner to promote learning (Brown, 2001). It is the observation of the author of this study that developing creative thinking in the process of creative writing can better enhance critical language learning, which make for creative language learning (Muhammad Kamarul Kabilan, 1999). This has resulted to a set of Instructional Materials that uses the latest trends to accelerate learning to survive in the twenty first century by facilitating the creative process. Processing the steps involved in writing the three literary genres: poetry, fiction and drama with a compilation of references (glossary of literary terms, a mini thesaurus, suggested readings, etc.), through metaphorming (Siler, 1996); raising the awareness, discovery, understanding, acceptance and confidence of language learners to indulge in creative writing individually and in small groups (Ortigas, 2003); combining responses or ideas in English in novel ways (Smith, Ward and Finke, 1995), and to use elaborate, intricate, and complex stimuli and thinking patterns (Feldman, 1997) to become fully human.

003
ESLIT, Edgar R. 2006. Computer Assisted Language Learning (Call): Interactive Language Teaching in COMARTS Using a Personal Website in STI-Iligan, S.Y. 2006-2007. (SP: MELS), 66pp.

The title of this Special Project is " Computer Assisted Language Learning (CALL): Interactive Language Teaching in COMARTS Using a Personnel Website in STI-Iligan, S.Y. 2006-2007".

Computer Assisted Language Learning (CALL) is one of the many tools and techniques that can help improve the students' language competencies. This new technology in language education has increased learner autonomy, creativity, productivity and teamwork. Interactive Teaching Approach and Computer-Assisted Language Learning have been used to tutor language learners through language drills or skill practice; as stimulus for discussion and interaction; or as a tool for writing and research.

Overall, this paper aims to improve an existing COMARTS Syllabus using Computer Assisted Language Learning (CALL) materials imparted through the use of a Personal Website. It is limited among the purposive samples of thirty five (35) COMARTS students of STI-Iligan. As it is, it is expected to contribute to the area of ESL teaching and to foster interactive and communicative English grammar learning.

The study, furthermore, seeks to answer the following questions: (1) How will the CALL materials provide interactive English grammar and writing exercises? (2) Will the CALL create an interaction among the students and teacher? (3) How will the needs analysis justify the modification of the old COMARTS syllabus? (4) What areas in the old COMARTS syllabus should be modified? (5) How will be the lessons are made interactive and communicative? And (6) will the modified COMARTS syllabus be found satisfactory by its users?

The findings of the study showed that there is a need to modify the existing COMARTS syllabus of STI-Iligan. Students found the CALL lessons more interactive and communicative. The areas modified include the language structure (grammar lessons/ drills) and the communicative use of language. Overall findings reflect general satisfaction by the users of the modified COMARTS syllabus.

Part one contains the Action Research preliminaries. Part two presents the Special Project, the Modified COMARTS Syllabus.

004
GOC, Dinah C. 2008. Instructional Materials for College English Freshman at Iligan Capitol College Iligan City. (SP: MELS), 88pp.

Instructional materials are essential tools in an English class because these materials allow the students to interact with words and visualize images, which in effect, help develop the learner's reading, writing, listening and speaking skills. Connection to institutional objectives and relevance to student's needs are the primary requirements in developing instructional materials. Both comprehension and motivation are often enhanced when students can activate relevant background knowledge as they read, connecting their personal experiences with vicarious experiences (NCTE Guideline). That is, materials which are relevant to background experiences of the learners are desirable.The ability of the students to cope with their lessons depends on their individual learning strategies. Therefore, one must assess the learning styles of students before providing teaching aids. Furthermore, activities in the instructional material must be arranged according to its degree of difficulty and it must allow the students to use English in a communicative situation. These guiding principles were used in developing the instructional materials in this paper. Reading, speaking and writing tasks were included to enhance the student's mastery of English.

005
SAVIOR, Hobart P. 2006. The Creation of Bachelor of Arts in Literature and Performing Arts Degree Program for Liceo de Cagayan University. (SP: MELS), 70pp.

This special project, "The Creation of Bachelor of Arts in Literature and Performing Arts Degree Program for Liceo de Cagayan University", aims to create a curriculum for an undergraduate degree program entitled Bachelor of Arts in Literature and Performing Arts for Liceo de Cagayan University in lieu of the existing Bachelor of Arts in English major in Literature. Since Liceo de Cagayan University aspires for cultural excellence as its commitment to total human formation, this revised program or curriculum is created with the presentation of the rationale, profile, policies, objectives, framed prospectuses and others.

This revision is necessary since the existing of the AB English program has seen a decrease in the number of enrollees in the past years. Instead of scrapping the program, the university suggested the reshaping of the program juxtaposed with specializations in the performing arts. With the University's deregulated status granted by the Commission on Higher Education, the university has been granted the privilege and the autonomy to offer a new program without securing any permit or authority from CHED.

The revised program offers three specializations namely: music, dance and theatre. Studying the performing art allows one to discover his potentials, abilities and life skills necessary for career work.

As Liceo de Cagayan University intends to offer this course in June of 2006, this study presents the complete curriculum including the various facilities and reference books and materials that the University has on hand. These are essential to the meeting of requirements and demands of the course.

Master in History (MIH)

001
CALIMPONG, Jeremy B. 2007. Historical Sites and Figures of Iligan City. (SP: MIH), 83pp.

This research entitled **"Historical Sites and Figures of Iligan City"** provides valuable information and insights about the former settlement of Iligan including the political leaders of early years. The objective of this research is to know and show the historical sites and figures of Iligan that was used and occupied by the colonizers and the local community. Specifically, it will ask the following queries: *1. What are the historical sites and figures of Iligan City? 2. Where are the historical sites located? 3. Why did the people occupy such location? 4. Who were the political leaders in the early years of Iligan City? 5. What do the historical sites reveal about the community?*

As a Christian settlement, Iligan's story really goes back more than four centuries ago, shortly before Legazpi's expedition reached the Philippines in 1565. Iligan was originally inhabited by people who were called either taga-baybay (the coastal dwellers), taga-ilaya (the hinter land dwellers), or taga-bukid (the highland dwellers). They were known by their geographical and territorial location. These people might have penetrated into this area using the rivers of Iligan as highways. These early inhabitants of Iligan are known today as Higa-onon.

As one of the cities in Mindanao, Iligan which became a chartered city on June 16,1950 with the virtue of Republic Act No. 525 signed by President Elpedio Quirino once traditionally used by both Americans and Japanese colonizers as the launching pad of their political and economic concerns. During the Spanish period, minimal development occurred in the town a few kilometers of roads were constructed and a small wooded pier was built. Compared to the coming of the Americans in 1900, a number of infrastructures were constructed and even telephone lines. A few houses were erected. But when Japanese invaded Iligan on May 5, 1942, many of the buildings were destroyed.

The Japanese also tried to resuscitate domestic trade and commerce. The first step undertaken to revive what was once a flourishing trade was the restoration and maintenance of peace and order. With this foreign occupation, much of the establishment like town's wharf, roads, bridges, the market places, and houses are constructed which have had a direct role in making the present town. Even some of the sites, that was once the battlefield and offices of the colonizers are considered living evidence that tells the life and activities of the past.

002
COLONIA, Janry B. 2006. An Ethno-Archeological Analysis on the Martaban Jars: The Paterna Marapao's Collection. (SP: MIH), 70pp.

It has always been the practice to relate signature materials-potteries as markers of status in the Philippines society. The value assigned to these prestige goods are most of the from the value system of the researcher. The study would like to explore the continuities and changes on the values assigned on these status symbols of society. Archeological "cultures" are material paralimpsets of human communities with interwoven historical trajectories. They constitute expressions observable by other social scientists. To comprehend and compare them the archeology had best meet ethnography on the contested terrain of the relations between space and time in a region of determinate character. I will define the varied materials signatures of different configurations of practice, agency and worldview, and then apply them to the archeology of a cluster of previously unstudied Martaban jars. In this study, I am proposing an independent system from ethnographic analogy by which signature materials goods could be evaluated from an archeological perspective.

003
CUYNO, Lieve L. 2007. The Development of Laubach Institute from the Threshold of Silliman University: A Study on the School Administrator's from 1948-Present. (SP: MIH), 206pp.

This Special Project deals with the Development of Lau Bach Institute from the Threshold of Diliman University: A Study on the School Administrators from 1948-Present, a private secondary institution located in Poblacion, Bicolor, Lanao del Norte, Philippines. It describes its establishments and enumerates significant contributions from the time it was founded up to the present condition. It also identifies problems, which the school encountered, and the alternative solutions to cope with these problems so as to give

quality education among their students.

An oral interview both individual and focused group was utilized including the questionnaires as guide were likewise conducted. The secondary sources, like books, souvenir programs, government and electronic records, and other related documents to accomplish the purpose of this thesis.

The faculty and staff of this school are well trained in their master's degree studies and the majority are LET passers. Many parents in Bicolor trust Lau Bach Institute for their children's future in over 59 years, which has been granted to provide more government subsidy and foreign support- students in Association of Christian Schools International (ACSI). The students and alumni are more than grateful to be a product of the school. The school director also hopes to realize his dream of reminding teachers of giving students a good quality of education. While the problems have learned to the development of the school, however, cannot prevent them from pursuing its goals. The administration is always to strive, follow and adopt policies that provide their students with better teachers, serving an effective teaching learning process by preparing and providing programs suited to the learning needs of the students. It is hope that Lau Bach Institute would become one of the top secondary institutions, not only in all provinces of Lanao Del Norte, but also in Mindanao as a whole.

004
DAUG, Artchil C. 2006. Glimpses of the Life of Kag. Genubio M. Daug of Barangay Dalipuga, Iligan City. (SP: MIH), 92pp.

This project, entitled DODO: *Glimpses of the life of Kag. Genubio M. Daug of Barangay Dalipuga, Iligan City*, is a compilation of essays about the life of barangay councilor Genubio M. Daug of Barangay Dalipuga since childhood to the present.

005
ESCARPE, Analisa A. 2006. Mayor Lawrence Lluch Cruz: A Lifestory. (SP: MIH), 58pp.

This study recounts the life story of Mayor Lawrence Lluch Cruz, who is a grandson of a great political figure of Iligan City former city mayor; Mayor Pacificador "Dodo" Lluch Sr. He was also the great, great grandson of Iligan's business tycoon Don Gregorio T. Lluch. This biography starts with a discussion of the origins of the Lluches, followed by tracing the maternal ancestors, descendant and relatives of Lawrence Lluch Cruz. It then describes his life story before he entered politics.

Lawrence Lluch Cruz life revolved around the world of politics. His political career was influenced by his maternal lineage of the Lluches.

He started his political life when he was encouraged by his cousin Nicolo Lluch to join the Kabataang Barangay Movement. When he ran for the position as KB President in Pala-o, Iligan City he then won overwhelmingly over his political veteran opponent. He then continued his political career from Kabataang Barangay Chairman, to City Councilor,

to Vice Mayor then now as the Chief Executive of Iligan City.

As a politician, he was able to contribute many resolutions and ordinances to the development of the city, and still working forward to serve the people of Iligan at his best with his motto "*Bacud Iligan, Bangon mga Iliganon.*"

006
JUNIO, Celyn O. 2006. Initao: A Glimpse of the Historical Development of a Mythical Land of Witches. (SP: MIH), 88pp.

This special project entitled "INITAO: A Glimpse of Historical Development of a Mythical Land of Witches," tackled the short historical background of Initao, stories about witches in Initao and the tourist spots found therein. This study could be answered through the following questions: 1. What were some of the evidences that Initao already functioned as a municipality during the Spanish regime? ; 2. How did government officials administer the municipality? ; 3. How did Initao come to be known as the *"land of witches*?*"* 4. What are the tourist spots found in Initao and how these contribute to the improvement of the image of Initao?

Initao was the former mother town of the municipalities of Libertad, Naawan, Manticao, and Lugait. Initao already functioned as municipality even during the Spanish regime. Initao has sixteen (16) barangays, which are categorized as rural, coastal, lowland, and upland. Initao has also been tagged as the *"land of witches."* However, there are still good stories that the municipality has. Initao has many tourist spots that could somehow help in eliminating the negative connotation of the name Initao. The local government is implementing the policy of promoting tourism in the municipality. It is on the process of developing the potentials of the municipality.

007
MAROHOMBSAR, Myrna M. 2007. The Integrated Developmental School of MSU-IIT: A Brief History, 1946-2006. (SP: MIH), 75pp.

This Special Project entitled "The Integrated Developmental School of MSU-IIT: A Brief History, 1946-2006" is a descriptive narration, employing chronological organization of how the IDS is evolving into a premier high school in the community. The study hopes to answer the specific questions:

1. How was the Integrated Developmental School established as an academic unit of MSU-Iligan Institute of Technology?
2. In its metamorphosis into a premier secondary school in the community, how have the changes affected the faculty, students and the community?
3. What are the vision, mission and goals of the Integrated Developmental School?

The history of the Integrated Developmental School (IDS) pre-dates that of MSU – Iligan Institute of Technology. Whereas the latter was established in 1968 by virtue of Republic Act 5363 and upon conversion of Lanao Technical School, as early as 1946, a

junior high school was created as a response to Iligan's clamor for its own school. At that time, there was only one Lanao Province with Governor Louis R. Marohombsar as the provincial governor, the very first for the province.

Establishing the school was fraught with difficulties. Then Superintendent Aguam Pangandaman refused to grant permit unless there was an eight-hectare land for school site. For him, "no land, no permit; no permit, no school." Prominent families in Iligan such as the Lasmarias, Abragan, Fernandez, Perfecto, Beley and Jariol rose to the challenge and donated land for free and the school materialized.

Over the years, the school underwent changes not only in its nomenclature but in its administrator and curricular offering as well. As a technical school under the Bureau of Vocational Education, it offered vocational and technical courses and for those who desired immediate employment, manufacturing firms in Iligan employed them. In its admission policy, future students were subjected to personal interview and were made to read. Admission tests may not be as refined as it is now, nonetheless, admission was based on one's mental ability.

In the 1990s, the school again was subjected to changes in its name and curricular offering. By virtue of BOR Resolution No. 147, s. 1992, the Developmental High School became the Integrated Developmental School, a laboratory school of the College of Education. Science and Mathematics were emphasized and re-enforced. With the passage of RA 8760, s. 2000 mandating high schools of state universities and colleges to phase out non-laboratory schools, the IDS being a laboratory school of CED was re-emphasized. There was no alternative but to be one if the IDS wanted to stay on campus and continue to be a part of MSU-IIT.

A study made by Dr. Camar Umpa in the late 1990s revealed that more Filipino scientists and engineers are needed, if the Philippines is to catch up with its neighbors in terms of development. It is furthermore noted that, although the Integrated Developmental School is only one of three duly-recognized science high schools in the country, there is a felt need for modification and intensification of its curricular offering vis-à-vis Science and Technology.

In SY 1998-1999, two science curricula were implemented as approved by BOR Resolution No. 33, s. 1998. The IDS was being conceptualized into a model high school for Science and Technology with the primary objective of producing inputs for collegiate courses in the aforementioned fields of study. After five years of implementation, it was deemed necessary to review the curricular offering due to the "burned-out" effect among students.

The IDS made and still is making its mark in academic achievements. In 1997, at Kidapawan National High School, the Agong and Ang Agong, IDS' official publications, were recipients of the hall-of-fame awards. In the fifth National Impromptu Speech Contest held on February 19, 1999 at Manila, Eigen John T. Ignacio won second place.

The year 2001 was a banner year for Science and Mathematics. In a National Chemistry Olympiad held at Cagayan de Oro, Ariel B. Radjac placed second and Vincent L. Montifalcon placed seventh. Prem Vilas Fortun M. Rara, because of his research, was a

SIBOL Awardee, and his work won him the Best Research Project in an INTEL sponsored contest. He was also a qualifier for the International Science and Engineering Fair held at Kentucky, USA.

In 2003, the Math and Information Technology Department had contestants in Correspondence International Math Competition that was sponsored by the Australian Math Competition for the West Pac Awards. Participants won the Credit Award. Franzemyll Dy and Evan Eblamo won the Encouragement Award in an Asian Inter-cities Teenagers Mathematics Invitation Competition.

For the Science and Research Department, Eigen Israel Rara won first place (individual project) in an INTEL National Science Fair and Quiz, sponsored by INTEL – DOST. In May 2003, the same student participated in an INTEL National Science and Engineering Fair at Cleveland, Ohio.

Then in 2005, three IDS students participated and won third place in a Mathematics Olympiad in Shandong, China.

For 2006, IDS students showed they could also excel in sports by winning Gold and Silver medals in swimming competitions like the Palarong Pambansa. In the same year, Rosauro Dividina won the Gold Medal in a Mathematician's Convention and Mathematics Competition at Lucknow, India. Also, IDS contestants were awardees in an Australian Mathematics Competition Awarding Ceremony.

These are the highlights of IDS students' sterling performance in all fields of academic endeavor. This quest for excellence is in consonance with MSU-Iligan Institute of Technology's mission of becoming a world-class institution. For the IDS, the quest continues.

008
MONTESCLAROS, Rey Luis A. 2006. The History of Maranao Telephone Company Incorporated. (SP: MIH), 57pp.

The History of Maranao Telephone Company, Inc. (MARATEL) is traces the remarkable story of the origin survival and expansion of Iligan's first telephone company. It tries to trace the start of the company from a fledgling manual switch telephone company to its transition into the cross bar automatic dialing to the introduction of digital switching equipment through interviews conducted among MARATEL personnel and based on the personal experience of the author as an employee of the company for nine years data had been gathered to recreate the different segments of the company's history. Whenever possible slices which best portray the particular period is included to add color to the story.

Maranao Telephone Company is remarkable because it is one of the companies which had been founded almost simultaneously with the birth of Iligan as a chartered city in 1950. It is therefore a sort of time capsule of the period and reflects the steady rise of Iligan as an Industrial city in Mindanao. The company's survival in the face of overwhelming competition is also worth telling as it had to do so in the midst of government policies which were more often unfavorable to its operations as a local

telephone company. By telling its story we have good idea of the interaction between government agencies and private enterprises in Iligan.

The Maranao Telephone Company had been able to survive primarily through introducing and utilizing the right affordable technology. Its adaptation was dictated by demand throughout the years and these were all due to the necessity of meeting the demand for telephone lines and improved services. This is particularly the case considering the nature of the telephone business as a capital intensive venture. The history of Maranao Telephone Company, Inc. clearly suggests that Iligan City's critical telecommunications structure must always have the right incentive and support from all government agencies as a prerequisite to further progress and to encourage its viability as a business hub in the region.

009

PALAHANG, Elmer L. 2006. The Case of a Vanishing Craft: A Survey of the Decorative and Industrial Arts of the Maranao. (SP: MIH), 84pp.

This research study dealt with the Decorative and Industrial Arts of the Maranao in the selected municipalities of Lanao del Sur. Specifically, this sought to answer the following questions: 1.What are the reasons why Maranao society has changed and transformed? 2. What are the different industrial and decorative arts of the Maranao? 3. What changes or transformations have this industrial arts undergone in the context of culture change? 4. What are the problems that the Maranao society encountered in its desire to preserve these industries as part of their cultural change?

This is micro rather than macro presentation of the different decorative and industrial arts of the Maranao. In this research paper, the researcher decided to classify these decorative and industrial arts into three headings: **Woodcraft and Carving, Metalworks** and **Clothweaving**.

The descriptive-analytical method was used. Oral interviews with questionnaires as guide were likewise conducted.

This study found out that Maranao industrial and decorative arts, although facing different problems are still present. But its artistry and intricacy, quality and texture had already changed. Thus, enabled the researcher to conclude that this craft is slowly but surely disappearing.

010

PAMAONG, Liza B. 2007. Courtship and Marriage Practices of the Higaunons in Barangay Lubilan, Naawan, Misamis Oriental: Continuity and Change. (SP: MIH), 85pp.

This special project is entitled " Courtship and Marriage Practices of the Higaunons in Barangay Lubilan, Naawan, Misamis Oriental: Continuity and Change."

Barangay Lubilan is peopled with an ethnic group called Higaunons whose cultural heritage is threatened by change.

Specifically, this study sought to answer the following questions:

1. What is the system of courtship among the Higaunons?
2. What are the types of marriage or marital practices of the Higaunons?
3. What is their traditional wedding ritual in terms of:
   a) wedding arrangement   b) wedding ceremony
4. What are the changes in their courtship and marriage practices?
5. What are the factors that influenced continuity and change?
   a) Contact   b) Socio-cultural
   c) Political/Legal   d) Economic

This study described and analyzed the cultural practices of the Higaunons of Barangay Lubilan. The study focused on the courtship and marriage practices - whether these practices are still preserved and/or are changed. The study also included the economic and political background of these people. It looked into the factors that may have influenced the continuity and change of their courtship and marriage practices.

In exploring these practices, fieldwork was undertaken to gather the data from the respondents. A focus group discussion was conducted followed by interviews. The key informants or the respondents were the elders of the tribe consisting of datus, baes, and also the barangay captain of   Lubilan. The data gathered from the secondary sources were also taken into consideration.

The study revealed that there are changes in the courtship and marriage practices of the Higaunons. These changes were influenced by contact and interaction with the lowland settlers and other factors. On the other hand, traditional marriage practices continue to be observed although this is followed by church wedding.

Master in Sociology (MIS)

001

ABITONA, Cheryl T. 2008. Fiber for Peace: A Strategy For Muslim Women Participation in Peace and Development in Barangay Pendulunan, Munai, Lanao del Norte. (SP: MIS), 84pp.

This study aims to examine the nature of participation of Muslim women in Barangay Pendulunan in the implementation of the Fiber for Peace Project, how the project initiates community participation among Muslim women in Barangay Pendulunan given the present situation which is a conflict-ridden area. As a strategy to widen participation among Muslim women peace and development efforts, this study will also deal with the levels of participation of Muslim women as they perform their roles and responsibilities in decision making, policy formulation, financial management and budgeting, project implementation, monitoring and evaluation.

This study will use a case study design with individual interviews and focus group discussion (FGD) as methods in gathering data. Ten respondents for the in-depth one-on-one interview and 13 respondents for the focus group discussion.

All the respondents are Maranao Muslim mothers that reside in Barangay Pendulunan, and are members of Pendulunan Mothers for Peace who are among the stakeholders of the project Fiber for Peace. The project is directed towards achieving peace and development in a conflict-affected area like Barangay Pendulunan, and these Muslim women serve as catalyst of the peace keeping and development efforts.

002
AKIATAN, Nita M. 2008. Mining in Mt. Canatuan, Siocon, Zamboanga del Norte: Patterns of Collective Responses of the Subanon. (SP: MIS), 109pp.

This study on "Mining in Mt. Canatuan, Siocon, Zamboanga del Norte: Patterns of Collective Responses of the Subanon" aims to examine and describe the Subanons' social mobilization arising from the mining operations in their ancestral domain/lands. Specifically, it attempts to document and to determine the ethno-history of the Subanon, their worldviews of ancestral land and environmental resources, the entry of mining and its effects (economic, political, socio-cultural and environmental) on their ancestral land, the responses of the Subanon and the relationships between the church, NGOs, and the POs in the struggle of the Subanon for rights to ancestral domain. The study will use the case study method employing key informants interview, focus-group discussion (FGD), and documentary analysis.

The site of the study covers Mt. Canatuan, Siocon, Zamboanga del Norte because of the on-going controversy regarding the Subanon's ancestral domain. The Subanon of Mt. Canatuan are facing eviction from their own land by the reactivation of the mining operations of Toronto Ventures Inc. Resource Development Philippines (TVIRD), a Calgary Canada based mining company. It is noteworthy that on June 12, 2003 President GMA announced the granting of the massive 8, 213 hectares of Certificate of ancestral Domain Title (CADT) to the Subanon. Ironically, it is the same land that is being subjected to mining operations.

The responses of the Subanon are not unified. There are those who sides with the mining company – TVIRD due to offers of employment. But generally the Subanon people of Mt. Canatuan have been opposing mining activities forr they do not want that their land – the source of their life will be destroyed.

This special project will hopefully unveil the plight of this indigenous group as a result of national development efforts in exploiting our natural resources.

003
AZCUNA, Angelie S. 2007. Call Center Agent Turn-Over: Its Implications for Job Satisfaction in Call Centers at Cagayan de Oro City. (SP: MIS), 58pp.

Dubbed as the "Sunshine Industry" by the Arroyo Administration because of its massive expansion, thus generating thousands of employments, call centers are the fastest growing sector within the information technology (IT) software and services industry. The Malacańang, seat of the Philippine government, takes pride in the "fastest growing industry in our country." It is sprouting not only in Metro Manila, but in other metropolitan areas as well, like Cebu, Davao, Pampanga and Cagayan de Oro City. With an unemployment rate at 13 percent, the highest in Southeast Asia, the call center industry is perceived as a rare bright spot in the country's ailing economy.

However, despite the very promising monthly paycheck an agent receives, an alarming agent turn-over is tipping off the scale of the weekly hiring of agents. The socio-demographic profile of the agent, the work itself, and the call center management is perceived to be factors associated with rate of agent turn-over at call centers in Cagayan de Oro City.

Banking on the force field analysis and reinforced by social exchange theory, an exploration on the perceived factors will be made to identify whether these are driving or restraining forces which influence the agents to leave their job at the call centers.

004
BAUTISTA, Michael M. 2008. PAASCU Evaluation at the Notre Dame of Midsayap College: Implications for Administrative Systems. (SP: MIS), 68pp.

The Notre Dame of Midsayap College (NDMC) had been granted varying levels of accredited status by the Philippine Accrediting Association of Schools, Colleges, and Universities (PAASCU). Although the NDMC had been granted Level II accreditation by the PAASCU, many recommendations have to be considered by its administration in improving certain areas of concern, particularly, instruction.

This paper is a special project regarding the PAASCU evaluation of instruction at the NDMC, the responses of the administration to the PAASCU recommendations, and the implications of such responses for conditions of faculty loading, types of instructional materials, types of instructional activities, school facilities, physical structures, and performance of students in licensure examinations.

This paper focuses on the following components of instruction evaluated by the PAASCU: program of studies; instructional procedures; classroom management; academic performance; supervision of effective instruction; instructional administration; co-curricular activities; and academic counseling.

This study will be conducted at the Notre Dame of Midsayap College, North Cotabato. The research design is qualitative and uses the case study method. Documentary analysis and the interview method will also be used.

The sources of data are both primary and secondary. Key informant interviews of several top administrators and department heads, a number of faculties, a number of students, and some community residents are the primary sources of data. Secondary sources include executive summary reports of the accreditation committee, student grades, faculty evaluation results, and licensure examination results.

The theoretical contribution of this study is in the application of the functionalist perspective in viewing the instructional process as a system. Methodologically, this study serves to reinforce the relevance of the case study method in generating concrete and empirical information about evaluating instruction in college. For policy, the study's results may be used as bases for improving instruction, curricula, and teaching strategies.

005
DUROPAN, Rocelito A. 2007. Quarrying in Barangay Bonbon, Butuan City: A Case Study on Its Effects on the Living Conditions of Families of Quarry Workers, Community and Environment. (SP: MIS), 90pp.

Despite the promising benefits that quarry workers and their families derive from quarrying, the adverse effects of this activity have posed a threat to human life, sustainability of the natural environment in Barangay Bonbon, Butuan City.

This study is an attempt to investigate the perceived effects of quarrying on the living conditions of families of quarry workers and how it impacts on the community and natural environment.

To provide the context of the study the general profile of Barangay Bonbon and the quarry site will be described in terms of their historical background, physical and biological features. Similarly, the respondent's background information will be examined in terms of their age, sex, civil status, number of children, educational attainment, occupation, monthly income, ethnic group and length of quarrying experience. For the same purpose, the nature of quarrying will be described in terms of method, dynamics of operation, number of workers, hours of work, volume of production and income.

Using an ethnographic design, this study will involve a combination of data gathering methods consisting of semi-participant observation, individual interview, key informant interview, focus-group discussion (FGD), and secondary sources.

Participants in the interviews will include ten (10) quarry workers residing in the quarry site and non-quarry areas, and eight (8) non-quarry workers composed of 2 senior citizens, 2 barangay officials, 2 DENR representatives and 2 NGO workers assigned in the locality. Whenever possible, males and females will be equally represented in the sample. Each of these groups of respondents will be selected in the basis of separate sets of criteria that are deemed appropriate for the purposes of this study.

The conceptual-theoretical framework of the study derives insights from a combination of ecological and sociological theories

006

DY, Maria Sheena Bianca D. 2008. The Sheltered Sexually Abused Young Girls in *Bantay Bata Center*, **Brgy. Tipanoy, Iligan City: A Preliminary Case Study. (SP: MIS), 163pp.**

Looking at the present situation of Filipino children, not everyone is blessed with loving and protective parents. Incidents of domestic child abuse is becoming rampant and it is sad to note that one of the most common abuses committed against Filipino children is sexual abuse which could range from harassment to rape. Reports revealed that most of the abusers are related to the children, either by consanguinity or affinity, making the experience even more traumatic and devastating.

It is in this light that this preliminary study is conducted to describe the various sexual abuse experiences of the girl-child incest victims in *Bantay Bata Center,* Tipanoy, Iligan City. Moreover, this study aims to initially find out how the intervention programs have influenced the lives of these victims. Five (5) sheltered girl-children in *Bantay Bata Center* were interviewed about their individual experiences when they were sexually abused and how the shelter changed their lives.

Furthermore, information on the shelter's programs and services and the problems on implementation of these intervention and treatment activities were obtained through secondary data and series of interviews conducted with the shelter's personnel who also served as this study's key informants. The following are the highlights of the preliminary findings: A.) the ages of the five girl-child victim respondents range from six (6) to sixteen (16) years old. Two of them are residents of Iligan City while the three others originated from nearby municipalities and provinces. They are of varied religious affiliations and birth orders. B.) Sexual abuse was precipitated by common dwelling laces that provide easy access for perpetrators to pursue their sexual advances innocent girl-children who are closely related to them by blood or affinity. For some, this factor is coupled with unhealthy relationships between parents or guardians and between victims and parents. C.) The common patterns of abuse which respondents experienced include fondling of breasts, touching and stroking of private parts, oral sex, digital and penile penetration. Victims were intimidated either through threat or bribery. D.) Victim respondents have suffered physical, emotional and social pains from sexual abuse. Physically, they suffered vaginal pain, fever, bleeding, and even pregnancy. Socially and emotionally, they feel detached, insecure, lonely, embarrassed, fearful, and hatred towards men. E.) They were motivated to participate in the intervention programs mainly by their desire to acquire basic knowledge and skills in reading, writing, and counting. F.) In general, victim respondents enjoy their stay at the shelter, having found a new family among their housemates and parents. G.) Respondents look forward to a bright future despite the life-devastating abuses that they experienced. Most of them desire to be reunited with their families while others prefer to stay at the shelter to avoid recurrence of sexual abuse by their own family members.

COLLEGE OF BUSINESS ADMINISTRATION (CBA)

Master in Business Management (MBM)

001
ACA-AC, Emile F. 2004. The Influence of Job Satisfaction on Organizational Commitment. (GT: MBM), 136pp.

The study attempted to investigate the relationship between certain job satisfaction indicators among the employees of the banking industry in Iligan City that may be correlated to organizational commitment.

Correlation analyses on the responses to the researcher-made questionnaires were primarily treated with Pearson Product-Movement Correlation.

The results of the study indicated that there exists a significant relationship between the six job satisfaction variables (*opportunity, stress, leadership, work standards, fair rewards, and adequate authority*) and organizational commitment.

Analysis of the demographic variables of the study revealed that only age is correlated with several facets of job satisfaction, namely: opportunity, fair rewards and leadership.

002
ADEVA, Evelyn B. 2002. The Management of Change in National Power Corporation-Mindanao Regional Center Vis-à-vis Privatization. (GT: MBM), 117pp.

This study was aimed to determine the dominant change management methods of executives of National Power Corporation- Mindanao Regional Center as identified by them and as perceived by their respective immediate subordinates. This study explored further if the change management methods used by executives has influence on the subordinates' support or resistance to NPC privatization.

The profile of the executives bears a significant influence on their dominantly used change management methods. It showed that the executives' socio-demographic profile has a significant relationship with their use of "education and communication" as well as "facilitation and support " as change management methods.

The results showed that there are significant differences in the perceptions of the executives and the subordinates in the change management methods used by executives. The subordinates' socio-demographic profile also bears a significant relationship with their perceptions on the executives' use of "participation and involvement". This means that the methods used strongly by the executives to effect change is perceived moderately by the subordinates. "Education and communication" as well as "participation and involvement"

have a significant relationship with the subordinates' support or resistance to NPC's privatization.

003

ADIONG, Maximo K. 2001. Assessment of the Optimum Utilization Level of NPC Hydro Power Plants in Relation to Some Performance Variables for the Period (1889-1999). (GT: MBM), 114pp.

The purpose of this study is to assess the operating performance of NPC's Agus plants for ten years time from 1889-1999. It seeks answers to the profile of Agus plants in terms of its utilization level, capacity and availability factor, force outage rate and production cost of electricity. Moreover, it compares the performance of the six hydro plants and evaluates its effects on the optimum utilization level.

The result of the study showed that there are significant differences in the capacity and availability factors of each plant under study. The ANOVA with Scheffe's test shows that each of the different Agus plants differs from each other in terms of the mean capacity and availability factors.

Among the six hydro plants, Agus 1 is the highest in force outage rate while Agus 7 is the highest in production cost of electricity.

The Pearson product Moment Correlation of the dependent and independent variables were computed and the results show that demand for electricity, water inflow rate, plant capacity factor, and plant availability factor are significantly and positively related to the optimum utilization of hydro plants.

The time series data for the dependent and independent variables were investigated for linear relationship using multiple time series regression. Among the six independent variables, the demand for electricity and plant capacity factor showed significant positive linear relationship and predictors of hydro plants optimum utilization.

004

ALEJO, Maria Teresa G. 2005. The Acquisition of Chowking Food Corporation and Its Emerging Culture. (GT: MBM), 257pp.

This exploratory-descriptive study seeks to find out and describe the perceptions of the three groups of respondents from Chowking Food Corporation – the members of MANCOM (Management Committee), the head office employees, and the franchisees – on the emerging culture of the organization in terms of leadership style, communication patterns, staffing, and compensation and benefits. The study further explores the dominant change management approach used by the leadership of Jollibee Food Corporation in its acquisition of Chowking.

Data gathered was analyzed and interpreted using statistical tools such as Frequency and Percentage Distribution, weighted mean, Pearson's Chi-Square Test, t-test, and the Analysis of Variance (ANOVA).

The results show that there were no significant differences in the views of each of the three groups of respondents to the emerging culture of Chowking in terms of leadership style. However, while the three groups' perceptions on communication patterns, staffing, and compensation and benefits were notably similar, there were significant differences on how each of the three groups viewed the practices or traits under these variables.

There were no significant differences in the perceptions of each of the three groups of respondents on the dominant change management approach.

Data also shows that there was no significant relationship between the socio-demographic profiles of the respondents and their level of acceptance to organizational change. Further, no significant relationship was found to exist between the respondents' perceptions on the leadership style and their level of acceptance. However, a significant degree of relationship was established between some of the practices under communication patterns, staffing, and compensation and benefits and the respondents' level of acceptance to organizational change.

005
APUGAN, Elena S. 1989. A Perception on Conflict-Related Management Issues Among Professionals in MSU-Iligan Institute of Technology, Iligan City. (GT: MBM), 138pp.

This study is about the conflict of professionals of MSU-Iligan Institute of Technology, Iligan City. It deals with the role of professionals in the workplace and their various differences referred to as conflict, and preference structures on the various issues such as management relationship with employees, psychological conditions, interpersonal relationship, opportunity for growth and advancement, work environment, adequacy of communication, participation and involvement and compensation.

A perception survey questionnaire was designed to gather the needed information. These were distributed to the seven colleges/schools and administrative units of the Institute.

The findings of the study revealed the following facts about professionals of the Institute:

1. Professionals interlink their personal goals with that of the organization's goals according to how they are perceived by each discipline. Each individual who joins the Institute becomes socialized assuming a set of values and perception and adhering to the behavioral norms established.
2. In some cases, professionals are likely to agree with someone in the same position title rather than with someone holding a different position title but having the same position classification.
3. The deans, assistant deans, directors, cost center heads are in conflictive positions given the multiple work emanating from and below the hierarchy. These above professionals adopt the idiosyncratic preference structures to meet the exigencies of the position held.

4. The length of service of professionals and the established policies and producers have greater impact on the stability of the college or unit because of the length of time spent by the professionals together, sharing their ideas, viewpoints and principle.

5. Decentralization of the colleges or units foster consensus among professionals and develop a distinct culture within the college or unit. However, this isolates them from the rest of the staff of the Institute.

6. Professionals of the colleges or units go through the process of evolution of their career alternating between rigid preference structures to more flexible orderings.

7. The hiring practices of the colleges to units determine the homogeneity of the new recruits.

8. Professionals are not different from non-professionals, that is, the administrative rank and file, however, the Institute created a structure giving the professionals greater role in decision making. This builds up the gap between the two.

006
AWIL, Marietta D. 1992. A Study of the Level of Job Satisfaction Among MSU-IIT Faculty – 1992. (GT: MBM), 85pp.

This study sought to find out the level of job satisfaction among MSU-IIT faculty for the early part of the year 1992 as affected by the different factors in their working environment and socio-economic profile.

Specifically, the study attempted to determine what is the evil of job satisfaction of MSU-IIT faculty of various academic ranks, what is the relationship of job related factors and socio-economic profile to job satisfaction, how do the levels of job satisfaction differ in terms of academic ranks, job related factors and socio-economic profile, which of the following job related factors and socio-economic profile determine the level of job satisfaction, and what policy recommendations may be adopted to enhance the level of job satisfaction.

The respondents of this study consisted of 204 MSU-IIT faculty members who were selected by simple random sampling distributed proportionately per academic ranks, namely: Professor, associate Professor, Assistant Professor/Master Teacher, Instructor/Teacher.

The research design used was a combination of descriptive and correlational. The arithmetic mean and percentages were used to describe the profile of the respondents or to make comparative analysis. The T-test, Z-test, Pearson-Moment Correlation, chi-square, multiple regressions as well as the analysis of variance test were employed to investigate the extent of the variations in the level of the job satisfaction among ranks and its independent variables. The questionnaire was the chief source of the data. Secondary data was obtained from the Office of the Vice-Chancellor for Academic Affairs and Human Resource Management Office.

The findings of the study revealed that MSU-IIT faculty are generally satisfied

with their teaching job regardless of rank although they are at the same time not satisfied with some aspects of their work. Job related factors found to significant affect job satisfaction were salaries/fringe benefits first, tenure second, supervision third, academic freedom fourth, working relationship fifth, professional growth sixth, promotion seventh. Age and monthly salary were the socio-economic profile factors that showed significant relationship to the level of job satisfaction among the different academic ranks. The Professors are found to be the most satisfied followed by Assistant Professor/Master Teacher, Associate Professor and Instructor/Teacher. Female faculty members were found to be more satisfied than males, faculty members with MA/MS/PhDs were more satisfied than bachelor's degree holders. Faculty members with tenure were more satisfied than those without tenure. Faculty members receiving higher salaries were more satisfied than those receiving less. Married faculty members were more satisfied than the younger faculty.

Determinants to the level of job satisfaction were salaries fringe benefits, age, tenure, supervision and academic freedom.

In the light of the findings, the following are recommended that MSU-IIT administrators should find ways to increase the level of job satisfaction by giving serious considerations and attention to the comments, suggestions and recommendation expressed by the faculty in regard to various aspects of their work as gathered through this study. Also, a regular job satisfaction survey should be undertaken through the HRM Office and coordinated by OVCA so trends over time can be plotted and to have an in-depth study on the casual relationship between job related factors and faculty satisfaction to prevent the lowering of the faculty satisfaction rating. This study could be used as baseline information.

Finally, it is recommended that since only 29% of the variation in the level of job satisfaction is explained in the regression, further studies must be undertaken to include more variables.

007
BUENSALIDA, Fernand Q. 2006. Leadership Competencies of Elected Officials in the Municipality of Aloran, Misamis Occidental. (GT: MBM), 222pp.

This study attempts to determine the leadership competencies of the elected leaders in the municipality of Aloran, Misamis Occidental. Specifically, it investigates the relationship between the respondents' personal profile and their leadership competencies. Moreover, it seeks to find out if there are significant differences in the perceptions of minimum leadership competencies between the elected officials and their superior, peers, and subordinates, as well as between the elected municipal and *barangay* officials.

Findings show that there is a significant relationship between the respondents' personal profile and their leadership competencies. There also exist significant differences in the perceptions of leadership competencies between the elected officials and their superior, peers, and subordinates, and between the perceptions of minimum leadership competencies by the elected municipal and *barangay* officials.

The elected *barangay* and municipal officials have identified the top 12 most important leadership competencies relevant to the accomplishment of their functions.

008

CARINAN, Nilda S. 2001. An Assessment of Entrepreneurial Competencies and Business Support Needs of Small Manufacturing and Processing Entrepreneurs Along the Cagayan de Oro- Iligan Corridor: Basis for Entrepreneurial Development Programs. (GT: MBM), 92pp.

The study assesses the entrepreneurial competencies of 37 small manufacturing and processing entrepreneurs operating along the Cagayan de Oro- Iligan Corridor and reveals ten characteristics of entrepreneurs.

Majority of these enterprises are self-owned and managed. They are mostly engaged in manufacturing, have asset size between 1.5 to 2.5 million pesos, and are manned by less than 32 employees. Further, they are in business for over 10 years.

The respondents have expressed the need for business support in terms of information and training programs in marketing, finance, technical aspects, and in general management. They get most of government assistance from DTI, DOLE DOST, TESDA, and MIRDC. However, the business assistance from both government and non-government agencies are less than adequate.

The respondents' PEC ratings are positively related to business profile except in years in businesses that have negative correlation. PEC ratings are also positively related to business support.

The researcher has proposed the conduct of training and programs to enhance entrepreneurial competencies in planning and achievement as well as the establishment of business resource centers and data banks by schools and the local government for more adequate information assistance.

009

DABA, Michelle Y. 2005. Level of Practices of Finance Functions Among Credit Cooperatives in Iligan City. (GT: MBM), 85pp.

This study sought primarily to find out the level of practices on finance functions and financial performance of the credit cooperatives in Iligan City and their relationship. The practices on finance functions include financial policy and strategy, financial management and control, and financial planning. The subjects of the study were the key personnel or members of the 30 credit cooperatives in Iligan City, who were knowledgeable in the financial matters of their respective.

The conclusion of this study shows that there is significant relationship between the credit cooperatives' financial performance and their level of practices on finance functions in terms of financial policy and strategy, financial management and control, and financial planning.

The study recommends further research on the educational attainment of members and performance of key personnel of the credit cooperatives in Iligan City and their effect on the credit cooperatives' financial performance. It also recommends an evaluative study on the financial aides and grants given by the government and NGOs to cooperatives in Iligan City.

010
DAL, Virgie M. 2006. Financing Needs and Credit Access of SMEs in Iligan City, 2001-2003. (GT: MBM), 89pp.

This is a study on 23 small and 14 medium enterprises in Iligan City, covering the years 2001-2003.

Most of the SMEs studied are engaged in service and trading, employing 10-50 people, operating for more than 20 years, have total assets of P5-15 million and initial capital of less than P1.5 million. Their financing needs amount to P1-5 million, and are granted mainly by commercial and development banks. However, there is some gap between the financing needs and the amount of loans granted.

The financing needs for modern equipment and machines, computerization of operations, and additional net working capital are strongly correlated with the *number of employees*. Only the financing needs for land and building are strongly correlated with the *number of years in operation.*

All financing needs for fixed assets and additional net working capital are strongly correlated with *total assets*. Only the financing needs for modern equipment and machines, and additional net working capital are strongly correlated with *initial capitalization*.

The loans granted by commercial banks are strongly correlated with the *number of years in operation*, and the loans granted by commercial banks, other financial institutions and other sources of credit are strongly correlated with *total assets* and *initial capitalization.*

The loans granted by development banks and other financial institutions are strongly but negatively correlated with the *number of employees* and *number of years in operation*; the loans granted by other sources of credit are strongly correlated with the *number of employees*, and are strongly but negatively correlated with the *number of years in operation.*

The study recommends that the government and the banking institutions should work hand in hand to support the development of SMEs, not only in Iligan City, but throughout the country.

011

**FARID, Muhammad. 2002. Factors Related to Job Burnout Among MSU-Iligan
Institute of Technology Faculty Administrators. (GT: MBM), 137pp.**

This study was designed to determine empirically whether certain working conditions and personality traits are significantly associated with the potential to get job burnout. The results will eventually be used as a basis for policy formulation at address job burnout among the faculty administrators in MSU-Iligan Institute of technology. It also sought to verify the null hypothesis about the absence of significant relationship between the prescribed demographic personal profile and the potential to get job burnout.

The results of the statistical tests show that the potential to get job burnout is significantly associated with the working conditions in terms of extra workload and time pressure and with personality traits in terms being pessimistic, delicate, sympathetic, and idealistic. In the demographic personal profile variables, only the family size criterion is significantly correlated with the potential to get job burnout.

Moreover, a stepwise regression analysis shows that working conditions such as extra workload, time pressure, and routine work, together with the personality traits in terms of being pessimistic, delicate/sensitive, dedicated, and sympathetic have come up as the predictors of the potential to get job burnout.

012

**GAJO, Doryn Kathryn G. 2002. Usage, Attitude and Image (UAI) Study of Master's
Degree Programs in Management and Concept Testing of Modular
Graduate Certificate Programs in Management. (GT: MBM), 227pp.**

It was the purpose of this study to determine the respondents' awareness of the master's degree programs in business, management/administration and governance and the schools offering them; the respondents' usage and reasons for enrolling in these programs and, among non-enrollees, their intention in these programs and to identify the different attributes which respondents find important in choosing a graduate school in management to enroll in using usage, attitude and image (UAI) study. A concept testing was also done, where the concept of modular graduate certificate programs leading to MBM degree was introduced to respondents to determine their intention to avail of the new offering and their expectations on each modular MBM program.

The study found out that educational attainment and occupation affect the respondents intention to enroll or not in the modular graduate programs leading to the MBM degree. The respondents' field of specialization, number of years of employment, age, educational attainment and place of residence, meanwhile, affect their intention to enroll in all or some of the graduate certificate programs. Finally, the respondents' number of years of employment and their type of employer affect their decision to have modular MBM programs accredited for the MBM degree on not.

013

GAMAD, Rosalyn B. 2001. Correlation of Socio-Demographic Profile and Job Competencies to Job Performance of SMC-Iligan Coconut Oil Mill Employees. (GT: MBM), 162pp.

This study attempts to correlate socio-demography profile to job competencies, socio-demographic profile to job performance and job competencies to job performance of SMC-Iligan Coconut Oil Mill Employees. The research design was descriptive and correlational in nature. Since the questionnaire was research-made, it was subjected to validity and reliability test through a pre-test given to respondents from Granex Corporation. The results indicated that over-all.

014

KHALID, Shahria A. 2007.   A Study on the Management Effectiveness of MSU-Main Campus College Bound Program. (GT: MBM), 92pp.

The study was carried out to determine the management effectiveness of the MSU-Marawi College Bound Program. Interviews of key informants and two sets of survey questionnaires were distributed to CBP administrators, faculty, staff and students to gauge how each group perceive and evaluate the program.

The findings of the study showed that the management of the Program as a whole is effective as perceived by the administrators, faculty and staff. The students perceive the faculty to be average but rate the program as a whole to be very effective. It also showed that 4,177 out of 8,025 participants during the period covered were admitted to college but of those admitted, the survey further showed a very low percentage of graduates (17% and 7% of those admitted in 1999 and 2000 respectively) as compared to the 41% graduates of the university in the same period.

The study recommends that the university strengthen the program by giving it the necessary support, both financial and moral. It should devise ways by which other cultural communities are also encouraged to participate. It is further recommended that efforts be exerted to find foreign donors, as was the practice when the program first started in the 70's in order to ensure that funds are available not only to sustain but also to develop or improve the program.

015

LASMARIAS, Jimmy C. 2002. Personal Entrepreneurial Competencies Among Business People in the Computer and Hotel and Restaurant Industries in Iligan City, 2001. (GT: MBM), 156pp.

This study sought to find out the personal entrepreneurial competencies (PECs) among business people in the computer and hotel and restaurant industries in Iligan City. Specifically, it investigated how personal and business profiles of the respondents affect their entrepreneurial competencies. It investigated further the difference between the PECs of the business people in the computer and hotel and restaurant industries. The hypotheses were presented in null form and tested at 0.05 level of significance.

The data generated were analyzed with the use of various statistical tools such as frequency, mean and mode, weighted mean, multivariate multiple regression, Pearson product-moment correlation and T-test. The data was processed making use of SPSS version 10.

The study found out that hotel and restaurant entrepreneurs in general have relatively stronger PECs in all aspects except in "information seeking." Computer entrepreneurs' personal profile such as years of schooling, relevant work experience and business profile such present capital, years of operation and return on investment significantly affects their PECs. Findings further show that hotel and restaurant businessmen's personal profile (gender, age and experience in family business) and business profile (present capital, years of operation) significantly affect their personal entrepreneurial competencies.

016
MANGALI, Melissa B. 1999. Perception of Female and Male Top Managers in Selected Industrial Companies and Banking Institutions in Iligan City on Women Managers. (GT: MBM), 136pp.

The study examined the perceptions of female and male top managers in selected industrial companies and banking institutions in Iligan City on women managers. It described the demographic characteristics, work or life value, traits, and leadership styles of top managers and established the extent of relationship and difference between these variables and the same variables perceived to be associated with women managers.

The study showed that age and civil status of top managers are significantly related to the perceived demographic characteristics of women managers. On the overall perceptions of women managers these variables, except organizational functions, are not significantly related.

The work or life values of top managers and those perceived of women managers are significantly related and different. Although there is no significant relationship between the traits of top managers and their perception on women managers on this attribute, these variables are found to be significantly different. The leadership styles practiced by top managers are similar to those perceived in women managers and are significantly correlated

Female and male top managers are significantly different in their perceptions of women managers. Female top managers tend to perceive the subject as similar to them in terms of attributes. Male top managers, however, do not exhibit the same perception on women managers.

017
MAQUISO, Ritche Ralp T. 2003. Usage, Attitude and Image of Study on On – Line Continuing Professional Education Programs in the Cities of Iligan, Cagayan de Oro, Ozamis, Marawi and Key Towns of Lanao del Norte. (GT: MBM), 307pp.

This study sought to determine marketability of on – line distance learning in the cities of Iligan, Cagayan de Oro, Ozamis, Marawi, and four Lanao del Norte key provincial towns through conduct of a usage, attitude and image (UAI) study. It focused on profiling consumer awareness of the service and their intention to avail it as well as on service attributes importance rating, providers' service differentiation rating and its local acceptability in terms of appeal. Price expectations of respondents on its three common classifications were also determined. Likewise, profiling of the target market was done.

To gather data, questionnaires were prepared as interview guide for the researcher and field surveys were conducted. Data were analyzed using frequency counts, percentages, means, and the Pearson chi – square test. All computations were done using the Statistical Package for Social Sciences or SPSS.

Findings indicated that the respondents' intention to enroll in on – line learning is influenced by their age, civil status, and household size. The older the respondent, the higher is their probability to avail of on – line learning programs. Likewise, married respondents are more probable to enroll. The same goes to household size with lesser members.

Based on the responses gathered over the geographic survey areas, all of the surveyed respondents signified their interest and intention to avail of on – line distance-learning programs, where the majority preferred the mixed mode type. The corresponding price expectations made use of prices for the year 2001, the survey period. Among others, a comprehensive marketing plan based on the findings is recommended.

018
MARQUEZ, Theresa I. 1999. The Impact of Key Economic Variables on Iligan Cement Corporations' Financial Performance (1975-1997). (GT: MBM), 118pp.

This study was designed to determine whether the key economic variables, namely, gross value added in construction, gross domestic product, exchange rate, interest rate, cement industry's capacity, ICC's rated capacity and market price of cement, affected the financial performance of Iligan Cement Corporation from 1975 to 1997. Secondarily, it aimed to determine whether the financial stability and efficiency to ICC are just the same with the acceptable or standard rates of the cement industry. Lastly, it aimed to project the financial performance of ICC in the next five years (1998 to 2002).

To achieve these objectives, the 1975 to 1997 data were assembled and the relevant hypotheses were tested. The unweighted least square method, the T-test and single and double exponential smoothing method were the statistical tools used to test the hypotheses.

The results indicate that the key economic variables really have an impact on the financial performance of the company with the exception of a few ratios. Most of the ICC's

financial ratios differ from the standard. These were greater than or lesser than the acceptable rates in the industry. The result of the forecasting, though uncertain, implies that ICC's future financial performance is likely to improve.

019

MARTINEZ, Miguel S. 1989. Factors Influencing the Continued Operation of Cooperative in Iligan City: Their Implications Towards an Accelerated Cooperative Development. (GT: MBM), 167pp.

This study concerns the general profile of the various cooperatives in Iligan City covering the period 1960 to 1987, and determines the factors influencing the success and failure of their operations. Some problems and issues encountered by these cooperatives in the course of their operations are also brought to light.

In terms of the general profile; close-type credit cooperatives dominate the successful cooperatives and open-type consumer cooperatives dominate the failed cooperatives. Majority of the successful cooperatives have started operations even before registration, which imply that the government has been flexible as regards registration requirement of these cooperatives. The managers of both successful and failed cooperatives are at the same time members of the cooperatives. As managers, they serve either on part-time or on full-time basis. In addition, majority of the managers also serve as members of the board of directors, which imply that these managers are serving both as formulators and executors. As regards performance, service cooperatives generate more profit because they operate mainly to serve other clients/customers. However, by doing so, these cooperatives failed to recognize the priority value of service first for the common needs of their members.

As to the factors influencing the performance of cooperatives covered in this study, the application of cooperative principles, the occupation and education of members, administrative and managerial capacity, governmental support, organizational structure and corporate or institutional support have been found to be significant.

The findings of this study will be of great help in the conduct of education seminars on cooperatives and cooperativism not only for prospective members but also for those who are already members of cooperatives and their managers. These will help re-orient cooperatives, including the officers and staff of the RCDAO and the BCOD, for them to review and evaluate cooperative policies, rules and regulations and make them relevant to current needs and thrusts.

This study will also help cooperatives realize the need to federate themselves in order for them to learn from each other's experiences, and to have a collective power-base in terms of resources, manpower and otherwise. A similar study conducted on a wider scope and scale will also be of great help to both the regional and the national cooperative managements in the same manner that this study will help the management of the local cooperatives.

020

NILLAMA, Nenita P. 2005. "Development of an Instrument Characterizing Conflict;

National Power Corporation-Mindanao Regional Center Employees' Experience". (GT: MBM), 86pp.

This study characterizes conflict as experienced by National Power Corporation-Mindanao regional center (NPC-MRC) managers and the rank and file employees. It also compares the perceptions of both the management and the rank and file employees on the causes of conflict in the organization.

The result of the study show that among the eight perceived causes of conflict, there is perceived difference regarding authority in NPC-MRC, an indication that the individual or group's prestige is consistent with ambiguity in leadership. The managers can interfere and influence the decisions of other managers. The study further reveals that competition over resources, communication failure, goal differences, lack of cooperation, personality conflict, differences regarding responsibility and value differences are not perceived as major causes of conflict in the organization. Moreover, it discloses that the perceptions of the causes of organizational conflict between the managers and the rank and file employees do not differ. The results of two statistical tools used in this study – the Sig (2-tailed) and the t-test do not show significant relationship between the perceptions of the two groups in the organization.

021

NOGAS, Leonardo M. 2001. Manager's Leadership Styles and Organizational Effectiveness of National Power Corporation-Mindanao Regional Center as Perceived by Managers Themselves and Their Subordinates. (GT: MBM), 160pp.

This study determines the perceived leadership style of the managers of National Power Corporation (NPC)-Mindanao Regional Center (MRC) and the perceived organizational effectiveness of the corporation. It examines the relationship between leadership style and organizational effectiveness, and the relationship between manager's personal profile and leadership style. It also describes the perceived strengths and weaknesses of the managers. Moreover, it valuates the encountered by subordinates needs of the managers.

The result of the study showed that NPC-MRC managers' style of leadership is a consultative one. It also showed that NPC-MRC as an organization often exhibits characteristics of an effective organization. Further, the study revealed that a significant linear relationship exists between leadership styles. Regarding the strengths and weaknesses, many managers often exhibit most of the positive attributes while very few claim that they possess the negative attributes. Common problems of subordinates towards their managers seldom occur in their workplace. Training on conceptual skill is what most of the managers perceived to be inadequate.

022

QUE ESTEVES, Chona B. 1992. A Comparative Study of the Leadership Style Between Maranao and Non-Maranao Government Executives in Iligan City. (GT: MBM), 164pp.

This study was an attempt to find out if leadership is a function of the socio-demographic attributes, personality traits and characteristics and cultural values and practices of 72 Maranao and non-Maranao government executives in Iligan City, chosen purposely for the study.

Specifically, the study attempted to determine 1) What the comparative profiles are of the Maranao and non-Maranao government executives in Iligan City in terms of their socio-demographic attributes, traits and characteristics and cultural values and practices; 2) What the differences are between the Maranao and non-Maranao government executives in Iligan City in terms of their socio-demographic attributes, traits and characteristics and culture values and practices; 3) What the predominant leadership styles are of Maranao and non-Maranao government executives in Iligan City; and 4) How the socio-demographic attributes, traits and characteristics and culture values and practices affect the leadership style of Maranao and non-Maranao government executives in Iligan City.

Data were gathered through questionnaires. Various statistical tools such as x^2 test, Spearman, Wilcoxon, Kolmogorv-Smirnov, binomial and simple linear regression tests were used for the data analysis using the situational theory of leadership as the framework.

Results of the findings revealed the following:

1. Maranao and non-Maranao executives differ significantly in terms of age, religious affiliation and educational attainment.
2. Salary is directly related to the leadership style of the maranao executives while age and length of service in ones present position are inversely related to the leadership style of the non-Maranao executives.
3. Both groups differ significantly in traits and characteristics particularly in aggressiveness, maturity and vision. There is no significant relationship between leadership style and traits and characteristics of both groups.
4. Both groups differ significantly in terms of values and practices but in terms of religiosity, Maranaos show a stronger adherence to it especially in their acceptance of religious doctrines and teachings. The "bata" system is directly related to the leadership style of the non-Maranao executives.
5. Both groups show a predominance of democratic leadership styles. This study substantiates the conceptual model which assumes that certain socio-demographic factors like salary, age and length of service; and cultural values like the "bata" system and familism are likely to relate to the leadership style of Maranaos and non-Maranaos. For personality traits and characteristic, however, only aggressiveness, maturity and vision make both groups significantly different from each other.

023

RESABAL, Vivitzgrace T. 2005. An Approach Toward Measuring the Emotional Quotient and Determining Its Relationship with Intelligence Quotient and the Teaching Efficiency Rating of Instructors. (GT: MBM), 145pp.

This study endeavored to come up with an EQ (Emotional Quotient) instrument and consider the relationship between the EQ of Iligan Medical Center College instructors and their IQ (intelligence Quotient) and TER (Teaching Efficiency rating). Instructors who have been teaching in Iligan medical center College for at least two years or equivalent to four semesters as of March 2003 were the respondents of this study.

The researcher attempted to develop an EQ test instrument, tested it and was applied to the respondents. An internet-based IQ test by Emode's Original classic IQ test was used to obtain the faculty members' general IQ. The data gathered were treated with several statistical tools such as, the mean, percentage, standard deviation, Pearson Product-Moment Correlation (Pearson r), t-test, and multiple linear regression relationship using SPSS.

It was found out that the instructors' TER bears a significant relationship with their general IQ with a t-value of 3.052, which implies that the IQ of a person will result to higher or lower TER. Moreover, the instructors' TER bears a significant relationship with their EQ with a t-value of 2.895, which implies that the EQ of a person will result to higher or lower TER.

The regression model for predicting TER using both IQ and EQ yields an $R^2 = 0.235$ which does not give a significant increase from $R^2 = 0.189$ using IQ alone according to the F-test. Thus, either of the EQ and IQ can be used to predict TER. However, IQ can predict TER more accurately than EQ since R^2 for the regression model of TER versus IQ ($R^2 = 0.189$) is greater than R^2 for the regression model of TER versus EQ ($R^2 = 0.170$).

024

RESURRECTION, Pamela F. 2001. Perceived Leadership Qualities of Fast Cargo Logistics Corporation-Iligan Managers and Its Relationship with Employees' Work Performance. (GT: MBM), 134pp.

The study attempted to investigate the relationship between certain leadership qualities of managers at the Iligan Branch of Fastcargo Logistics Corporation that may be correlated to employees' work performance.

Correlation analyses on the responses to the research-made questionnaire were primarily treated with Pearson Product-Moment Correlation.

The results of the study indicated that there is a significant relationship between the perceived leadership qualities of managers and the supervisors' evaluation of their subordinates' work performance, particularly on critique.

Analyses of the demographic variables of the study demonstrated that overall supervisors' evaluation of work performance bears a significant relationship with training

and seminars attended and work experience of the employees. Furthermore, it was also found out that there is a significant difference between how the supervisors evaluate their subordinates work performance and how employees evaluate their own work performance.

025

RUFLO, Evelyn D. 2007. An Evaluation of the Iligan City Government Shopping Mode Procurement System. (GT: MBM), 163pp.

This study, based on actual observation of the manner of Iligan City government's existing shopping mode procurement system is implemented in terms of transactions completed vis-à-vis request received, attempted to determine the following: effectiveness of the existing procurement system as perceived by the department heads, 21 procurement personnel and 21 liaison officers of the 21 offices in the City Government of Iligan; and the level of satisfaction among respondents.

The study sought to determine the relationships between the purposes of the approved purchase request and the average number of processing days per transaction in the Main Bids and Awards Committee and Special Bids and Awards Committee. It also sought to establish the relationship and effectiveness of the existing procurement system and level of satisfaction among the respondents.

The researcher developed a questionnaire to determine the effectiveness of the current shopping mode procurement system and the level of satisfaction among respondents. The validity and reliability of the questionnaire was tested using the Cronbach Alpha method. Gathered data were analyzed using the following statistical tools: frequency, percentages, weighted mean, Pearson-Correlation, and T-test.

Results based on the analysis of the 83 approved purchase requests showed that the posted flow of transaction contained lesser number of steps than the actual process flow. It showed that the Main Bids and Awards Committee differ from the Special Bids and Awards Committee in terms of average number of processing days. As such, it showed that there is a significant relationship between the purposes of the approved purchase request and the average number of days per transaction. Further, it showed that the existing shopping procurement system is perceived as effective in terms of transparency, accountability, and its being client-friendly. Customer satisfaction is high considering such factors as information and communication campaign (IEC), procedures involved, and personnel behavior towards clients.

Findings showed that there is a significant relationship between the effectiveness of the Iligan City shopping mode procurement system with the level of satisfaction of the respondents. There is no significant difference in the level of satisfaction among 20 department heads, 21 procurement personnel and 21 liaison officers nor for the perceived effectiveness of the existing shopping mode procurement system.

026

SALACOP, Norhaya M. 1989. A Review of the Financial Planning and Control System of the Mindanao State University – Marawi. (GT: MBM), 172pp.

This study was conducted for the Mindanao State University, specifically, the Finance Department. It main objective is to determine the effectiveness and efficiency of the Financial Planning and Control System and its related sub-system of the Mindanao State University – Marawi. Data were mainly gathered through personal interviews and questionnaires. The interviews and questionnaires were supplemented by personal observations of the actual flow of work and the use of available records of the University.

After an analysis of the data gathered, it has been observed that the financial planning and budgeting is ineffective and inefficient because of:

      1.1   Lack of cooperation among unit heads;
      1.2   Poor financial planning among organizational units; and
      1.3   The absence of standard criteria in the allocation of resources.

The description of the jobs actually performed by the Finance Department does not jibe with the standard Job Description.

There is inadequate internal control for collection, payroll, cash, supplies and fixed assets.

There is poor Management Information System.

To improve the Financial Planning and Control System of the University, the following are recommended for implementation.

      a)   The Qualification Standard should be followed strictly.
      b)   The responsibility center and responsibility accounting must be adopted.
      c)   The internal control system must be strengthened to ensure safety of Collection, Payroll, Cash, Supplies and Fixed Assets.
      d)   There must be Management Information System Plan.

027
SERATE, Daisy Loida N. 2000. The Inventory Management of Selected Accredited Iligan City Contractors. (GT: MBM), 87pp.

The objective of this study is to know how contractors in Iligan City manage their inventory by looking at their level of awareness on the importance of inventory control, their extent of usage of the inventory control techniques and their purchasing practices. The contractors, when divided into different groups of license categories, exhibited a general awareness of the important effects of the usage of inventory control, with the exception of the small contractors who exhibited minimal awareness. The study further found that the contractors in different category groups exhibited the same frequency of usage of inventory control techniques, that is, *most of the time*. Regarding the extent of usage of inventory control techniques, when the differences of each of the contractor groups were tested with one-way analysis of variance, no significant variance between their frequencies of usage of the inventory control techniques was found. The relationship between the level of awareness and the extent of usage of the inventory control techniques was tested with the

least squares linear regression analysis and the relationship was found to be linear. However, even though the contractors are aware of the importance of inventory control, they do not order or purchase the optimum order quantity. The difference between these two quantities is highly significant.

028

TORRES, Royce S. 2001. Financial Management Practices of Barangays in Iligan City. (GT: MBM), 174pp.

This study primarily aimed at determining the financial management practices of all barangays in Iligan City and its relationship with the profile of the barangay officials and employees involved in financial management and the barangays' profile as well. Financial management practices pertain to planning and control, cash management, accounts management, bookkeeping, and financial reporting. The subjects of the study were the punong barangay, the treasurer, the secretary, and the finance officer.

The study found out that there were no significant relationships between the barangay officials' and the employees' financial management practices and their number of years of schooling, relevant training, length of experience, the barangays' population, income, and expenditures. Moreover, when regressed, none of the predictor variables emerged as significant.

Further research on related areas would certainly affirm or negate the findings of the study thereby providing a more comprehensive and thorough approach of the subject.

029

UMPA, Melanie A. 2005. Development of an Instrument to Measure Preferred Type of National Leader. (GT: MBM), 108pp.

This study attempted to develop an instrument to measure preferred type of national leader as perceived by officials and employees of the Marawi City Government and MSU-Marawi Campus. It also attempted to determine the perceptions of a preferred type of national leader by those coming from the city government and academe. Further, it also examined the relationship between the respondents' socio-demographic profile such as age, gender, civil status, ethno-linguistic affiliation, educational attainment position and length of service and the perceptions of a preferred type of national leader.

The researcher came up with an instrument to determine the preferred type of national leader as perceived by Marawi City Government and MSU-Marawi respondents. The reliability and internal consistency of the questionnaire was tested using the Cronbach Alpha model. Data were gathered and analyzed using the frequency counts and percentages, mean, Pearson-correlation, chi-square, t-test and Mann-Whitney U test.

The t-test result of the study indicated that there exists no significant difference in the perceptions of a preferred type of national leader between the respondents in Marawi City Government and MSU-Marawi.

Based on the Pearson-correlation and chi-square test of the nominal and

categorical socio-demographic variables, the age, gender, educational attainment and position occupied by the respondents are significantly related with the perceptions of a preferred type of national leader.

The perceptions of the prominent qualities of preferred type of national leader by Marawi City Government and MSU-Marawi respondents using Mann-Whitney U test showed that there exists a significant difference in the perceptions of the respondents.

Based on the findings and result of the study, the researcher recommends that the preferred type of national leader instrument be tested further to a larger sample respondent for refinement and validation, which can be helpful in future similar research.

030

VILLACIN, Glenn C. 2001. The Impact of the Kopra Ko, Mahal Ko Program to the Quality of Inland Copra Receipts, Coconut Oil and Pellets Produced by San Miguel Corporation-Iligan Coconut Oil Mill. (GT: MBM), 101pp.

The study examined the impact of the Kopra Ko, Mahal Ko program to the quality of inland copra receipts, coconut oil and pellets produced by San Miguel Corporation – Iligan Coconut Oil Mill. It described the demographic characteristics of the comprador-farmers, including age and years of experience. It measured the degree of implementation conducted by the comprador-framers on the preparation of copra delivered to SMC-ICOM. It also provided a detailed picture of the respective qualities of copra in terms of moisture content, free fatty acid, oil content, color and aflatoxin level; coconut oil in terms of moisture content, free fatty acid, solid impurities, and oil color; pellets in terms of moisture content, residual oil and aflatoxin level. These materials were delivered and produced at SMC-ICOM during the period 1990-1999.

The results indicated the KKMK program made a substantial improvement in relation to the physical characteristics of the products and raw materials. The free fatty acid of the copra was affected which also coincided with the FFA of the coconut oil. Overall, the *Kopra Ko, Mahal Ko* program did a noticeable impact which when improved and studied further will benefit the entire coconut industry in terms of supplier and total quality management.

031

YECLA, Louella P. 2003. Social Responsibility Profile of Some Companies Along Cagayan – Iligan Corridor. (GT: MBM), 129pp.

The study examined the social responsibility profile of some companies along Cagayan – Iligan Corridor. It described the profiles of the respondent companies with respect to their number of years in operation, net worth, product lines, presence of ISO certification, average number of employees, presence of foreign equity, and percentage allocation in the pretax income for social responsibility programs.

Three areas of intervention were examined: consumer, socio – economic and environmental affairs. The companies' level of understanding of social responsibility was

determined under three dimensions of social responsibility: as social obligation, as social reaction and as social responsiveness. The extent of relationship between the companies' level of understanding of social responsibility and the companies' profile were established. The different social responsibility involvement programs of the companies' were identified and classified by the respondents under the three dimensions of social responsibility. The extent of relationship between the companies' social responsibility involvement programs and the companies' profile were also established. The study also examined how the companies rank the different factors that most heavily influenced their firms' selection of areas of social involvement.

The study showed that industrial classification and percentage allocation of profit of the companies are significantly related to the social responsibility involvement programs of the companies.

The study also showed that the different profiles of the companies have no significant relationship with the companies' level of understanding of the social responsibility. The companies however concur that they have responsibilities to be accountable to all its stakeholders in all its operations and activities. They also affirm the interdependence of their businesses with the well – being and self – reliance of the community.

COLLEGE OF EDUCATION (CED)

Master of Arts in Education (MAED)

001
CUEVAS, Felda A. 1998. Reading Grade and Its Relationship with Certain Factors and the Readability Levels of the Reading Materials of Grade V Pupils of Tubod East District SY 1997-1998. (GT: MAED), 65pp.

The study on the "Reading Grade and its Relationship with certain Factors and the Readability Levels of the Reading Materials of Grade V Pupils of Tubod East District SY 1997-1998" revealed the following:

1. 60.5% are about ten (10) to eleven (11) years old are children of fathers who are farmers and mothers who are housekeepers with an average monthly income of P1, 000.00 and below.
2. 87.3% have below average mental ability
3. 95.5% have a reading grade of 2.9, meaning ninth month of grade, which is significantly different from the respondents' actual grade level.
4. The readability level of the reading materials used in English is 5.46, which is not significantly different from the actual grade level.
5. Age, I.Q., basic sight words and interest in reading of the respondents influenced significantly their reading grade.
6. Sex has no significant influence on their reading grade.
7. The relationship between reading grade and the parents' income and occupation cannot be validly determined.

In the light of the findings the following conclusions are drawn:

1. The Grade v pupils of Tubod East District SY 1997-1998 have reading grade severely lower than their actual grade level.
2. Some selected demographic characteristics of the pupils; namely, I.Q., Age, Basic Sight Words and interest in Reading are significantly related with their reading grade. However, sex does not have significant relationship with their reading grade. Furthermore, the relationship between reading grade, parent's income and occupation do not vary among respondents.

3. The readability level of reading materials used in English by the respondents is not significantly different from their actual grade but significantly different from their reading grade since the former is much higher than the latter. This can be explained by the pupil's poor reading comprehension.

As a result of this study, it is recommended that, there should be a functional reading program and a reading clinic in every school in the District of Tubod East with enough reading materials suited for every grade level. A competent team should be organized to supervise and evaluate the program. Furthermore, in-service trainings for reading teachers be conducted to upgrade their competence in teaching reading and improving pupil's reading performance. Parents should be educated about their role to work hand-in-hand with the teachers in developing reading skills and interest among school children.

002

DAITOL, Russel P. 2000. The Oral Reading Achievement Levels of the Grade V Pupils of Sapad District, Lanao del Norte (SY 1998- 1999). (GT: MAED), 53pp.

This study aims to evaluate the oral reading achievement of the grade five pupils of Sapad District, Lanao del Norte for the school year 1998- 1999. More specifically, it seeks to answer the following questions: 1) What is the profile of the respondents in relation to these variables: a) sex, b) age, c) parents combined monthly income, d) parents educational attainment, and e) availability of reading materials at home; 2) Is there a difference between the oral reading achievement of the grade five pupils using the same variables; 3) What is the overall reading level of the grade five pupils of Sapad District, Lanao del Norte for the school year 1998- 1999.

Results using the ANOVA show a significant difference in the oral reading levels and sex of the respondents. Significant differences exist in the word miscues and the age of the pupils less than twelve years old. A significant difference exists in the father's college educational attainment and the oral reading level of the respondents.

The dependent variable shows that majority of the pupils are in the frustration and instructional oral reading levels and four are non-readers.

It is recommended that 1) the teachers must conduct oral reading remediation classes, 2) the schools have rooms where there are reading materials that these children can read, 3) these schools must inform the parents that their children's education is a cooperation between them and the school, 4) trained remedial reading teachers for these schools are provided because of the urgent need, and 5) the school administrators' all out support for the opening of a remedial reading program is necessary.

003

DEBALUCOS, Florita T. 2002. The Study Habits, Attitudes and Reading Achievement of the Grade Five Pupils in the Three Schools of Balo-i East District: Basis for a Remedial Reading Program. (GT: MAED), 76pp.

This study investigated the relationship between the study habits, attitudes and reading achievement of the Grade Five pupils in the three schools of Balo-i East District.

The respondents consisted of eighty (80) pupils who were chosen using the Sloven's formula for random sampling. Forty five (45) pupils were from Maria Christina Central School, twenty nine (29) Nangka Elementary School and six (6) pupils from Pendulunan Elementary School.

The study, which made use of descriptive- correletional design, also made use of standardized tests to gather data. These are the Survey of Study Habits and Attitudes (SSHA) of Brown and Holtzman, Gates Basic Reading Tests (GBRT) and Raven's Standard Progressive Matrices (RSPM). For the statistical tools, the percentage, chi-square and Pearson-Product Moment Correlation were utilized.

The following are the findings of the study:

1) Majority or 56.3% of the pupils were females.
2) All or 100% of the respondent's family income per month is less than P12, 000 which is the poverty line.
3) Almost one third or 31.3% of the respondents belonged to below average level of I.Q.
4) Majority of the respondents were eleven years old (51.3%), Roman Catholics (76%) and Cebuanos (73%).
5) Majority or 91.3% of the pupils were deficient in getting the main idea of the selections.
6) Most or 78% were prompt in doing their school work.
7) Seventy five percent (75%) approved their teacher's classroom behavior and methods.
8) There is no significant relationship between reading achievement and the profile of the pupils.

The following recommendations are suggested:

1) The remedial reading program formulated in the study should be implemented in the three schools.
2) Highly trained teachers in English should be tapped to enhance learning.
3) More drills and exercises should be given to pupils to improve their vocabulary and comprehension.
4) Audio-visual devices should be used in classrooms to reinforce instruction to learners.
5) Parents and teachers should meet regularly to monitor pupil's progress.
6) A reading corners must be put up in the classroom to motivate pupils to read during their free time.
7) Teachers should be required to attend seminars, workshops, and in-service trainings in reading to upgrade their competence.
8) Development of the study habits among pupils should be an integral part in all subject areas.
9) Assignments should be checked regularly by teachers to motivate pupils to study at home.

10) A reading center should be established in the barangays to motivate pupils/parents out-of-school youth to read.

11) Considering that the findings show no significant relationship between the two variables, another study is suggested for future researchers.

12) A replicate study should be done on different locale.

004

ESMEDIANA, Teodora L. 2001. A Reading Comprehension Assessment in English and Cebuano of First Year High School Students of Balo-i National High School and Linamon High School SY 1999- 2000. (GT: MAED), 87pp.

This study aims to assess the reading comprehension in English and Cebuano of the first year high school students of Balo-i National High School and Linamon High School for SY 1999- 2000. More specifically, it seeks to answer the following questions: 1.) What is the profile of the students? 2.) What is the comprehension level of the students in Cebuano and English reading tests? 3.) Is there a difference between the comprehension level of the students in Cebuano and English reading tests? 4.) Is there a relationship in the comprehension levels of the students in English and Cebuano reading tests and the following variables: a. age, b. sex, c. language spoken at home, d. parents' income, e. parents' educational attainment, f. reading materials at home, and g. teacher factor.

The results reveal that there are more females than males enrolled. Majority age of the respondents enrolled is 13-15 years old. Most are Bisayan speakers and they are from low-income family.

In terms of the findings, the learner's level of competence in second language depended on the level of development that had been reached in the first language. In both schools, reading comprehension of the students had no significant difference in their English and Cebuano tests.

The results also show that sex, age, parents' educational attainment have significant relationship to the comprehension level of the students in their Cebuano test but not in English test. The parents' socio-economic status, father's educational attainment, and age have no significant relationship to the comprehension level. The teacher factors that have significant relationship to the comprehension level of the students in both English and Cebuano test are factor 1, factor 2, and factor 6.

005

EVA, Evelinda R. 2001. An Assessment of the Reading Proficiency of Third Year Students of Linamon High School, Lanao del Norte School Year 2000- 2001. (GT: MAED), 75pp.

This study assessed the reading proficiency of the third year high school of Linamon, Lanao del Norte enrolled during the academic year 2000- 2001.

The descriptive method of research was utilized and the reading proficiency of the students was based on their performance on the test questionnaires administered to them. There were 70 respondents.

The study revealed that the students passed the 6-item literal level test, 4-item inferential test, the 2-item critical level test and the 2-item application level test. Out of the 18-item reading proficiency test, the reading proficiency of the respondents was above passing.

The reading proficiency of the respondents was not affected by their sex, age, and educational attainment of their parents, reading materials available at home, reading materials available in school, appliances and facilities available at home, and frequency in studying their lessons. Being read to by their parent when they were still young affected their reading proficiency.

006

GONZAGA, Juliet V. 2000. The Reading Performance of the Grade V Pupils of Sapad District, Division of Lanao del Norte S.Y. 1998-1999. (GT: MAED), 95pp.

The reading performance of the grade five pupils of Sapad District during the school year 1998-1999 in terms of vocabulary development (vocabulary in context), literal comprehension (noting details, getting the main idea and sequencing events) and inferential comprehension (perceiving cause-effect relationship, making inferences and predicting outcomes) was determined in this study. Along with this, investigation tried to find out what pupil-factors significantly affect their reading performance based on the five variables, namely sex, attitude towards reading, parents' educational attainment, family monthly income and reading materials available at home.

The findings showed that the pupils' reading performance was very low or poor. Out of the 230 respondents, using the 30-item test, 176 or 76.52 percent fell under the category of "needs improvement", 43 or 18.7 percent had "moderately satisfactory" score, 3 or 3.49 percent "satisfactory", 3 or 1.30 percent "very satisfactory" and 0 or more got an "outstanding" score. It further revealed that out of the five variables which are purely pupil-factors, only two- the sex and the materials read at home had a significant relationship with the pupils' performance. This implies that pupils' performance in reading does not necessarily depend on those foregoing factors only, but also on some other factors, like teacher competence, school facilities and maybe home and community environment.

007

LARIN, Francisca S. 2000. An Assessment of the Reading Proficiency of Fourth- Year Students of Lanao del Norte National Comprehensive High School and Mercy Junior College, Lanao del Norte, SY 1998-1999. (GT: MAED), 96pp.

The purpose of this study is to assess the reading proficiency of fourth-year students of Lanao del Norte National Comprehensive High School and Mercy Junior for the school year 1998- 1999.

Data on the personal profile of the 206 respondents were obtained through a

survey questionnaire. Data on students' grade reading level as well as reading proficiency were obtained through Gates Reading Survey Test and teacher-made test, respectively.

T-test revealed that there exists no significant relationship between LNNCHS and MJC in vocabulary in context test but with significant relationship in comprehension test. Likewise, chi-square test and Spearman Rank correlation revealed that there is a significant relationship between type of school and interest in reading materials and no significant relationship in students' self-rating of reading ability, interest in English, reading habits and reading problems.

Furthermore, results show that females are better in vocabulary test than males and no significant difference in reading comprehension. Parents' monthly income does not significantly affect students' reading ability, while fathers' educational attainment is positively correlated with students' vocabulary.

008

MACABANDING, Diangca B. 2000. Reading Difficulties Among Grade Six Pupils of Matungao District, Lanao del Norte, SY 1999-2000. (GT: MAED), 88pp.

This study aimed to identify the common reading difficulties among grade six pupils of Matungao district, a remote district of Lanao Del Norte and a dominant Maranao populace. This study employed the descriptive-survey method of research. Data on the personal profile of 119 respondents were gathered using a survey questionnaire, while their reading difficulty levels were obtained through a researcher-made test.

Results showed majority of the pupils have an average reading difficulty levels as to vocabulary skills, comprehension skills (literal, inferential, and critical levels) and pronunciation skills (vowel and consonant sounds). However, majority of them have an above average reading difficulty level as to stress in pronunciation, which means that these pupils have the greatest reading difficulty in terms of stress in pronunciation of words. In general, majority of the pupils have an average reading difficulty level.

Moreover, no significant differences exist in pupils' reading difficulty levels when grouped according to age, parents' socio-economic status, parents' highest educational attainment, interest in reading, and availability of readings materials at home. However, there is a significant difference in pupils' reading difficulty levels when grouped according to sex. In particular, the male pupils have more difficulty in reading than females.

009

MAROHOM, Jasmin M. 2000. A Reading Comprehension Assessment of Grade Three Pupils of Linamon Central School Linamon, Lanao del Norte: Towards Developing a Remedial Reading Program. (GT: MAED), 88pp.

This study aimed to assess the reading comprehension levels of grade three pupils of Linamon Central School at Linamon, Lanao del Norte. This employed the descriptive-survey method of research. There were 103 Grade 3 pupils who served as respondents of the study. Data on the pupils' personal profile were gathered using a survey questionnaire, while pupils' reading comprehension levels were obtained through a researcher-made test.

Results show that as to profile of the pupils: female pupils dominate in number over males; majority of the parents were elementary graduates or had obtained elementary level of education; most of them belong to families with P8,000 and above income status; majority did not have reading materials at home; and majority of them were interested in reading.

Likewise, majority of the pupils had *below average* rating as to critical, inferential/interpretive level, critical, and application levels. In general, majority of the pupils had *below average* reading comprehension level.

No significant differences existed in pupils' reading comprehension levels when grouped according to pupils' personal variables, namely: sex, parents' educational attainment, socio-economic status, availability of reading materials at home, and attitude towards reading.

Master of Arts in Mathematics Education (MAME)

001
ANGAY, Marivic E. 1998. Difficulties in Solving Fractions Encountered by the Grade Six Pupils in Tubod East District, Malingao, Tubod Lanao del Norte, SY 1997-1998. (GT: MAME), 83pp.

This study aimed to determine the difficulties in solving fractions by the grade six pupils in Tubod East District, Division of Lanao del Norte. Subjects of this study were 110 pupils in the five schools of Tubod East District. There were 56 males and 54 females wherein the excess of two among the males was not significant enough to show their predominance over the female pupils. To achieve this aim an achievement test was administered to the respondents' socio-economic status, parents' education, and type of school of respondents. To analyze and interpret the data gathered the following statistical methods and procedures were used: Percentage, Mean, Chi-Square test, T-test, and One-way ANOVA.

The achievement test in fraction showed that most pupils directly added or subtracted numerators and denominators of similar and dissimilar numerators and mixed numbers. A whole number is added or subtracted to the numerator of a fraction and the denominator copied. Multiplication of mixed numbers showed that the products were obtained by multiplying the whole number plus the products of the numerators and denominators. The achievement test also showed that the pupils did have a full grasp of fraction related concepts.

The questionnaires revealed that most pupils' parents went through the elementary level of education and from their family income most belong to the lower socio-economic status.

The following conclusions were drawn based on the findings of the study: males performed significantly better than females; pupils are in the upper socio-economic status;

there is a significant difference between pupils' achievement and parents' education; pupils performed poorly in the four fundamental operations of fractions; the pupils from the central school performed better than pupils from non-central schools; and pupils coming from the five schools included in the sample performed significantly with Malingao Central Elementary School performed best followed by Pualas Elementary School, Guillermo Abugan Sr. Memorial Elementary School, Bualan Elementary School and Candis Elementary School.

In view of the conclusions drawn, the following recommendations are offered:

1. Re-examined the Mathematics Supervisory Program in relation to the needs of the pupils.

2. Develop evaluation tools to identify the fast learners from the slow learners.
3. Teachers organize remedial classes to assist slow learners either in school or at home.
4. Schools work hand in hand with government and non-governmental agencies to improve the socio-economic status of parents.
5. Organize math-related games and activities to enhance mathematical learning.

002
BIGORNIA, Ederlita C. 2000. Factors Affecting Mathematics Proficiency Level of Grade Six Pupils of Kauswagan District, Division of Lanao del Norte SY 1998- 1999. (GT: MAME), 70pp.

The study aimed to determine the factors affecting the mathematics proficiency level of the Grade VI pupils of Kauswagan District. Factors under consideration are teacher competence, pupil's background and communication skills. The study was conducted to all elementary schools of Kauswagan District comprising a sample of 229 pupils – respondents, their parents and nine teachers teaching the Grade VI mathematics classes.

An achievement test was conducted to the respondents to get the mathematics proficiency level and the teacher and Pupil Personal Data sheets to know their profile in relation to the study.

The proficiency level of the performance of the Grade VI pupils was very below the 75% mastery level.

Teacher competence, pupils' background and communication skills were found to have highly significant relationship with pupils' mathematics achievement. Particularly, type of school graduated and educational qualification of the teacher, number of children in the family and educational attainment of parents, and reading comprehension skills of the pupils had affected mathematics achievement.

003

BIHAG, Marife B. 1999. Development of an Achievement Motivation Scale in Elementary Mathematics. (GT: MAME), 85pp.

A motivation scale for achievement in elementary mathematics is developed and validated. One hundred thirty-nine (139) Grade VI pupils were interviewed and subjected to the developed scale to provide the baseline data for the Factor Analysis and validation procedures that followed.

The motivational scale developed has twenty-nine (29) items classified in three dimensions namely; intrinsic value, eleven (11), test anxiety, ten (10), and self-efficacy, eight (8) items. These twenty-nine (29) were obtained using Factor Analysis out of 107 initial items.

The validation procedure used resulted in high reliability coefficient ($\alpha = .79$) signifying the reliability of the instrument. Furthermore the motivational scale is found to have a significant discriminating power for the highly motivated and poorly motivated pupils based on their first and second grading grades.

004

BUAN, Amelia T. 1997. The Effects of Cooperative and Individualistic Learning Instruction on Mathematics Achievement and Attitude Towards Mathematics: A Comparative. (GT: MAME), 53pp.

Two sections in the third year of ICEHS-RSHS at Santa Filomena, Iligan City were respondents of the study. The students in both individualistic and cooperative groups were matched according to their sex, their Mathematics grades during the previous grading period and their scores in the Raven's mental ability test. There were sixteen (16) matches made and each group consists of four (4) boys and twelve (12) girls. They were randomly assigned to the groups, namely, cooperative and individualistic group.

This study aimed to compare the effects of cooperative and individualistic instructions on student's achievement in Mathematics and their attitude towards the subject.

Based on the analysis of the respondents' scores in achievement test and the attitude scale which were administered both before an after treatment, it was found out that there is a significant difference in the pre-test and posttest scores of the cooperative group in both tests. In the individualistic group there is a significant difference in the pre-test and posttest achievement scores only but there is no significant difference in their pre-test and posttest attitude scores. There is an interaction of the difference in the pre-test scores on the posttest scores seen both achievement and attitude scores between the groups.

It was also found out that the mean gain scores of the cooperative learning group in both achievement test and attitude scale are significantly higher than the mean gain scores of the individualistic group. This is an indication that cooperative learning is better than the individualistic learning in terms of improving mathematics achievement and developing a positive attitude towards mathematics in the students.

005

CALIAO, Antonio B. 2000. Factors Associated with the Ability of the Grade VI Pupils of Tubod East and West Districts to Solve Problems in Mathematics, S Y 1998- 1999. (GT: MAME), 89pp.

The study aimed to determine the factors associated with the pupils' ability to solve problems in mathematics by associating pupils' mathematics achievement with the following factors: home environment, quality of mathematics instruction received by the pupils, pupil's attitudes towards mathematics, mental ability, reading comprehension ability. This study was conducted at Tubod East and West Districts, Lanao del Norte Division in the school year 1998- 1999 among the 233 grade six pupils, their parents, and their 6 mathematics teachers.

The needed data were obtained from the mathematics achievement test, reading comprehension test, parents' home environment questionnaire, pupil's attitudes towards mathematics and mental ability questionnaires.

Pearson correlation coefficient, chi-square, multiple linear regression were computed to determine the association among the variables.

The factors that were significantly associated with pupils' mathematics achievement were the following: fathers' education, neighbors, friends and relatives who took care of the child, buying things of educational value, teachers' profile such as number of math seminars attended, number of years in teaching math, number of awards received, lesson plan preparation, teachers' activity like conducting review classes, coaching during math competitions, encouraging and supporting pupils to participate in math competitions and the number of skills taught, mothers' hours spent at home and at work, mental ability, and reading comprehension.

006

CAÑETE, Orlando C. 2002. Factors Affecting Problem Solving Skills Among Grade VI Pupils of Linamon District. (GT: MAME), 123pp.

This study aims to find out the teacher and pupil factors affecting problem-solving difficulties in mathematics of Grade VI pupils in Linamon District, Linamon Lanao del Norte during the school year 2001-2002.

This study employed the descriptive-correlation method of research. The respondents were the 341 Grade VI pupils and six Grade V Teachers who are actually teaching Mathematics. There were five instruments used to gather necessary data for the study. These are: a teacher's questionnaire, a pupil's questionnaire, a basic skills test, an attitude scale and a problem solving achievement test.

Results show that majority of the pupils had satisfactory performance in the basic skills test, which involves four fundamental operations in whole numbers, fractions and decimals. On the other hand, majority of the pupils of Linamon District had fair attitude toward Mathematics. However, in the Problem Solving Achievement Test, majority of the

pupils had low performance.

Meanwhile, significant relationship existed between pupils' problem solving skills in Mathematics and some teacher factors, namely, educational qualification, and possession of master's units/degree, specialized training, performance rating and strategies in teaching math.

No sufficient evidence was seen to show significant relationship between pupils' skills in Mathematics and the pupil factors, mothers' educational attainment and family annual income.

007
DAITOL, Idelfonso L. 2000. A Comparison Between the Inductive Method and Expository Method in Teaching Some Concepts in Mathematics. (GT: MAME), 77pp.

This study aimed to compare the effectiveness of the inductive method and the expository method in teaching some mathematical concepts in elementary mathematics.

The respondents of the study were twenty-two pairs of grade six pupils matched according to results of an IQ test and a pretest. The pupils came from two schools in the Sapad district chosen for their comparability in terms of district examination performances. The Sapad Central Elementary School pupils constituted the expository group while the Panoloon Elementary School pupils constituted the expository group. After treatment the pupils were given a posttest to ascertain their performance levels.

Results showed that both groups achieved learning by the significant difference in their pretest and posttest scores. Although the expository group consistently had significant higher mean scores than the inductive group in both pretest and posttest, their mean gain in score did not significantly differ, thus implying that both methods are equally effective.

008
DELMO, Nancy B. 1998. Mathematical Skills: Their Relationship to the Performance and Attitude Towards Mathematics of the Grade Six Pupils of the Sultan Kudarat Division. (GT: MAME), 65pp.

This study was concerned only with the status of the mathematical skills of the grade six pupils in the central elementary school in the Division of the Sultan Kudarat during the school year 1997-1998. The basic skills that are evaluated in this study are the comprehension, computation and the problem solving skills. Moreover, it aims to correlate the pupils' mathematical skills with their final grade in Mathematics 5 and their attitude towards Mathematics.

Grade six pupils were selected through stratified random sampling with proportional allocation from the twenty-four (24) central schools of Sultan Kudarat Division.

Results in Mathematics Achievement Test given by the Sultan Kudarat division office were used to measure the pupil's mathematical skills. This was correlated with their scores in an attitude scale adapted from the study of Padura (1984) and their final grade in Mathematics 5.

Based on the analysis of the respondents' score in the achievement test, it was found that the comprehension and computational skills were satisfactory developed while the problem solving skills were satisfactory developed while the problem solving skills were moderately satisfactorily developed. A significant relationship was seen between mathematical skills and final grades in Mathematics 5, pupils' attitude towards mathematics skills and final Mathematics grade, and pupil's comprehension skills and their attitude towards mathematic. However, there was no significant relationship between pupils' attitude towards mathematics and computational skills and between pupils' attitude mathematics and problem solving skills.

009

DALIGDIG, Romeo M. 2000. A Comparison of the Mathematics Achievement and Attitude of Fourth Year High School Students Under the Free and Controlled –Grouping Schemes. (GT: MAME), 51pp.

The effectiveness of controlled and free intra-class grouping schemes in mathematics instruction in relation to the mathematics achievement and attitude of fourth-year students towards mathematics was investigated in this study.

Sixty students in two fourth year classes of Iligan Capitol College, matched according to their mean Mathematics grades during the first and second quarter, were the subjects of the study. These two classes were randomly assigned to the two grouping schemes and the same subject matter was taught to them by the peer-teaching approach. In this class assigned to the free scheme, the students were grouped according to their personal choices. Grouping in the other class was controlled by the teacher using mixed-ability grouping. The instruments used were an achievement test, an attitude scale, and a set of formative tests. The paired t-test was used to compare the achievement, attitude, and formative test results of the two classes. The results showed that: 1. There is a significant difference between the achievement test scores of both groups before and after the study. 2. There is no significant difference between the achievements of the two groups in the pretest as well as in the posttest. 3. There is no significant difference in the attitude of the two groups before and after the study. 4. There is no significant difference between the retention scores of the free group and control group.

010

DIVINO, Flora E. 2000. The Effect of Teachers' Training Under Lanao del Norte Teachers In-Service Education Program on the Pupils' Mathematics Achievement (SY 1993- 1999). (GT: MAME), 64pp.

This study ascertained the effect of Lanao del Norte Teacher In-service Education Program on the students' achievement in Mathematics for the school year 1998- 1999.

This study employed the causal-comparative method of research. The respondents

of the study were 30 elementary trained mathematics teachers. Data on the teachers' performance ratings and pupils' performance in Mathematics Achievement Test were utilized in the study. Data on teachers' personal profile were gathered using a survey questionnaire.

Results showed that on the average, mathematics teachers were 37 years old with 10 years of experience in teaching the subject and who used *often* the different methods of teaching the subject. Likewise, they had a grade-point average of 1.59 and with *very satisfactory* teaching performance before and after their training.

Moreover, majority of the pupils had scores of 51 and below (*below average)* before the training while majority of them had scores above 51 after the training. Pupils had higher mathematics performance scores and teachers' performance rating after training was significantly correlated with pupils' performance in the Mathematics Achievement Test. It contributed 60.25 percent in the variation of pupils' performance in mathematics.

011

GA, Mary Ann C. 1998. Perception of Mathematics II Teachers in Iligan City on the SEDP Curriculum in Relation to the Students' Achievement and Attitude Towards Mathematics SY 1997-1998. (GT: MAME), 57pp.

The teachers' perception of SEDP curriculum in relation to students' achievement and attitude towards mathematics was studied. Third year students and 16 mathematics teachers from the 12 schools in the division of Iligan City SY 1997-1998 were considered. The instruments used in this study were a 100-item multiple-choice division-made test and a Mathematics Attitude Interest Inventory for the students and a Perception Questionnaire for teachers.

Results of the study revealed that the teachers' "disagree" in terms of the content of the program. They are "undecided" in terms of the implementation and also "undecided" in terms of the entirety of the program.

The students' mean achievement in Mathematics III was fairly satisfactory and was "undecided" on the attitude towards mathematics. Students' achievement was significantly related to the teachers' perception of the SEDP program in terms of the content, implementation, administrative support and entirety of the program.

Students' attitude was significantly related to the teachers' perception of the SEDP program in terms of administrative support and entirety of the program due to the unpleasant feeling of the teachers about the curriculum but not significantly related to the content, implementation of the SEDP program on the way teachers presented and discussed the subject.

012

LUCERO, Gina H. 1999. Parental Involvement in Relation to Mathematics Achievement and Attitudes of Grade Five Pupils in Balo-i East District, Division of Lanao del Norte. (GT: MAME), 68pp.

This study determined the relationship between parental involvement and mathematics achievement and attitudes among Grade Five pupils in Balo-i East District, Division of Lanao del Norte, School Year 1998- 1999.

The study employed the descriptive-correlational research design where primary data on pupils' demographic profile, mathematics attitudes, and parental involvement were gathered through a survey questionnaire. Secondary data on mathematics achievement were based from the Division Achievement Test results.

Data revealed that pupils had below average achievement level and had a generally fair attitude toward mathematics. Likewise the parents were occasionally or fairly involved in the academic work of their children,

Moreover, parental involvement was significantly correlated with both pupils' mathematics achievement and attitudes. Mathematics achievement was significantly correlated with both father's education and mathematics attitudes; while mathematics attitude was significantly correlated with parents' monthly income.

013
MAGLUNOB, Jasmin C. 1999. Attitude of Mathematics Teachers: Their Implications on the Mathematical Achievement of Grade VI Pupils of Iligan City Central Schools SY 1998-1999. (GT: MAME), 80pp.

The relationship that exists between teachers' attitudes towards mathematics and teaching and pupils' mathematical achievement is investigated. Certain variables are also examined as to their association with the attitudes of teachers, namely, age, civil status, number of years of teaching math, educational attainment, awards and citations in math received and number of in-service trainings in mathematics being attended.

Teachers attitudes towards mathematics has significant relationship with number of awards and citations in math received and number of in-service trainings in math attended but does not significantly associate with age, civil status, number of years of experience in teaching math and educational attainment.

Attitude of teachers towards teaching has significant relationship with age, civil status, number of years of experience in teaching math and educational attainment but is not significantly affected by number of awards and citations in math received and number of in-service trainings attended.

Regression analysis shows that neither attitude of teachers towards math not this attitude towards teaching significantly affects mathematics achievement of pupils. This means that low or high achievement of pupils in mathematics cannot be accounted on the negative or positive attitudes of their teachers.

014
MARAVILES, Delia P. 2002. School and Home Conditions of Elementary

Mathematics Teachers and Its Influence on the Mathematics Achievement at Sapad, Lanao del Norte. (GT: MAME), 63pp.

This study aimed to determine the conditions perceived by elementary mathematics teachers at Sapad District, Lanao del Norte and find out if these conditions influence the mathematics achievement in the Sapad District Achievement Test (SDAT).

The study consisted of 44 elementary teachers from grades one to six during the school year 1999-2000. The instrument was a researcher-made questionnaire to find out the conditions of the teachers at home and in the school. The researcher personally distributed and administered the questionnaire during the year-end district meeting and the District Achievement Test results were obtained at the District office.

Using means, Pearson Product-Moment Correlation, T-test, the researcher did the analysis and interpretation of gathered data. Results of this study show that school and home conditions of teachers have not influence the pupils' achievement in mathematics. This implies that teachers do not bring their problems at home to the school to detriment of pupil's achievement.

015

MONTECALVO, Teresita P. 2000. Problem Solving Skills in Fractions, Decimals and Percentage of Grades Six Pupils of Linamon District School Year 1999-2000. (GT: MAME), 78pp.

The study assessed the problem solving skills and attitude in Mathematics of grade six pupils in Linamon District, Division of Lanao del Norte during the school year 1999- 2000.

This study employed the descriptive-correlational method of research. Data on socio-demographic profile and attitude towards mathematics among the 202 respondents were gathered using a survey questionnaire. Performance scores of pupils on problem solving skills were obtained from the researcher-made test.

Results show that majority of the pupils had *average* performance in problem solving skills along fractions, decimals, and percentage. Likewise, they had a *fair* attitude level towards mathematics and perceived that mathematics is useful for problems in everyday life. Their performance in the three topics did not vary significantly.

Furthermore, significant relationship existed between pupils' performance in problem solving skills test and type of school as well as pupils' average grade in Mathematics.

Finally, no significant relationship existed between pupil's performance in problem solving skills test and the following pupil-related factors, namely: family income, size of family, and attitudes toward mathematics.

016

OLAVIDES, Lorraine C. 2000. The Effects of Manipulative Approach in Teaching Fractions on the Mathematical Achievement and Attitude of Pupils. (GT: MAME), 117pp.

An experiment was conducted to examine the effects of using manipulative approach in teaching fractions on the mathematics achievement and attitude of two matched groups from Grade VI classes in Tubod Central Elementary School (TCES) and Rufo dela Cruz Memorial School (RCMS) of Tubod, Lanao del Norte. The 25 pairs in the manipulative and traditional groups were matched according to their Grade V mathematics grades and their Raven's Mental Ability Test scores.

The individual manipulation strategy in teaching was taught to the members of the manipulative group, while the pupils in the traditional group were taught the same topic through the usual lecture method of teaching mathematics. The comparison of pretest and posttest measures of mathematics achievement and attitude towards mathematics revealed that the posttest scores of the manipulative group in both achievement and attitude test were significantly higher than those of the traditional group. It was also disclosed that posttest achievement scores in the traditional group, while in the manipulative group, no correlation was seen between the pretest and posttest scores.

Furthermore, based on the simplified phenomenographic analysis, manipulative approach made the children positive attitude and resulted in high achievement in mathematics.

017

PALA, Alice B. 1997. Correlation Between Some Selected Variables and the Reading Proficiency of Grade Five Pupils at Kauswagan District Lanao del Norte: Basis for Developmental Reading Program for Grade Six. (GT: MAME), 71pp.

The study on the "Correlation Between Some Selected Variables and the Reading Proficiency of Grade Five Pupils at Kauswagan District Lanao del Norte: Basis for Developmental Reading Program for Grade Six" showed that the grade five respondents comprising of 78.05% within the ages of ten (10) to eleven (11) years old, 76.83% females, and 77.44% with parents whose monthly incomes are within the bracket of P2, 000.00 and P4, 999.00 have the following characteristics:

1. 40.24% of the respondents have below average mental abilities.
2. Averagely, the respondents have a very low rating in noting details and in reading vocabulary. In understanding direction, their reading grade is also rated very low, which is the same rating they obtained for general significance and in their level

84

of comprehension.

3. Age does not influence the reading proficiency of the respondents.
4. Sex, mental ability and parents' monthly income influence the reading proficiency of the respondents.

018

PANDAN, Daylinda P. 2002. Grade Six School Teachers' Instructional Competencies and Pupils' Academic and Neat Achievement in Mathematics and English. (GT: MAME), 78pp.

This study compared the Grade VI School Teachers Instructional Competencies and Academic Achievement and National Examination Achievement Test (NEAT) of pupils in selected school of Bacolod District in the Division of Lanao del Norte during the SY 2000-2001. Specifically, it endeavored to identify the instructional competencies of the Grade IV School Teachers handling English and Mathematics using 40-items questionnaire developed by the researcher based on Dime's work (1999).

The results of the study showed that Grade IV schoolteachers possessed satisfactory instructional competencies in teaching skills, classroom management skills, guidance skills and evaluation skills as rated by the administrators. However, rating of pupils using the same questionnaire for the instructional competencies of teachers showed a very satisfactory result. The Grade VI schoolteachers' instructional competency level was significantly related to their pupils' Mathematics final grade and Mathematics NEAT results and so with English grade and English NEAT results. There was also significant difference in Mathematics and English NEAT results of the pupils.

It is recommended then that the teachers should take graduate courses specifically in Math and English education. Teachers must be given in-service training and upgrading on the areas that involve academic instruction specifically English and Math in recent trend of teaching to improve them further in teaching.

019

QUIJANO, Marilou M. 2002. The Effects of Using Multi-Modal Interactive Strategy in Teaching Measurements on the Achievement and Attitude of Grade VI Pupils. (GT: MAME), 85pp.

This paper is a comparative study on the effects of using Multi-Modal Interactive Strategy in teaching measurement on the achievement and attitude of Grade VI pupils. As an experimental study, it used experimental and control groups of Mathematics of Grade VI pupils. Forty Grade Six pupils were given the OLSAT (Otis-Lennon School Ability Test) non-verbal test to determine the mental ability of the pupils. Results were interpreted by a psychometrician for matched pairing of the two groups. A pretest was given and the experiment was conducted. Two long quizzes were given after every week during the experiment. Posttest was administered after the treatment. The first group was exposed to multi-modal interactive strategy while the second group was exposed to the traditional method of teaching. Data on the long quizzes, pretest, posttest and attitude test were gathered and analyzed. Pupils exposed to Multi-Modal Ineteractive Strategy were found ineffective based on the performances in the achievement and attitude test. The result of the study lacks sufficient evidence to prove those pupils under Multi-Modal Interactive group

performs better than pupils under traditional group.

020

RONDEZ, Irene B. 1997. Educational Productivity Factors Affecting High Achievement Among Grade Six Pupils in the Mathematics Achievement Test. (GT: MAME), 96pp.

The study aimed to determine the educational productivity factors affecting high achievement among grade six pupils in the mathematics achievement test. It attempted to associate high achievement in math with the following factors: home environment, quality and quantity of math instruction received by the pupils, pupils' attitude towards math. It also would like to find out if the following other factors associated with high achievement in math, namely: grade level when interest in math related activities and other achievements like acceleration to the next grade, and math awards received.

There were 124 grade six pupils identified as high achievers as samples in this study and respective 19 math teachers comprising the eight districts of the division of Iligan City. The major instruments for this were validated questionnaires for both pupil respondents and their respective math teachers.

The factors significantly associated with high achievement in math are the following: pupil respondents' father's educational attainment, number of influencing household member, seminars attended and math awards received by the teacher respondents, and pupils' attitude towards math.

The factors that are not significantly associated with high achievement are the following: pupil respondents' mother's educational attainment, parents' occupation, parental support, teachers' degree, preparation of lesson plan, use of instructional materials, conduct review classes, train contestants for math competitions, encourage participation in math competitions and give incentives.

The other factors that are not associated with high achievement in math are the following: grade level when interest in math started, T.V. shows geared towards math, participation in math related activities, acceleration to the next grade and number of awards received by the pupil respondents.

021

TALINGTING, Ruth S. 1998. A Profile Analysis of the MSU-SASE Results of Fourth Year High School Students in the Hinterlands of Iligan City, SY 1996-1998. (GT: MAME), 47pp.

Two groups were namely: the high school graduate students of school year 1996 to 1998 of four (4) different schools and the faculty members of the respective schools.

The samples sizes of each group considered in the population of the study were as follows: a) one-hundred two (102) students, and b) thirty-one (31) teachers. A total of one-hundred thirty-three (133) respondents composed the population. Since the numbers of

respondents in the various samples cited were relatively few, the enumerative and purposive sampling methods were employed. The analysis showed that the respondents got very low scores in the SASE.

It was also found out that the only factors that contributed to the result in the MSU-SASE were the age of the teachers and the extra work other activities of students during weekends.

Master of Arts in Science Education (MASE)

001
ABAMONGA, Elma U. 1988. A Comparative Study on the Performance of the Third Year High School Students Exposed to Selected Topics in Chemistry in Cebuano and in English During the Academic Year 1987-88 at Aloran Trade School. (GT: MASE), 170pp.

The new Philippine Constitution of 1986 recognizes the use of regional dialects (since there are 87 dialects and six regional languages spoken by different groups of Filipinos) as an auxiliary media of instruction. This research is deemed necessary to find out how effective the regional dialect, Cebuano as a medium on instruction specifically in Chemistry class.

Main Problem: to compare the achievements of third year students in selected topics in high school chemistry who were exposed to Cebuano and English as media of instruction at Aloran trade School during the academic year 1987-88.Sub-problem: 1) What is the profile of the students of both groups in terms of sex, age family income, occupation of parents and mental ability?; 2) is there a significant difference between the means of the post-test scores of third year Chemistry students who are exposed to English and Cebuano instruction? and 3) Do socio-psychological factors in terms of sex, age, parents' occupation, family income and mental ability relate to the post-test score of both groups?

This study employed the descriptive-comparative research design. The research instruments used were: 1) a standardized test on mental ability known as the Purdue Non-Language test; 2) a self-constructed questionnaire; 3) and a self-validated achievement test.

The statistical techniques used were: 1) the mean 2) t-test and 3) coefficient of correlation and point-biserial correlation.

The major findings of this study are: 1) there was a significant difference between the post-test scores of the two groups exposed to Cebuano and English media of instruction; 2) there was no correlation between the post-test score and the sex and the mothers' occupation of the group exposed to Cebuano instruction; 3) there was a correlation between the post-test scores and the age, fathers' occupation, family income, and mental ability of the students exposed to Cebuano instruction; 4) there was no correlation between the post-test scores and the fathers' occupation of the group exposed to English instruction; and 5) there was a correlation between the post-test score and the sex,

age, mothers' occupation, family income, and mental ability of the group exposed to English instruction.

The following conclusions are drawn based on the findings of the study: 1) Cebuano instruction appeared as an effective method of medium of instruction; 2) age, fathers' occupation, family income, and mental ability emerged as correlates of the achievement in chemistry of the students exposed to Cebuano instruction; and 3) sex, age, mothers' occupation, family income and mental ability of the subjects exposed to English instruction.

Based on the findings and conclusions of this study, the following recommendations are offered: 1) Cebuano instruction should be done side by side with English instruction so that students in chemistry would be able to understand and conceptualize more the lessons taught to them; 2) since this study was done on a limited time, another study should be conducted on a longer period of time with more variables treated in the study; and another study should be made making use of a pure experimental design in order to control the necessary variables that could affect the students' achievement in chemistry.

002
AREOLA, Marilyn B. 1999. The Effects of Domestic Effluents on the Photosynthetic Rate of *Dunaliella Marina Skeletonema Costatum* and *chlorella sp.* and Its Application to High School Biology. (GT: MASE), 74pp.

This study primarily aims to determine the effects of domestic effluents on the photosynthetic rate of the following phytoplanktons: *Dunalliella marina, Skeletonema costatum* and *Chlorella sp* using an improvised manometer. A set of laboratory activities based on the study has been devised to supplement high biology experiments.

The results revealed that domestic effluents at 20%, 40%, 60% and 80% concentrations affected the photosynthetic activity of the three phytoplanktons. It has also been noted that the higher the concentration of domestic effluents, the lesser the photosynthetic activity of the phytoplanktons. However, the degree of effects varies with the different phytoplanktons. It is also noted that 80% concentration of domestic effluents for a 24-hour treatment has been detrimental to all phytoplanktons.

The laboratory activities so designed have been shown to be useful for high school biology classes.

003
BAGALOYOS, Joy B. 1998. A Quantitative Analysis on the Inquiry Approach in the

Integration of the Environmental Concepts Among Four Philippine Published Secondary Biology Textbooks. (GT: MASE), 73pp.

This study is on quantitative analysis on the inquiry approach on the integration of environmental concepts among four Philippine published secondary Biology textbooks. Specifically it identifies what environmental concepts are integrated, the extent of the integration, and how these concepts are integrated.

Based on the findings in the content analyses of the four textbooks studied there are 18 environmental concepts identified to be integrated which are more or less evenly spread out.

Based on Text Index of Romey's Quantitative Technique, for a book to be integrative in nature it must have an index of student involvement of 1.0. Among the books analyzed Capco and Yang's book is highest with 0.08, which is sill very low. This therefore means that all the books studied are primarily authoritarian. The books mainly give out information, spoon-feeding the students and do not encourage critical thinking. The books encourage a lower form of learning, mostly cognitive.

004

BARQUILLA, Manuel B. 1993. *In-situ* **Studies on the Growth and Regeneration of** *Sargassum crassifolium* **J.** *Agardh* **(***Sargassaceae, Phaeophyta***) in Lucolan Shoal, Gango, Ozamis City (Panguil bay). (GT: MASE), 111pp.**

The effects of cutting the thallus (1 cm from the holdfast and 1 cm from the stripe) on the regeneration and growth of Sargassum crassifolium J. Agardh for a period of thirteen months were determined and compared with the control (uncut plants).

Monitoring of the test plants in terms of the emerging of offshoots of laterals, which included the number, location of emergence, length increase of the primary laterals and length increase of the stripe was performed. In addition, determination of some physicochemical parameters was done.

In all treatments the number of laterals emerging were significantly different. The location of the emerging offshoots or laterals in three treatments followed a general pattern, that is, starting from the apical portion (upper stripe) down to the base. The regenerating primary laterals of the control were longer (34.43 – 98.36 cm) compared to treatments II (8.96 – 44.17 cm) and III (12.4 – 50.2 cm). In general longer laterals were observed in the months of November of January coinciding with the reproductive phase. The length increase of stripe were significantly different among treatments wherein stripe cut 1 cm above the base were longer than the control and those cut 1 cm above the stripe.

Sagassum crassifolium exhibits two dieback or degeneration within the whole

sampling period occurring before and after the reproduction phase.

Growth of test plants in all treatments was poorly correlated with the physico-chemical parameters determined yet results showed high growth rate in June and November, December and January when nutrients were relatively high.

Programmed management in Sargassum can be formulated base on the results in this study. Harvesting should be done in the month of October and November when the laterals are long and in May when growth rate is high. It is also suggested that cutting should be 1 cm from the base or 1 cm from the laterals to allow the holdfast to regenerate rather than uprooting the whole plant.

005
CABAHUG, Susan Y. 1995. Analysis of the Teacher-Made Chemistry Tests and Its Relationship with Some Demographic Variables. (GT: MASE), 79pp.

This study is designed to analyze teacher-made Chemistry test and its relationship with the teacher's demographic variables.

Specifically, this study attempted to establish the teacher's profile and to analyze the test items in terms of validity and reliability. It also determined the relationship between reliability of the test and the teacher's demographic variables. Similarly, it tried to find out whether or not student score was affected by the reliability of the test. Hopefully, this study provides information in the teaching-learning process.

There were 46 sets of test paper analyzed and 36 high school Chemistry teachers who participated in this study. The item analysis focused only on the multiple choice items, particularly on the answers of test question and the score obtained by the students.

Findings revealed that 26 of the teacher respondents were still young and 7 were graduates of BSE-Chemistry. Twenty-five of the respondents pursued graduate studies not related in teaching Chemistry but to administrative work.

Multiple choices were the most common type of test questions administered during the third and fourth periodical examinations. Comparison of reliability of the test administered by the respondents showed that 28.57% of the test paper from public schools analyzed with low reliability value, 50.00% in private and none in state university. This implies that there was a high percentage of the test paper having low reliability value. This finding was supported by the results of the items analysis performed. Most of the test item in public and private schools were difficult and there were a high percentage of test items, which were marginal and poorly constructed. Test items administered by teachers from the state university were found to be of average difficulty and items, which were poorly constructed, were found to be negligible.

Seven indicators were correlated with the reliability of the teacher-made test. These demograpic variables were: bachelor's degree, units in evaluation and measurement, seminars attended on test construction, teaching experience, age and type of school. Except for age and type of school, all the other indicators were found to have significant

correlation with test reliability.

It was also found that student scores was affected by the reliability of the test. The degree of association was 16.81%, indicating that as reliability value decreases student score also decreases.

Based on the aforementioned findings, it is recommended that school administrators must consider the following: 1. That area of specialization, the principal basis in the recruitment of high school Chemistry teacher. 2. Ensure that master's programs pursued by Chemistry teachers in their respective schools should be in line with their field of specialization. 3. Provide opportunity to Chemistry teachers to attend seminars on test construction so that they become aware on the importance of effective and accurate evaluation. 4. Put-up in-service training program that will enhance latest educational information towards quality education.

To have a well-constructed teacher-made test the following should be observed: 1. A Chemistry syllabus with clearly defined objectives be prepared and followed to provide sequence and direction. 2. Teachers should observe time allotment for each specific topics covered in each grading period. 3. Table of Specification must be used so that equal proportion of each topic is included. 4. Correct all typographical errors in the test paper before administering them. 5. Perform item analyses to determine whether the items are retained in the pool of the test questions in a test bank.

The researcher also recommends the following for further study: 1. Analysis of the teacher-made test focusing on the analysis of stem of test items using large sample. 2. A computer program that will determine the quality of teacher-made test and suggest possible interpretation of outputs.

006
CLAR, Veronica D. 1997. Utilization of Experimental pH Indicator from Dahong Pula *Hemigraphis alertnata (Bum. F.) T. Anders* for Classroom Instruction Through Potentiometric Analysis. (GT: MASE), 107pp.

The pH indicator prepared from Dahong pula aqueous extract can qualitatively distinguish an acid from a base although the color changes in basic solutions were unstable. It is a suitable pH indicator in the titration of strong base.

The experimental pH paper from Dahong pula may be the best alternative or a good substitute to commercially available one. It has been tried out to third year students and found out that it can be utilized in the proposed activities for classroom instruction.

Efforts were made to calculate the pKa of the plant extract. However, the presence of the participating substances as indicated by peak picks in the absorption spectra of the Dahong pula extract causes variation of the spectrum and erratic alterations of the graphs of absorbance versus pH and do not furnish means to calculate the pKa of Dahong pula extract.

007

ESTARDO, Jose B. 1986. Comparative Topical Content Analysis of Word-Load and Student Involvement Among Four Philippine Published Secondary Biology Textbooks. (GT: MASE), 121pp.

This study compared the two word-load and the student involvement in the major topics in each of the four secondary biology textbooks published in the Philippines and used in the secondary schools of Iligan City, Namely: 1. Biology for Philippine High School, 2. Integrated Science II, 3. Secondary Science for Learning and Living, 4. Biology in the Changing Philippines by D. Hernandez, L Rabago, H. Rodriguez and M. Vega, respectively.

Content analysis was employed on the 25 % sample of pages covered by key topics; Cytology, Ecology, Genetics, Morphology and Taxonomy, in each of the books under study.

Word-load analysis was based on the proportions of technical and non-technical terms to the total words analyzed in each of the aforecited key topics and in each of the aforementioned textbooks. Technical and non-technical terms (Gardner, 1972) as guide.

As to student involvement analysis of study units, Romey's (1966) rating index for textual prose was used.

Word-load analysis revealed that there is an equal proportion of technical and non-technical terms to the total words analyzed in "Cytology" in the works of Hernandez, and Rabago, in "Ecology" in those Hernandez, Rodriguez, and Vega's; in "Genetics" in all textbooks analyzed; in that of Vega's.

On the other hand, the proportion of non-technical terms are higher than technical ones in "Cytology" in Rodriguez and Vega's; in "Ecology" in Rabago's; in "Morphology" in Rabago, Rodriguez and Vega's, and in "Taxonomy" in Hernandez, Rabago and Rodriguez' works.

These results raise apprehension on the influence on books used as textbooks in biology classes on the comprehension of biological concepts, particular for less able readers.

The values obtained in the student involvement textual prose analysis exposed the outstanding merits of Hernandez' textbooks. Her work obtained in Cytology, Ecology and Morphology, values greater that 1.0; indicative of the great tendency towards student participation.

A balanced presentation of investigation and non-investigative materials in Ecology and Genetics are found in Rabago's work. In "Cytology", a similar observation is noted in the textbook of Rodriguez.

Works with less investigative categories and less facts and definitions are in "Cytology" in Rabago's, "Genetics" in Hernandez', "Morphology" in Rabago, Rodriguez and Vega's, and "Taxonomy" in Hernandez and Vega's.

Inclined towards the traditional authoritarian form of presentation are the works of Rodriguez in "Ecology", "Genetics" and "Taxonomy", and that of Vega's in "Ecology and Genetics".

The findings on the total student involvement analysis manifest the shift towards the modern student-oriented manner of discussion concepts.

It is recommended that the findings of this study should be utilized as guide by secondary biology instructors in the choice of textbooks and references more appropriate to the needs of their students. Further, the secondary biology instructors are encouraged to render assistance in reading. The study should also be utilized by textbook writer for revisions of works analyzed herein or for the construction of new instructional materials, particularly in the topics "Genetics" and "Taxonomy"

Biology education researchers should likewise utilize the findings as source of problem areas to work on.

008

FABRIGA, Enrico N. 1990. Studies on the Antimicrobial Potentials of Octocorallians. (GT: MASE), 146pp.

The extracts if the nine species of Octocorallians were tested for their antimicrobial activity. There were two solvents used: methanol (95%) ant toluene. The test microorganisms were: Aspergillus niger (mold), Saccharomyces cerevisiae (yeast), Bacillus subtilis and Staphylococcus aureus (gram-positive bacteria), and Pseudomonas aeruuginosa and Escherichi coli (Gram-negative bacteria). Of the nine species, eight species exhibited varied antimicrobial activity (Sinularia sp., Xenia sp., Lobophytum sp. 1 and 2, Siphonogorgia sp., Nephthea sp., Sarcophyton sp., and one unidentified species: unknown sp.). Lophogorgia sp. did not exhibit any antimicrobial activity. Toluene showed greater efficiency in extracting active components from the Octocorallians than methanol. For the six microorganisms, the gram-positive bacteria had a higher sensibility than the Gram-negative bacteria to the Octocorallian extracts. The fungi were the least affected.

009

GOMEZ, Rizalina G. 1995. Bacteriological Analysis and People's Awareness as to the Potability of the Drinking Water Supply in Selected Barangays of Iligan City. (GT: MASE), 124pp.

Bacteriological analyses were conducted to determine the potability of the drinking water supply in selected barangays on Iligan City. Relative to this, a survey was conducted on people's awareness of its potability. Current status of the drinking water supply was determined based on the records filed by the agency concerned.

The drinking water in Iligan City was found to be crystal clear and no sediments were observed. Disinfections were done with the use of powdered chlorine and liquefied chlorine gas. Very few barangays were affected by bacteria of the coliform group and

drinking water was considered to be generally safe.

Four types of bacteria were isolated by chance from samples of drinking water supply, namely: bacteria of the coliform group, <u>Salmonella</u> sp., <u>Shigella</u> sp. And <u>Vibrio</u>. Bacterial population was found to be greater in areas with low water pressure. Findings showed that there was no significant difference in the results of the bacteriological analysis taken from the different sampling areas in selected barangays of Iligan City. (x^2=3.125). Likewise, the results conducted by both the researcher and the agency concerned was found to have no significant difference (T value for colony count = 0.6381; T value for coliform = 1.393).

Furthermore, the residents in selected barangays of Iligan City were aware of the physical characteristics and system of disinfections of the drinking water supply. However, they were uncertain as to the presence of bacteria. When grouped according to the location of water connection, there was a significant difference pertinent to their awareness on the physical characteristics of water (F = 3.969). The data further revealed that there was no significant difference in their awareness regarding the city's system of disinfections. (F = 2.144) and presence of bacteria (F = 0.774).

010
KENADY, Dulce Corazon C. 1998. Allium Test as an Indicator of Water Pollution in the Rivers and Creeks of Iligan City. (GT: MASE), 117pp.

The *Allium* test, an alternative first-tier assay system for toxicity testing and environmental monitoring was tried on April 15 o June 4, 1997 to indicate water pollution in Tubod River, Mandulog River, Agus River and Baslayan Creek, all in Iligan City, through macroscopic and microscopic responses of onion roots. Results of the tests were compared with the control. Tubod River and Baslayan Creek waters, particularly in the downstream samples, inhibit root growth, which is a positive response of the *Allium* test and indicates further that the tested waters were polluted. However, in Mandulog and Agus Rivers, the root growth responses of *Allium* were similar to that of the control and shows that there are no appreciable amounts of toxic substances present in these rivers. There are also no chromosomal aberrations observed in all the samples, which implies that there are no mutagenic substances present in the rivers.

Using the results on the microscopic responses on the *Allium* test conducted in Tubod River, Mandulog River, Agus River and Baslayan Creek, an inquiry teaching material was developed and tested from October 20 to 22, 1997 to the second year biology students of the Integrated Developmental School, MSU-Iligan Institute of Technology, Iligan City. Students were required to interpret graphical and tabular data and draw their conclusions. Their responses were recorded and later transcribed and assessed; their interpretation of data and conclusion were similar to that of the researcher.

011
LANDA, Elein S. 1998. Electrolytic Analysis of Lead in Canned Goods and Determination of its Toxicity by Fungal Assay. (GT: MASE), 79pp.

The electrolytic analysis of lead in some canned goods showed negative results in both qualitative and in the conformity test for lead compounds using hydrogen sulfide.

Evaluation of the effects of the different concentrations of lead acetate on the growth *Aspergillus niger* as performed by fungal assay. The influence of temperature and pH on the effect was also determined. Results of the assay were statistically analyzed using the Analysis of Variance (ANOVA).

Different concentrations of lead were found to have no significant effect on the growth of the fungus. However, the effect of the temperature and pH was found to have a significant effect on the growth of *A. niger*. Both factors were found to be inversely proportional to lead's toxicity. When temperature and pH were increased lead's toxicity decreased. As temperature and pH decreased lead's toxicity was increased.

The formulation of the laboratory activities in Phase 2 was based on the fungal assay with the influence of temperature and pH. Its effectiveness will be further studied.

012
LEOPOLDO, Vivien D. 1999. Genetic Variability Among Families of Second Year Students of Suarez High School. (GT: MASE), 58pp.

Genetic variability among Second Year students and their families of Suarez High School enrolled in School Year 1997-98 were surveyed. The traits under scrutiny were: characteristics of earlobe, tongue rolling, thick-hiker's thumb, index finger, tongue-folding, widow's peak, curly hair, dimpled cheek, clasping pattern, polydactility, baldness and blood types. Inherited diseases were also included like diabetes, ulcer, heart disease, kidney stones, hypertension, tuberculosis, tumor in the uterus, anemia, rheumatoid arthritis, gout, glaucoma, deafness, otitis media, alcoholics, measles and blood types. Traits like free earlobe, tongue rolling, hitchhiker's thumb, straight index finger, tongue folding were found to be the more frequent. The computed gene frequencies do not fit the Hardy-Weinberg equilibrium. Blood type O was more frequent in the sampled populations followed by blood type A and then B and the least frequent is type AB. Ulcer, anemia, rheumatoid arthritis, glaucoma, otitis media, measles and development kidney stones were associated to blood type O. Significant correlation were found between blood type A and heart disease, diabetes, and hypertension. Associations of ulcer to blood type O and heart disease to type A individuals conformed with the results of the research conducted by Rosario & Laude (1993). Blood type AB individuals were found to be more frequent for alcoholics. Computed genotypic frequency of ABO blood groups fit the Hardy-Weiberg equilibrium.

013
LONTAYAO, Rowena E. 1998. Effectiveness of Video Instruction in Teaching Concepts on Aquatic Ecosystem to Second Year High School Students of Selected Public High Schools. (GT: MASE), 54pp.

The effectiveness of video instruction suing the DECS-approved videotape in the

teaching of marine, estuarine and freshwater ecosystems among biology students from three selected public high schools was determined.

Sixty-six randomly selected second year students from each of the chosen high school were given pre-test and post-test before and after teaching the concepts. The students were divided into three groups. The first group was given a lecture, the second was exposed to the three methods of teaching was also compared using the analysis of covariance.

Comparing the effectiveness of the three methods of teaching using a 5-point scale base, it was found out that in all the three schools the use of video alone is ineffective. Lecture supplemented by video is less effective in ICEHS, effective in INCHS, and very effective in LNNCHS.

014

MIKIN, Salvacion P. 1990. Micronutrients Content in the Soils of Lanao del Sur. (GT: MASE), 86pp.

Spectrophotometric Methods of analysis by Atomic Absorption and UV-Visible were used in establishing the baseline data of the micronutrients B Fe, Cu, Zn, Co, and Mo content in both the topsoil and subsoil levels of the seven (7) different soil types in Lanao del Sur.

All of the seven soil types were acidic, with Ramain clay loam soil type found to be very acidic (pH 4.97 – 5.10) and Malabang silt loam soil type to be slightly acidic (pH 5.83 – 6.06).

The total micronutrient contents in the topsoil and subsoil levels in Lanao del Sur were found to have the following ranges: 51,000 – 83,500 ppm, Fe; 535 – 985, Mn; and 35 – 65 ppm, Cu. The available micronutrients were found to have the following range: 7.60 – 66.5 ppm, Co; 4.7 – 48.5 ppm, Mn; 0.5 – 10 ppm, Fe; 0.2 – 7.7 ppm, Cu; 0.750 – 6.69 ppm, Mo; 0.21 – 2.40 ppm, Zn; and 0.37 – 1.65 ppm, B.

Each soil type exhibit varying degrees of the micronutrient content. However, Sandy loam and Ramain clay loam soil types generally exhibited low and high micronutrient content respectively for all of the elements studied.

015

PACHO, Susan G. 1988. The Performance of MSU-IIT First Year High School Students in a Teacher-Made Test on Selected Biologically Significant Chemistry Concepts in Science-I. (GT: MASE), 58pp.

The study determined the performance of MSU-IIT first year high school student in a teacher-made test on selected biologically significant Chemistry concepts in Science 1 during the school year 1987-1988. It also tried to find out the relationships of student performance to different factor such as ability grouping in different sections, Grade VI elementary science final grade, first periodical grades in Integrated Science 1, sex and elementary school graduated.

There were 103 students chosen as subjects of the study randomly selected from 321 total first year population. The instrument used was the teacher-made test constructed by the researcher herself and validated by the other Chemistry and Integrated Science 1 teachers of the Science Department of the Developmental High School of MSU-Iligan Institute of Technology. It consisted of 25 multiple-choice items developed in the knowledge and comprehension levels of learning.

The Kuder-Richardson Formula #20 reliability coefficient for teacher-made test was .50. The mean score of the respondents was 3.74 indicating homogeneity of the grouping. The one-way analysis of variance of students' performance according to their grouping into sections was 4.78 significant at α= .05.

The computed r at 0.13 was a significantly low correlation between students' performance in the teacher-made test and their DHS entrance test score.

There were substantial correlations between students' performance in teacher-made test and their Grade VI elementary science final grade, as well as their first periodical grades in Integrated Science I. Their values were 0.68 and 0.57 respectively.

There was no significant difference between students' performance in the teacher-made test and sex as well as the elementary school where the students graduated both insignificant at 0.5 levels.

016
TABARES, Perla C. 1986. Inquiry Teaching with Filmstrips and Student Performance in Secondary Biology. (GT: MASE), 139pp.

This study attempted to determine the relationship between the type of inquiry teaching used and student's performance in secondary biology. It also tried to find out whether there is a significant difference on the performance of biology students or none if inquiry discussion is done with the use of filmstrips and or if it is done without filmstrips.

The pretest-posttest experimental design was used in this study. The second year section one biology students of MSU-Iligan Institute of Technology were used as subjects. They were grouped at random into two – group I and group II. Group I was taught with the aid of filmstrips while Group II without filmstrips. Both classes were handled by the researcher for the duration of the experiment. The instruments used in this study were the achievement test and Flanders' Interaction Analysis.

In the statistical analysis of the data gathered the chi-square test was used to find the relation between the type on inquiry discussion used and the verbal behavior of students. For the achievement test, the t-test for two independent samples was used.

Results of this study showed that the verbal behavior of the students in the two groups exceeded from that of the teacher's in all the five concepts. However, such difference was not significant.

In like manner, the achievement tests of the two groups did not have a significant difference as shown on the t-test results.

Based on the findings of this study, the following recommendations were made:

1. It is recommended that pre-service and in-service training should stress inquiry discussion approach in teaching biological science.
2. There is a need for the administrators to reassess the curriculum.
3. Further researcher on the teaching strategies in the classroom and in the cognitive level of development of students should be conducted to ensure improved teaching-learning process.

It is therefore, necessary that inquiry discussion be adapted in biology science teaching both in the classroom and in the laboratory. This study, however, revealed that there was no significant difference in student performance using inquiry discussion with or without the use of filmstrips. Results further indicated that there was no significant difference between the achievement test taken by Group I who were taught with the aid of filmstrips, and Group II who were taught without filmstrips.

017

TARRANZA, Victoria A. 1993. A Laboratory Activity Designed to Demonstrate the Effects of Sulfur Dioxide on the Early Stage of Development of Corn Seeds (*zea mays l.*) *In vitro.* (GT: MASE), 74pp.

Primarily, this work designed a laboratory activity to demonstrate the effects of sulfur dioxide (SO_2) on the early stage of development of corn seeds. The trial design was tested to second year high school students for suitability. Evaluation by the students who performed the activity showed that the activity was suited to their level of comprehension and relevant to their academic and social life.

Secondarily, the work established the effects SO_2 on the number of seeds that germinated out of thirty, number of leaves that sprung-up, length of shoot, number of roots per seed, total length of root per seed and the presence of chlorosis in the leaves. The conduct of the final design and the statistical testing of results showed that SO_2 reduced the chances of concentration of SO_2, the lesser the chances become. Moreover, a germinated corn seed exposed to SO_2 had a slowed growth process and thus bearing fewer leaves, shorter shoots and fewer and shorter roots.

Master of Arts in Teaching (MAT)

001

AMODIA, Justo Jr. C. 2000. An Evaluation of Classroom Interaction of Selected Grade V Science Classes in Lanao del Norte and Iligan City Through Outside- Observer Technique. (GT: MAT), 56pp.

Using Merrill's outside-observer technique classroom verbal interaction among four selected Grade V science classes in Iligan City and Lanao del Norte was conducted. Pupils' responses to teachers' questions were classified based on codes suggested by Merrill.

Findings show that although there are a limited number of pupils who can respond in a 40-minute period, performance assessment of verbal interaction is high in ICCHA, ICECS, and TWECS SPED classes and quite low in TWECS Non SPED class. Evaluation of pupil involvement in classroom interaction shows the responses are mostly good with ICECS and TWECS SPED classes having few very good responses.

Classifying the responses to determine the level of learning per Bloom's taxonomy, it was found out that responses in all classes were mostly of the lowest level of cognitive domain particularly knowledge of specific facts and terminology.

002
APAT, Marilou C. 1999. The Mathematical Readiness of Incoming Freshmen High School Students of Learning Resource Center-Lala National High School 1996-1997. (GT: MAT), 71pp.

The study evaluated the mathematical readiness of the incoming freshmen high school students in Learning Resource Center-Lala national High School (LRC-LNHS), school year 1996-1997.

Descriptive method was used. There were 43 students who were involved in the study. The instrument used in gathering data was the teacher made mathematics readiness test. The students' scores in mathematics readiness test were compared to their scores in Learning Resource Center (LRC) entrance test and final grades in Elementary Mathematics VI. The performance of boys and girls in the mathematics readiness test was determined by the mean and percentage of their scores. The Pearson's Product Moment Correlation was used to describe the relationship between the students' scores in mathematics readiness test, LRC entrance test and final grades in Elementary Mathematics VI.

It is apparent, that passers of LRC entrance test are moderately ready for high school mathematics under the science curriculum, particularly in arithmetic, geometry and statistics. Slight inadequacy in consumer mathematics and algebra were manifested. The study also reveals that there is a relationship between the LRC entrance test and the mathematics readiness test. Also, relationship between the LRC and elementary mathematics VI grades was revealed. The study further revealed that girls perform better than boys.

003
BEGONTES, Annabelle S. 1999. A Quantitative Analysis of Grade VI Science Textbooks Used in Public and Private Schools in Lanao del Norte and Nearby Cities. (GT: MAT), 56pp.

Content of four Philippine published Grade VI Science textbooks used in public and private schools in Lanao del Norte and nearby cities were quantitatively analyzed. The study evaluates which textbook(s) is/are suitable for an inquiry/discovery-oriented lesson by determining the index of student involvement.

For a textbook to be inquiry/discover-oriented Romey's Quantitative Technique says it must have an index of student involvement of <u>1.0</u> which represents material with an equal number of investigative to non-investigative statements.

Results show that in analysis, the student involvement indices are very low with only 0.27 in textbook used by the DECS, 0.18 in Fallera, 0.83 in Lozano, et.al. and 0.20 in Ballon and Cantalejo. Values for student involvement show that all the textbooks obtained below 0.4, which means there is less emphasis on inquiry process. All the books studied therefore are non-investigative in nature and only give out information and do not encourage thinking, analysis, and formulation of conclusions.

004
CASTILLON, Lydia P. 1998. An Appraisal of the Teaching Competencies of the Secondary School Mathematics 1 Teachers in the Division of Lanao del Norte SY 1997-1998. (GT: MAT), 89pp.

The study consisted of 42 Mathematics I teachers in both public and private secondary in the Division of Lanao del Norte during the school year 1997-1998. Two (2) instruments were established by the researcher namely, competency test and teacher's profile questionnaire, which served as the major tool in collecting the desired data. These were personally administered and distributed by the researcher namely, competency test and teacher's profile questionnaire, which served as the major tool in collecting the desired data. These were personally administered and distributed by the researcher at Kapatagan National High School, Kapatagan del Norte on July 22, 1997, during the Division Mathematics training. The data gathered were analyzed and interpreted using frequencies, means, percentages, regression analysis, Chi-square test, T-test, and one-way ANOVA.

Results of the study showed that, majority of the teachers were female and Bachelor of Science in Education (BSE) graduate major in Mathematics. The competency level of Math I teachers was found to be competent. However, they need to upgrade on areas that involved fractions, decimals and divisibility, and in solving mathematical sentences and problems. Variables such as mathematics units earned, age, and teaching experience were found to be the best predictors of teachers' competence. Findings also revealed that experience teachers performed significantly better than inexperienced teachers. Also, the performance of graduates of a state college, a public school and a private college did not vary.

005
FERNANDEZ, Felicidad S. 1999. Effects of Students Performance in Mathematics: An Assessment of the Lanao del Norte Teachers' In-Service Education Program (LNTIEP) (1996-1997). (GT: MAT), 79pp.

Descriptive-normative survey was used to study twelve public schools secondary mathematics teachers, of which 6 were LNTIEP grantees and 6 were not. There were 480 student-respondents. Questionnaire, personal interview, and teacher-made achievement test in mathematics were used.

Results indicated that the mathematics teachers in Lanao del Norte were academically prepared to teach mathematics. The trained teachers-participants strongly agreed that the LNTIEP was a great help in improving their competencies. The program provided them adequate and functional knowledge of the content of mathematics. As signified by their mean scores and the two-sample test statistics, the students under the trained teachers performed better than the students under the untrained teachers.

The study also showed an increase in the number of passers in the MSU Scholarship and Admission Examination among the students of the trained teachers. There were greater distinctive awards received by students under trained teachers in several Mathematics Competitions both in the division and regional levels.

006

GARCIA, Ermelinda L. 2000. Problem Solving Skills of Fourth Year High School Students of Kapatagan National High School, SY 1999- 2000: An Investigation Study. (GT: MAT), 63pp.

The performance of fourth year high school students of Kapatagan National High School in problem solving and the relation of problem solving skills to reading comprehension skills and translation skills ascertained by this investigation.

One hundred three fourth year high school students were randomly selected as respondents of this study. These respondents were asked to answer the questionnaire-checklist on language exposure in English, reading a passage and a cloze-test to measure the comprehension skills of the respondents in English and the same group of students were asked to answer the 15-item structured problem solving test in translating mathematical sentences to symbol and 5 unstructured problem solving test.

It was found out that the respondents performed <u>poorly</u> in the unstructured problem-solving test, performed satisfactorily in the comprehension test and also in the translation test.

It was also found out that there is a significant relation between reading comprehension skills and problem solving skills. The ability to translate English phrases or sentences to symbols is significantly correlated with problem solving skills. There is also a significant relation between reading comprehension skills and mathematical translation skills.

007

HAMBRE, Vilma D. 2000. Effects of Practical Works in Teaching Triangle Similarity on Students Behavior, Motivation and Performance. (GT: MAT), 111pp.

This is a comparative study on the effects of Practical Works in teaching Triangle Similarity on student behavior, motivation and performance. As a quasi-experimental study it used experimental and control groups of Mathematics III students in Kauswagan National High School, Lanao del Norte.

One hundred randomly selected third year students were given the International Psychological Association Test (IPAT) culture fair non-verbal test to identify the paring of the two groups. Results were interpreted by a psychometrician. After pairing was done and 70 students (35 pairs) were selected, a pretest was given and the experiment conducted. Posttest was administered after the treatment.

The first group was exposed to practical work strategy while the second group was exposed to the traditional method of teaching.

Data on behavior on behavior patterns in terms of mathematics attitudes and study habits; motivation levels in terms of intrinsic valuing, test anxiety, and self-efficacy; and the results of the achievement test were collated and analyzed.

Students exposed to practical work showed a significant positive change in their behavior patterns in terms of mathematics attitudes and study habits. Practical work strategy was found to be effective based on the students' performance in the achievement test. However, there was no significant change in the three components of motivation level in the practical work group.

008

LAGURA, Letecia H. 1998. The Relationship Between Teachers' Competence and Students' Achievement in Mathematics IV in Public Secondary Schools in Lanao del Norte Division SY 1996-1997. (GT: MAT), 80pp.

The study was conducted to find out the relationship between teachers' competence and students' achievement in Mathematics IV in public secondary schools in the division of Lanao del Norte, school year 1996-1997.

Descriptive method was used. A total of 10 teacher-respondents and 212 student-respondents from 9 public secondary schools in the division were involved in the study.

All teachers have met the minimum requirement of mathematics units to teach mathematics; have attended at least two mathematics trainings and have at least three years of teaching experience; yet not all of them are competent to teach Mathematics IV. The students' achievement in Mathematics' IV in general was low for it was only within the moderately satisfactory level. Teachers' competence and students' achievement are dependent from each other and there is a positive relationship between the two variables.

It is transparent, therefore, that the more proficient the teacher in teaching Mathematics IV, the higher will be the achievement of students in the class.

009

MONTEZA, Rene B. 1999. The Effects of Cooperative Group Work on the Mathematics Achievement and Attitude of Fourth Year Students of STS-TESDA, Lanao del Norte, SY 1997-1998. (GT: MAT), 120pp.

The effects of cooperative group work on students' achievement and attitude towards mathematics through a pretest-posttest control group-experimental design with qualitative analysis were ascertained by this study.

Thirty-seven pairs of students in two fourth year classes, matched according to sex, Math I, II, and III was exposed to cooperative group work while the other to individualized teaching.

It was found out that there was significant difference between pretest and posttest achievement scores of students in the cooperative group and individualized. Moreover, no significant difference was indicated in the change in attitude between the two groups.

An attempt to a simple phenomenographic analysis revealed that cooperative group work holds a promise in the development of positive attitude towards mathematics.

010

PACLIPAN, Maxima O. 2001. An Assessment of the NSAT Mathematics Performance of the Fourth Year High School Students in the Division of Lanao del Norte SY 1999-2000. (GT: MAT), 62pp.

The study was conducted to find out the mathematical performance in the NSAT of fourth year high school students in the division of Lanao del Norte during the school year 1999-2000.

The descriptive method was used in this study. A total of 15 teacher-respondents and 1726 student-respondents from public and private schools of the two districts of Lanao del Norte were the subjects of the study.

Results of the study showed that, majority of the parents of the fourth year students in the division of Lanao del Norte have not acquired higher education. They are only up to the elementary level with an occupation of either a fishermen or farmer for the fathers and housewife or vendor for the mothers. Most of the math 4 teachers are new in the service and have earned MA/MAT units in Math.

Findings also revealed that the students' performance in Math 4 was satisfactory while their mathematics performance in NSAT was very low. There was no significant difference in the students' performance in Math 4 by type of school and by district.

On the other hand there was a significant difference in the mathematics performance in NSAT by district but not by type of school.

011

SUMIGUIT, Lorelie O. 2000. Product Development and Evaluation of Tropical Candy. (GT: MAT), 105pp.

This study primarily focused on the production of tropical candy as health-food confectioners. The tropical candy was produced from three tropical fruits namely: papaya (Carica papaya) locally known as " kapayas", sweet potato (Ipomoea batatas) otherwise known as "camote", and soursop (Annona muricata L.) locally known as "guayabano".

A standard procedure for tropical candy production was established. Four (4) variataions of flavors of the tropical candy were developed based on paste candy making. These included (a) plain, (b) tea, (c) chocolate, and (d) coffee.

The acceptability of the candy was determined through sensory evaluation by thirty (30) randomly selected respondents composed of high school, college students, and adults whose individual responses were gathered through a scorecard. Results indicated the evaluators extremely preferred the product and that among the four samples, the plain was the most acceptable.

Chemical and microbiological analyses of the product showed that the tropical candy contain calcium, vit. C, ash and iron; and that has a shelf life of 49 days.

012
TABARANZA, Amy Lyn Q. 1999. Product Developmental and Evaluation of Breadfruit Chips. (GT: MAT), 83pp.

This study primarily focused on the production of breadfruit chips as an alternative source of snack and good nutrition. These breadfruit chips was produced from the fruit of a tropical tree Breadfruit *(Artucarpus altilis)*, locally known as "kolo". Specifically, it aimed at (a) establishing a standard procedure for breadfruit chips production, (b) its acceptability in terms of color, flavor, texture, over-all desirability, and over-all acceptability, (c) the shelf-life of the product, and (d) its nutritive contents.

The procedure of processing breadfruit chips was patterned after the basic recipe for banana chips making. In preparation of the taste-test evaluation, seven variations were developed and set-up for the test. These included (a) plain, (b) barbecue, (c) cheese, (d) butter, (e) vanilla, (f) lemon, (g) garlic flavors.

To determine the acceptability of these chips, a taste-test evaluation was conducted. Forty randomly selected respondents composed of grade school, high school, and college students and some adults constituted the panel of taster wherein their individual responses were gathered through a score sheet. Results indicated that the evaluators extremely preferred the product and that among the seven samples, the plain, cheese and vanilla flavored breadfruit chips were the most acceptable ones.

The breadfruit chips were also tested for chemical and microbiological analysis for the objective of determining its shelf life and nutritive contents, respectively. Based on these tests, it was learned that breadfruit chips' consumability covered a span of 2 ½ months or 78 days and that concentration of calcium, iron and protein were present in the product.

013

VIERNES, Rico D. 2000. Proposed Module In Number Theory. (GT: MAT), 116pp.

This study aimed to design a supplementary learning material in the field of Number Theory. This self-learning kit is composed of 4 modules concerning four major topics in Number Theory. Module 1: Mathematical Induction, Module 2: Divisibility Rule and Concepts, Module 3: Primes, GCF and LCM and Module 4: Congruence.

The module was tried out to three third year sections of the Integrated Developmental School of MSU-Iligan Institute of Technology, School Year 1999- 2000. These sections include: III- Kappa and III-1 Lambda from the IDS Science Curriculum, and III-1 from IDS Revised Curriculum.

The result of the study revealed that the module was effective and learning occurred among the respondents as evidenced by an increase of more than 40% of the mean score difference between the pre-test and post-test. The 40% criterion was set as indicator that the learning occurred among the respondents.

014

YURONG, Jaime Y. 2001. Science Teaching Capability of Grade III to Grade VI Teachers in Magsaysay District, Lanao del Norte. (GT: MAT), 52pp.

The very low achievement in science in national and international examination is a reflection of the state of quality of science teaching in the country. The researcher tried to look into factors, which may affect the science teaching capability of teachers.

Thirty (30) teacher respondents of Magsaysay district were studied with respect to their science courses and units taken in college, age, teaching experience, teachers' load and attitude toward science. The capability of teacher-respondent was measured by giving them an inventory test, items covered were lessons from Biology, Chemistry, Earth Science, General Science and Physics that are taken up from Grade III to VI.

The attitudes of teacher toward science were established by giving them an attitude inventory test.

Results of the study showed that the elementary school teachers in the district of Magsaysay are not quite competent hence there must be some interventions to be applied to improve them. Though majority of the teachers have the appropriate attitude toward science it has been observed that there are 2 to 4 deviants, hence should not be assigned to teach science for they have a negative influence on the pupils.

In correlation coefficient of the factors with teaching capability, only age is found to be positively correlated to teaching capability while others are not.

Master of Science Education (MSciEd)

Major in Biology

001

GRANIDO, Balve G. 2005. Reference Guide for Plant Identification Around the School Campus of Misamis Oriental General Comprehensive High School. (GT: MSciEd), 100pp.

This study provides baseline information on plant resources within Misamis Oriental General comprehensive High School (MOGCHS) campus. The methods used include plant inventory by blocks, taking of plant pictures, plant identification, plant mapping, placing of scientific name tags, plant collection, designing students' activities, and examining plant tissues and taking of photomicrographs.

The floristic survey covered the two-hectare land area of MOGCHS Campus. A total of 198 species belonging to 122 genera and 64 families had been identified. Botanical collection of plants includes 158 species of plants (herbs and shrubs including the trees found in the assigned botanical area). There were 198 plants with photodocumentation and their classifications from Kingdom to species and with morphological descriptions. There were 119 plants observed using the Photomicrograph System (PMS). Students' activities were designed so as to use the "Reference Guide". This study also successfully provided scientific nametags of plants reference guide, herbarium collection must be considered for future actions for confirmation of plant identification and classification made. Identification of plants was based only on some available reference guides. Whatever mistakes committed by the researcher in the classification is do acknowledge.

002

PABOLOLOT, Alma N. 2004. Distribution, Occurrence and Relative Abundance of Larval Mosquitoes and Incidence of Mosquito-Borne Diseases in Cagayan de Oro City. (GT: MSciEd), 104pp.

This research is undertaken primarily to study the distribution, occurrence and relative abundance of larval mosquitoes and incidence of mosquito-borne diseases in the representative barangays of Cagayan de Oro City.

The data revealed that the percentage abundance of larval mosquitoes is higher in areas along the horizontal transect line including mostly coastal and urban barangays in Cagayan de Oro City. *Aedes* mosquitoes are the most abundant among the species present. *Aedes* **sp.** Chooses man-made niches; *Culex* **sp.** prefers stagnant canals and ditches; *Anopheles* **sp.** chooses niches that are shaded and rich with vegetation.

There is a high correlation (r = 0.68) and a significant relationship between distribution and occurrence of mosquito larvae to the incidence of mosquito-borne diseases particularly dengue in Cagayan de Oro City.

Results confirmed that the people in Cagayan de Oro City lack the necessary information of the biology of mosquitoes. However, this problem can be remedied by educating the people through information campaign, mass media and by integration to classroom lessons. It is recommended that a year-round survey must be conducted regularly to identify the local species of mosquitoes as well as its population in specific breeding grounds to prevent the widespread of dengue fever.

It is also recommended that a follow-up should be conducted on the life cycle of mosquitoes in areas with high incidence of mosquito-borne diseases for possible planning on how to eradicate mosquitoes at the earliest time.

Major in Chemistry

001
DEL ROSARIO, Rodolfo S. 2006. Development of the Laboratory Activity Based on Nitrate Determination of Drinking Water. (GT: MSciEd), 93pp.

Drinking water from 18 wells of Lala, Lanao del Norte, Philippines had been investigated for possible nitrate pollution. The study employed standard water sampling techniques and followed the standard method of nitrates analysis. Determination of the nitrate content was done by measuring the absorbances of resulting solutions in a UV-VIS spectrophotometer at 412nm. Results showed that the concentrations of nitrates are all below 10 ppm N (the maximum allowable limit set by EPA). It was further shown that the amount of nitrates was not related to the depth of the wells and to the distance of the wells from the farm.

A laboratory activity related to the analysis of nitrates was developed, validated, tested and found out to be effective in enhancing the learning of the high school students about the presence of nitrates in water and colligative properties of the solution. The laboratory activity included an innovative set-up that was designed to test the presence of nitrates in drinking water and determine boiling point elevation of water solutions.

002
FERNAN, Maria Cindy S. 2008. Development and Evaluation of a WebQuest Activity in Nuclear Chemistry. (GT: MSciEd) 115pp.

The objective of this study was to design, develop, and validate a WebQuest activity on Nuclear Chemistry as a learning tool in teaching radiation and radioactivity in high school Chemistry. A qualitative-quantitative type of study using a one-group pretest-posttest was employed to determine the students' performance in the pretest and posttest, and to know their attitude towards Chemistry before and after the WebQuest activity.

The developed WebQuest activity was evaluated by WebQuest experts using a rubric. The results of the evaluation showed that the designed activity was an effective and valid instructional material in teaching radiation and radioactivity.

The following are the important findings of the study:

1. The students' scores in the posttest were significantly higher than those in the pretest.

2. The students developed a positive attitude towards Chemistry after they did the WebQuest activity.

3. Students' perception towards the WebQuest was found to be favorable based on their responses in the self-assessment tool.

4. The groups' outputs were rated excellent and very satisfactory in both brochure and multimedia presentation.

Since the findings also revealed that the students developed skills in searching the web and in communication, appreciated the collaborative effort of the group and other members of the community, and enhanced their creativity, resourcefulness, and determination, it is recommended that the WebQuest activity be used in teaching Chemistry.

003
JARANTILLA, Ellen L. 2008. Development of Laboratory Activity Manual for the Do-It-Yourself (DIY) Chemistry Equipment. (GT: MSciEd), 196pp.

The main objective of the study was to develop a Chemistry Laboratory Activity Manual for the Do-It-Yourself (DIY) Chemistry equipment to be used in the Chemistry class of high school students. The resulting manual was assessed by the selected pre-service and in-service Chemistry teachers.

This study employed qualitative and quantitative research design. A survey was conducted in order to know how the DIY equipment items were utilized in the classroom. Rubrics were used to assess the workability of the different DIY equipment and the validity of the developed Laboratory Activity Manual.

Results revealed that in public schools, the DIY equipment items were used as exhibits and for demonstration only in public schools and not in laboratory activities because there were no laboratory activities designed for the different equipment items.

The pre-service General Science teachers rated the eleven (11) DIY Chemistry equipment as *very workable.* The pre-service and in-service Chemistry teachers gave a rating of *very good* to the *Student Worksheet* and to the *Teacher's Guide* of the Laboratory Activity Manual. Using t-test, it was found out that there was no significant difference in

the ratings of the pre-service and in-service Chemistry teachers on the *Teacher's Guide* of the manual. However, t-test showed that there was a significant difference on the rating of the pre-service and in-service teachers on the S*tudent Worksheet* of the Laboratory Activity Manual.

004

JONDONERO, Clowe D. 2004. Bio-Activity-Guided Isolation and Partial Characterization of an Anti-Inflammatory and Antibacterial Principles from *Musa Paradisiaca*. (GT: MSciEd), 129pp.

This study deals with the bioactivity-guided isolation and partial characterization of anti-inflammatory and antibacterial principles from *M. paradisiaca*.

The phytochemical screening (using the outlined procedure of Cantoria) shows the presence of leucoanthocyanins, flavonoids, saponins and tannins.

The primary bioassay procedure which is the Brine Shrimp Test shows that among the four extracts produced from serial extraction, methanolic extract has the highest mortality raging from 63.33% - 90.0% at concentrations 10 – 1000 ppm.

In the anti-inflammatory activity determined, the methanolic extract exhibited superior anti-inflammatory activity over the control both in the lower and higher concentrations in the casein solution. While in the albumin solution, methanolic extract only shows higher anti-inflammatory activity over the control at higher concentration.

Antimicrobial activity of the extract exhibits significant susceptibility to the following bacteria: *S. aureus, B. subtilis, P. bulgaris,* and *E. coli.* Data reveal that the extract exhibits greater bioactivity as the extract becomes purer.

Spectroscopic analyses reveal that the bioactive fraction has alcohol functionality with bands at regions $3200 – 3600$ cm^{-1} and 1050 cm^{-1}, for presence of aliphatic O-H stretch and aliphatic C-O stretch, with aromatic C-H stretch at 1050 cm^{-1} respectively. The UV spectrum reveals a peak at λ_{max} 290nm, which denotes that the structure of the bioactive fraction may consist of several conjugated double bonds. With the IR and UV spectra, it can be hypothetically believed that the bioactive fraction may be a conjugated alcohol with benzene ring.

005

MAYORMITA, Zyhrine P. 2007. Development of a Motivational Scale to Learn Chemistry. (GT: MSciEd), 131pp.

A motivational scale to learn Chemistry for third year high school students is developed and validated. A pool of one hundred seventy-five statements basically collected from interviews with two hundred five combined student-teacher interviewees was tried-out to eight hundred twenty-five third year students from different secondary schools in Iligan City and the neighboring areas. The students' responses were subjected to Pearson correlation analysis and factor analysis using the principal components method. Twenty-five final statements were confirmed as significant factors of the three motivational components on the scale. Intrinsic value component has eleven statements; extrinsic value

component has nine statements and self-efficacy with five statements.

The "panel of experts" technique was employed to reinforce the scale's construct validity. Concurrent validity was established when the developed scale was administered to an intact group of thirty-two third year students. The scale positively discriminates highly motivated and lowly motivated students on the basis of their chemistry grades. This was also ascertained by the teacher and classmate's evaluation of the subjects' motivation in chemistry task-oriented activities. The reliability coefficient of the developed scale (α = .9087) indicates that the scale is highly reliable. Internal consistency is strengthened further by the evaluation of the teacher and the students themselves on the respondents' motivational classification.

006
MICABALO, Sotico Jr. P. 2005. Supercritical Carbon Dioxide Extraction of Essential Oil from *Eucalyptus Globulus* Linn. Leaves. (GT: MSciEd), 85pp.

The essential oil from *Eucalyptus globulus* leaves was extracted using supercritical carbon dioxide at a temperature of 35°C and a pressure of 100 atmospheres.

The color of the oil obtained was pale yellow. Gas chromatographic analyses revealed that the extracted oil basically contains the same component with the standard oil, the cineole. The percent yield using supercritical carbon dioxide is 4.50%. A confirmatory test was performed utilizing the refractive index and was found to be comparable to the standard oil's refractive index of 1.45642.

The result was presented to the chemical engineering students during a symposium. Their interests were directed to the machine operations and its impact to industries. On the other occasion the result was read to the high school students of La Salle Academy whose interests were focused in the nature of the tree.

007
NAVIDAD, Suzeth V. 2001. Extraction of Essential Oil from *Pogostemon cablin* Benth (Patchouli) Leaves Using Supercritical Carbon Dioxide. (GT: MSciEd), 95pp.

The supercritical carbon dioxide extraction of patchouli oil from air-dried leaves of *Pogostemon cablin* Benth (Patchouli) was studied at varying temperatures of 35ºC and 40°C and pressures of 80, 100 and 120atm. The oil extracted at 40ºC and 100atm was of better quality based on color, refractive index, chromatographic data and the absence of waxy substances.

The oil yield from supercritical carbon dioxide extraction was 7.15% which is considerably higher than the yield from steam distillation which was between 1.3% and 1.8%.

The refractive index of the supercritical CO_2 extract ranged from 1.37042 to 1.38275 while that of the extract from the steam distillation process was 1.50840. The lower refractive index indicates that the supercritical CO_2 extract is more pure than the steam distillation extract.

Gas chromatograms of the extract from the two processes showed peaks in extracts from supercritical CO_2. More peaks in extract from steam distillation may indicate the presence of substances other than the normal components of the patchouli oil.

Dissemination of the information obtain from the experimentation stage was done through classroom lectures in chemistry classes, Regional Chemistry Congress and Research and Development Lecture Series in MSU-IIT, Iligan City.

008
QUINDO, Annallee D. 2001. The Science Literacy of Nonscience Teachers Assessed Through Their Evaluation of Scientific News Briefs. (GT: MSciEd), 76pp.

This study assessed the science literacy of nonscience teachers through their critical evaluation of scientific news briefs (education, medicine, environmental issues, technology, and paranormal belief). Their evaluation were based on the following scientific evidences: social context, agent/theory, data statistics, related to research, relevance, other, ambiguous/relevant and off-task. Teachers were treated with the three literacy evaluation criteria first the ratings of the plausibility of conclusion, second the request for additional information, and third the specific request from the researcher.

Teachers were good evaluator of education and environmental news briefs but, they are not interested to know more in any of the news briefs presented and it is even ambiguous to determine their interest in asking for specific question from the researcher.

It was also found out that regardless of the teachers' profile, they were classified literate in the first evaluation criteria, illiterate in the second evaluation criteria (especially those strong paranormal believer, 100%). Likewise, except for strong paranormal believer the respondents were classified as illiterate in the third evaluation criteria, especially the age bracket 19-24 (100%).

Among the teachers' personal profile, teachers' literacy is affected by age in the first evaluation criteria, science units earned in the second evaluation criteria, and gender and age in the third evaluation criteria.

Major in General Science

001
CODILLA, Lina T. 2006. A Laboratory-Designed Activity in Ecology to Demonstrate

the **Allelopathic Property of** *chromolaena odorata* **l. (hagonoy) Leaf Extracts. (GT: MSciEd), 121pp.**

This study primarily designed a laboratory activity in ecology to demonstrate the allelopathic property of *Chromolaena odorata* L. (hagonoy) leaf extracts. Different concentrations of aqueous, hexane and ethyl acetate extracts of *C. odorata* L. leaves were each applied to two common crops, namely, mungbean (*Vigna radiata* L.) and corn (*Zea mays* L.) representing the broad and narrow-leaf crops, respectively; and to two common weeds, namely; kulitis (*Amarathus spinosus* L.*)* and ubod-ubod (*Fimbtistylis miliacea* L.*)* representing also the broad and narrow-leaf weeds, respectively.

The results of the experiment were used as the basis in the development of instructional material in ecology. The designed laboratory activity underwent face validation by five (5) experts in various fields of specialization, namely, Biological Sciences, Chemistry and Science Education. The readability of the designed laboratory activity was determined using a Cloze Test.

A quantitative experimental research design, utilizing a 2 x 2 x 11 x 2 factorial analysis is used in the determination of the effect of extracts to crops and weeds and Pre-test – Post-test quasi-experimental design is used in the determination of the effectiveness of the designed laboratory activity.

The results of this study showed that *C. odorata* L. leaf extracts possess allelopathic property. Growth of all types of plants, crops or weeds, broad and narrow-leaf, were significantly affected by the extracts of different concentrations. This indicates that *C. odorata* L. can be a potential source of a broad spectrum class of organic herbicide. The study also showed that treatment by leaf application is more effective than soil application. The laboratory activity developed from the results of this study was found to be a very effective tool in supplementing learning about allelopathy in ecology.

002
DAYRIT, Marietes B. 2007. Genotoxic Effect of Antibiotics Employing Allium Test: A Basis for Laboratory Activity Development. (GT: MSciEd), 82pp.

The objective of this research was to design and develop a laboratory experiment where High School students can learn about chromosome, mitosis and genotoxic tests.

The study undergone two major phases: (1) Experimental phase and (2) Activity Development phase. Antibiotic was used as test material. Allium Test was utilized to determine genotoxicity of antibiotics. Three types of antibiotics were used in the experiment, namely, Cephalosporin, represented by commercial antibiotic Cefalexin, Tetracycline represented by generic Tetracycline and Macrolide represented by Erythromycin. These antibiotics were diluted and reconstituted to obtain different concentrations from 100 mg/5mL, 200 mg/5mL, 300 mg/5mL, 400 mg/5mL and 500 mg/5mL. The 0 mg/5mL served as the control concentration for each type of antibiotic. Analyses done were macroscopic and macroscopic. Macroscopic analysis includes daily growth rate of root and macroscopic abnormality of the roots, while microscopic analysis

includes microscopic index and chromosomal aberrations. Significant results from the experiment were used as basis by which the laboratory activity for students was designed.

Results revealed that from first to third day, the daily growth rate of the roots immersed in 0mg/5mL (control) was significantly higher over the roots immersed in 100 to 500 mg/5mL. The macroscopic abnormalities observed include stunted growth and falling off of the treated roots. Roots in 0mg/5mL (control) did not show these abnormalities. In the microscopic analysis, cefalexin was found to have significant effect on the roots by reducing the number of mitotic cells. Roots immersed on tetracycline had significantly greater number of mitotic cells. However, the number of mitotic cells of roots immersed in concentrations from 0 mg/5mL to 500 mg/5mL was about the same. Interaction effects between types of antibiotics and levels of concentration however showed that mitotic cells in Cefalexin dropped off as the concentration was increased.

Roots immersed in Tetracycline had consistently higher number of mitotic cells and all the more as the concentration reached 300 mg/5mL. However, results also showed that antibiotics, regardless of type and concentration, had no significant effect on the chromosomes of the onion roots.

The laboratory activity designed was based on these findings. Experts were consulted in the designing the experiments as well. The designed activity was also subjected to Cloze test. The laboratory activity was administered to high school students and was found to significantly increase their learning about chromosomes, mitosis and genotoxic test.

003
EBILLO, Everlita B. 2006. The Development of Laboratory Activity on Blood Coagulation Time with Crude Tannin Extracts from *Rhizophora mucronata* and *Moringa oleifera*. (GT: MSciEd), 81pp.

The coagulation time of blood samples treated with crude tannin extracts from *Rhizophora mucronata*, commonly known as mangrove, and *Moringa oleifera*, commonly known as malunggay, was compared with the normal blood coagulation time. The tannin extracts were obtained from *Rhizophora mucronata* and *Moringa oleifera* using ethanol and acetone as solvents.

Statistical findings (2 tailed, t-test) showed that there is a significant difference between the coagulation time of mangrove extract treated blood samples and the untreated samples but no significant difference with malunggay extract treated blood samples. Results showed that the mangrove extract treated blood samples coagulate earlier than the malunggay extract treated and the solvent treated blood samples. This indicates that mangrove extract is a good enhancer of blood agglutination; hence could be a potential source of compound for topical antihemorrhagic treatments.

A laboratory activity entitled "Blood Typing and Blood Agglutination Effect" was designed to demonstrate the effect of crude tannin extracts of mangrove and malunggay on blood coagulation time. The output was validated by experts and tested to college BSE Biology students. The conducted cloze readability tests show that with 80% average the activity was readable and comprehensible for the students. Statistical analysis of the pre-test and post test that was administered to evaluate the general effectiveness of the activity show that there is a significant difference between the pre-test and the post test scores. The pre-test scores were lower than the post test scores. This suggests improvement in the knowledge and comprehension of the students after doing the said activity.

004

FEBRO, Rhea D. 2008. Development of an E-Learning Course for Science Secondary School Teachers. (GT: MSciEd), 169pp.

This study developed an e-learning course on technology integration in Science teaching. The survey conducted to eleven Integrated Science teachers in Iligan City helped determine its appropriate content and delivery. The course is designed to allow participants to work in stages, namely: introduction of problem-based learning, knowing the learners, identifying learning standards, developing problem situation, mapping interdisciplinary units, formulation of learning objectives and evidence of attainment, organizing the learning environment and preparing assessment tools.

Results of the instructional design evaluation using the instrument of Moore and Kearsely (1996) showed that experts strongly agree that the online course followed the general design principles for web-based course instruction except for "completeness" and "repetition". Most expert evaluators observed using the instrument from Karaoulis and Pambortsis (2003) on usability, that the course meets the criteria on: quantity, quality and value of content; Online Distance Learning adaptation and integration; user interface; use of technologies; interactivity; provision for student support and communication channel; acquisition of knowledge; projects and learning by doing; and assessment according to the principles of ODL.

The course includes course guide, resource manual, and an interactive CD that directs participants to activities in the online classroom via the M.O.L.E.

005

MAGSAYO, Joy R. 2006. Gimaylan River Assessment as Ecological Learning Field Station. (GT: MSciEd), 133pp.

This study attempted to conduct an assessment of the River found in Gimaylan, Libertad Misamis Oriental as a field station in learning ecological concepts. The component of the river ecosystem being studied includes the physical parameters, which include width, and depth, velocity, flow and discharge, rock sizes and water clarity and the temperature of air, soil and water. On the other hand, chemical parameters include pH, salinity and dissolved oxygen level. Diversity index of plants, animals and freshwater organisms in the nearby environs were sampled utilizing 0.25 square meter quadrat. Random sampling technique was employed in the upper, middle and lower catchments of

the river.

Gimaylan river was divided into three sampling sites with Station 1 as the upper catchments situated in the uppermost portion, Station 2 is the middle catchments and Station 3 is the lower catchments situated near the opening of the sea. The river has a mean width of 6.7 meters and a depth of 0.45 meters, a velocity of 0.2045 meters/second with a total discharge of 1.048 meters ^{3}/ second. Air and soil temperature of the river is 24.24^0C and $25.92\ ^0$C, respectively. The water temperature of the river is $25.64\ ^0$C with a mean dissolved oxygen level of 5.52 ppm. The pH of the water is 7.84 and a salt content of 0.

Station 1 has the highest diversity of animals and freshwater organisms while Station 2 for plants identified during the sampling period. Station 3 has the least number of all the biotic organisms being considered in this study. This part of the river is the lowest portion with more households located in the area and this is also the part of the river with the highest water temperature that have contributed to fish loss. The river is in danger of pollution by domestic waste and by the activities of the people living near the area. Cutting of trees and throwing of garbage are some of the factors that have contributed to the pollution of the river.

The designed field guide has five activities that can be given to high school students in studying ecosystem in the subject Biology. Rock sampling can also be made for first year students in the subject Science I. Readability of the field guide falls on the independent reading level that can be given to students without the guidance of the teachers. It is further recommended for that the field guide should be validated to high school students. The area can be a possible site for fieldwork on the topics Living Things and their Interactions, Changes in the Environment and Ecosystem for high school students.

The developed brochure is designed to inform the local residents of Gimaylan on the importance of the river.

006
SABADUQUIA, Rudy Phel D. 2005. Phytochemical Screening and Microbial Assay of *Saccharum Spontaneum Linn.* **Extract and Its Utilization. (GT: MSciEd), 119pp.**

The study had three phases: the gathering of indigenous knowledge on the use of *Saccharum spontaneum* (*bogang*), the laboratory experimentation involving phytochemical screening and antibacterial and antifungal assays of bioactive compounds from *bogang*, and the product application education through information drive and laboratory activities for classroom use.

The study, which used qualitative and quantitative research designs, revealed the following: The respondents had sparingly used *Saccharum spontaneum* as herbal medicine. Phytochemical screening of the leaf and stem extracts revealed the presence of alkaloids, anthraquinones, polyphenolic compounds, flavonoids and saponins. Antifungal and antibacterial assays of the stem and leaf extracts at certain concentrations revealed significantly susceptibility toward the bacteria *Escherichia coli, Bacillus cereus,*

Staphylococcus aureus and *proteus vulgaris* and the fungi *Rhodotorula glutinis* and *aspergillus flavus*

A lecture seminar was conducted to disseminate the findings to the community. Laboratory activities were likewise designed based on the findings.

The following are recommended for future investigations: A similar study using leaves, stem and roots of other species of herbal plants; isolation and characterization of bioactive compounds; bioassays such as immunomodulatory, antineoplastic and anti-toxicity; animal assay using different extracts and use of more bacteria and fungi for bioassay.

007
TUBERA, Delia Caryl C. 2007. Phytochemical Screening, Antibacterial Assay of *Calonyction Muricatum* **Seeds Extract with Community Validation. (GT: MSciEd), 91pp.**

This study consisted of three phases: the ethnobotanical knowledge of the local people on the use of *Calonyction muricatum* (Cobracil) seeds through interview, the laboratory experimentation including the phytochemical screening, antibacterial assay of bioactive compounds from cobracil and the community validation.

The respondents utilized *Calonyction muricatum* as herbal medicine in treating ailments like; food poisoning, stomachache, nail pricked, and swollen wounds .The phytochemical screening of the seed extracts showed that the plant posseses several bioactive compounds. These are: tannins, tripenes, phenols, alkaloids, saponins and sterol glycosides specifically the 2- deoxy sugars.

The antibacterial assay of the crude extract, exhibits significant susceptibility towards *S. aureus, B. cereus, E.coli and P. vulgaris*. The data revealed that the crude extract of Calonyction *muricatum* has a greater antibacterial activity if diluted with some percentage of methanol (50% extract with 50% methanol and 25%extract with 75% methanol).

A lecture- seminar was conducted to disseminate the scientific findings in the laboratory experiment using the designed brochure. The information drive was found to be effective, since there was an increase of cobracil users after two months from the actual conduct of the seminar.

Major in Physics

001
CUAJOTOR, Mardeliez T. 2006. Learning Effectiveness of CAI in Teaching College Physics. (GT: MSciEd), 162pp.

With the continuing growth of technology and the increasing pressure for schools to raise test scores, teachers are being faced with the challenges of combining traditional teaching with technology to improve content achievement.

This study aims to ascertain if Computer-Aided Instruction (CAI) Method could enhance the learning achievement, learning attitude and retention of learning of college physics students. In carrying this objective, the researcher utilized the quasi-experimental design using a series of pretests and posttests involving two equivalent groups. The college physics students of the Lyceum of Iligan Foundation enrolled in Physics 1 class served as respondents in this study.

In obtaining the data for this research, several data gathering instruments were used. A set of eight achievement tests (eight topics on Classical Mechanics) and two major exams, both developed by the researcher, were used to measure the learning achievement and retention of learning of the students while the Attitude Scale of Pascual (1983) was employed to determine if there's a positive change in attitude towards physics in both groups before and after the study.

This study revealed that the use of CAI as a method of teaching could significantly influence a positive change in attitude of the students towards Physics but shows affirmative effect over the lecture method in terms of achievement and retention of learning on selected Physics topics only.

Major in Secondary Math

001

ABATAYO, Marilou M. 2007. The Use of Interactive Historical Vignettes in Teaching Algebra: Development and Effectiveness. (GT: MSciEd), 149pp.

The Interactive Historical Vignettes (IHV) was developed as instructional materials for teaching Algebra. It studied its effects on the students' performances and motivation to learn Mathematics. There were three IHVs developed: the Fibonnacci, Gauss, and Pascal's Interactive Historical Vignettes. These IHVs served as motivations to the students before discussing the main topic of the lesson.

This is a quasi-experimental research that employed a pretest-posttest control group design. It also used a combination of quantitative and qualitative approaches. The thirty-four (34) second year students involved in this study were given two sets of tests: achievement test and the motivation scale test.

The quantitative findings revealed that Interactive Historical Vignettes (IHV) enhanced students' performance in Mathematics. The qualitative data also showed that the IHVs have influenced students' behavior. Students appreciated the inclusion of the origin or history of a topic in the lesson. They attributed positive responses on the impact and importance of the incorporation of IHV in the teaching of algebra.

002

ANIÑON, Annie A. 2005. The Utilization of Selected Maranao Arts and Practices in

Teaching Ratio and Proportion, Triangle Similarities and Circles. (GT: MSciEd), 229pp.

Mathematical concepts imbedded in some Maranao arts and practices were integrated in the teaching of geometry for one grading period. A teacher-demonstrator conducted the class while the researcher acted as a participant-observer, recording daily observations in her field notes.

A questionnaire was administered and interviews were conducted to 32 third year Maranao students of Baloi National High School who were the subjects of the study. Interviews were also conducted with three Maranao families. Pre and post tests on Achievement and Mathematics Attitude Inventory were also administered. Students were made to write journals wherein they could express their feelings towards the integration of their culture in their lessons.

Data obtained from responses in the questionnaire, interviews and journals were analyzed phenomenographically and by the triangulation method.

Results of the study showed that the integration of selected Maranao arts and practices in the math lessons helped facilitate students' understanding and made them proud of their own culture. It also acquainted the new breed of Maranaos with some aspects of their culture otherwise unknown to them due to acculturation, and, therefore, helped preserve the Maranao culture.

Attitude of students towards mathematics, however, was not affected by the integration of Maranao culture in the math lessons.

003
ARON, Exquil Bryan P. 2004. Developing Higher Order Thinking Skills Through Mathematics Portfolio Assessment. (GT: MSciEd), 76pp.

The main objective of the study is to investigate the development of Higher Order Thinking Skill (HOTS) among students through mathematics portfolio assessment.

This study employed the experimental method of research. Two sets of instruments were used to gather necessary data for the study. These are the student's mathematics portfolio and the HOTS Achievement Test. The students' portfolio consisted of Self-Reflection, answers to an Open-ended Question, and Problem Solving.

Three set-ups were studied: set-up 1 was treated with HOTS provisions and math portfolio assessment; set-up 2 was treated with math portfolio assessment but without HOTS provision; and, set-up 3 served as the control group with neither HOTS provision nor math portfolio assessment.

Results from the math portfolio assessment show that majority of the respondents taught with provisions for HOTS were found to have developed HOTS while all of the respondents without provision for HOTS did not develop HOTS.

However, it was found out that respondents treated with math portfolio assessment with or without HOTS provisions have comparable performance in the Achievement Test. Their scores show that all of the respondents without HOTS provisions have also developed HOTS and this development is attributed to the mathematics portfolio treatment. In other words, mathematics portfolio has proven to be a good substitute for HOTS provisions in the classroom teaching.

004
BUCAYONG, Celilia O. 2004. 3-Dimentional Improvised Apparatus for Vector Operations. (GT: MSciEd), 76pp.

The study focused on the construction of a 3-dimensional (3-D) apparatus. The apparatus was designed to visualize vector in 3-D and performs vector operations experimentally with results comparable to the mathematical approach.

The study was composed of two phases. First was the design and construction of the apparatus, and the testing of the effectiveness of the apparatus for the second phase.

The constructed apparatus consists of the following main parts: a wooden framed box made up of calibrated 4 side square frames each with an area of 60 cm^2, the center post that serves as the y-axis of the Cartesian coordinates, strings that represent the other axes, and the 16 calibrated sticks used to anchor the strings.

The experimental data obtained includes the components, magnitude and directions of the resultant, the dot and cross products. These data were then compared with the data obtained using the analytical method.

Statistical tests results showed that the experimental error was less tan 5%. It was further verified that the apparatus performed best in finding the resultant.

005
CELERIAN, Maria Genile E. 2004. Reward System: It's Effect on Learning Behavior,Motivation and Performance of Students in Mathematics. (GT: MSciEd), 102pp.

This study was aimed to ascertain if a system could enhance the learning behavior, motivation and performance of underachieving sophomore students in Mathematics. In carrying his objective out, the researcher utilized the quasi – experimental design using pretest and posttest involving two equivalent groups. The researcher chose the last sections of two barangay national high schools in Iligan City as the experimental and control groups respectively, since the said sections matched in terms of self-esteem and pre-achievement test results. The said test results as the basis of comparability for the respondents.

In obtaining the data for this research, several data gathering instruments were used. A set of seven quizzes and an achievement test, both developed by the researcher, were used to measure the performance of the students while the Achievement Motivation Scale of Bihag (1999) was employed to determine how well motivated the respondents were in both groups before and after the experimentation. The Behavior Checklist develop

by Lahoylahoy (2003) was also used to observe and describe student behavior during the experimentation.

This study revealed that the employment of a reward system in a Math class could significantly influence student motivation, reaction/attitude of the students towards the lesson and their participatory behavior but not the performance and execution skills of the students in problem solving/activity.

006
DAGUIO, Eugene B. 2003. The Interference of Worked Examples in Learning Elementary Algebra. (GT: MSciEd), 104pp.

The objectives of this study was to know the effect of Worked examples in leaning elementary algebra among the regular first year students of Iligan City National High School.

Two sections consisting of 40 students each were selected as respondents through leveling-off of the respondents based on their Math grades and BEC Math Test ratings. They randomly assigned as the Control Group and Experimental Group. The latter group was treated with Worked Example Strategy of Teaching while the former group remained in the usual traditional setting. Both groups were under the researcher's instruction.

Specifically, this study answered the following question: What were the Basic Education Curriculum (BEC) math rating and the first grading math grades of the Control Group and Experimental Group? What was the performance of both groups in the Achievement Test during the pre-test and post-test? Which were correlated to the post-test scores of the respondents in both groups? Is there a difference in the students' achievement during the pre-test and post-test? is there a difference in the students' attitude towards mathematics during the pre-test and post-test? And, What was the attitude of the respondents in the Experimental group towards Works Examples in learning Mathematics?

The researcher's finding revealed that the use of Worked Examples significantly improved the performance of students, that Worked Examples have improved the attitude of the students toward Mathematics; and, that the student have develop a positive attitude toward Worked Examples.

Master of Science in Physical Education (MS PE)

001
BUCAD, Misloverly Jozania Kiethe M. 2008. Stress Resiliency Level and Recreational Activities Participation Among Working Women of Cagayan de Oro City. (GT: MS PE), 109pp.

The study focused on the relationship between stress resiliency level and recreational activities participation among the working women of Cagayan de Oro City in the year 2007-2008. It seeks to find out among the working women of Cagayan de Oro City whether participation of some activities and involvement with others could help them

to become resilient to stress.

The respondents of the study were working women who are actively participating in the recreational activities offered by the Physical Fitness Center/Saloon for a fee such as Art Ramos Dance Center, Axis Gym, Big Apple, Cagayan Badminton Center, Perfect Line Fitness Center, West Side badminton Court. Recreational programs are believed to influence the working women ability to stress resiliency.

The nature of the study utilized descriptive - correlational method of research. In gathering information, self-made and standardized questionnaires were used to answer the problems formulated. For validation of test, the instrument was given to 20 women working in both private and public sectors of Cagayan de Oro City to obtain comments and suggestions.

After the validation has made, distribution of actual questionnaire were given to 82 working women in the respective Commercial Fitness Center before or after their participation. The data was analyzed using the SPSS program version 12 to measure regression or the coefficient of correlation between the independent and dependent variables. To test if there is an interaction effect between the variables, one way Anova was used.

The data generated results that working women participated in more than one type of recreational activities with high frequency and duration, while stress resiliency level among the respondents' categorized average to strong Most of the women claimed that health is the primary reason for recreational activities participation. And there is no significant relationship between independent variable such as recreational activities participation and dependent variable such as stress resiliency level. Among the moderating variable, personality type impinge in the relationship between recreational activities participation and stress resiliency. Respondents stress resiliency level when grouped together according to independent variable, it has no significant difference. On the other hand, when grouped according to moderating variable, only personality has significant difference.

The need arises simply because everybody gets stressed out. Taking into consideration the working women in general, who are susceptible to stress from the workplace and domestic pressures. Women should find time to engage in any recreational activities whether it's for free or not. Brisk Walking, 15 minutes home workout, window shopping and other simple modified exercises that can done at work and home must be practice to be in shape and stress free. However, participating in recreational activities should be done moderately and properly to avoid muscle fatigue or even stress.

002
CASIMERO, Gina C. 2008. Weight Loss Methods and Body Mass Index (BMI) Among the Obese and Overweight Employees of La Salle Academy, Iligan City. (GT: MS PE), 109pp.

This study sought to determine which weight-loss method was effective in

reducing the body mass index of overweight and obese employees of La Salle Academy. Also, the study attempted to determine whether moderating variables like gender, age, civil status, socio-economic status, fat predictor scores and physical activity were related to obesity and weight loss method efficacy. This study used a descriptive and quasi-experimental design to determine the effects of the weight-loss programs to the body mass index of the participants. A questionnaire was given to the participants to determine their demographic profiles and genetic predisposition, while they were subjected to two weight-loss methods; exercise only, and exercise with dietary modifications. The participant's body mass index before and after each intervention program was measured. The results indicate that the weight-loss method was effective in reducing the body mass index of the participants, but exercise with dietary modifications had higher rates of BMI reduction than the exercise only program. Moreover, it was found that age, income, occupation, physical activity and fat predictor score was not correlated with weight-loss method, although some of the moderating variables were significantly related to each other. Finally, it was found that exercise and exercise with dietary modifications was highly correlated. The research concludes that the moderating variables did not contribute to weight gain and obesity and that the two weight loss method was effective in reducing body mass index. The researcher recommends that the school continue with the fitness program and further studies be conducted that would examine the psychological factors and motivation of the participants for weight loss.

003
SAN DIEGO, Chiedel Joan G. 2008. Assessment of the Physical Education 1 of La Salle University: Basis for Curriculum Enhancement. (GT: MS PE), 122pp.

This study aims to assess the Physical Education 1 curriculum of La Salle University Ozamiz. A curriculum enhancement is expected based on the results and findings of the study. It looks further into the factors that influence the students' performance on the Physical Education 1 activities. The study also focuses on the relationship of the curricular factors such as content, facilities and equipment, teacher and students' attitudes towards Physical Education 1 activities to the students' Physical Education 1 activities performance.

The study involves 306 Physical Education 1 students of La Salle University, 4 PE instructors and 4 LSU administrators. The study uses the descriptive correlation method. In gathering the data, the researcher uses standardized and self-made tests in which these tests were piloted in order to get the reliability of the test.

The findings of the study assert that physical activities are considered as good to one's health when taken regularly and an activity that builds up self-confidence. Majority of the respondents have very positive attitudes toward physical activities. It notes that the attitudes of the students and also the teachers' effectiveness in teaching affect to the students physical activities performance. It notes also that the teachers' effectiveness in teaching influences the students' physical activities performance.

Master of Sciences in Teaching (MST)

001
CUEVAS, Rosita A. 1999. Analysis on the Performances in English, Science and Mathematics of Fourth Year Students of Tubod East District Tubod, Lanao del Norte. **(GT: MST), 73pp.**

This study assesses the average performance of fourth year students of Tubod East District in the fields of English, Science and Mathematics, which they learned since first year relative to some selected factors.

Out of the 190 fourth year populations, only 80 randomly- selected students were taken as subjects of the study.

Results utilizing ANOVA show that a significant difference exists in the respondents' sisters' inclination in English and Science. A significant difference also exists in the respondents' mothers, relatives and siblings high performance in English, Science and Mathematics. Finally, there is also a significant difference in extra-curricular activities with the students' performance in Science and Mathematics, and classroom adequacy of books, the students accessibility to textbooks, as well as their teachers' area of specialization in English, Science and Mathematics.

Independent variables, which contribute significantly to the students' performance in English, Science and Mathematics are school factors such as extra curricular activities, adequacy of books and accessibility of students to textbooks and classroom contact hours and teacher factor such as teacher's area of specialization.

002
SEMAÑA, Delia R. 1999. An Assessment of the Lanao del Norte Teacher In-Service Education Program in Chemistry for Secondary Schools. (GT: MST), 66pp.

The study was a competency-based evaluation of the Lanao del Norte Teachers In-service Education Program for Secondary Chemistry Teachers. The proficiency levels of the LN-TIEP trained teachers were compared with that of the non-LN-TIEP trained teachers in terms of performance in competency test in chemistry content and laboratory skills, actual classroom teaching behavior and students' performance in the achievement test.

Profile of the respondents showed that only few of the LNTIEP trained teachers have finished chemistry oriented courses while majority of the non-LNTIEP trained teachers have earned chemistry oriented courses. Further, the LNTIEP trained teachers have enriched themselves by attending in-service training programs/ seminars related to chemistry, majority have been in the service for quite sometime and are older in age compared to those in the non-LNTIEP group.

Results showed that the LNTIEP- trained teachers are more proficient than the

non-LNTIEP trained teachers in the competency test. In the actual classroom teaching behavior, both groups have average proficiency level. However, in the students' performance in the achievement test, the LNTIEP trained teachers were more proficient than those who have not attended the program.

Statistical analysis revealed further that there were significant differences in the proficiency levels of both teacher groups in the competency test on chemistry content and laboratory skills, actual classroom teaching behavior, and students' performance in the achievement test.

Master of Teaching Technology (MTT)

001
ADLAON, Danilo C. 1996. Computer Based Control Data Acquisition of an Electric Power Substation. (GT: MTT), 104pp.

This study sought to develop a Computer-Based Control and Data Acquisition for an Electric Power Substation, specifically the monitoring of status and control of power circuit breaker (PCB). It utilized mainly the centronic printer port which was used as bi-directional input and output port interfaced with a develop external hardware interconnected to the field of an Electric Power Substation.

The method was set the three phases. The first phase was the determination of the terminating points, analysis and evaluation of actual schematic diagram of an Electric Power Substation. The second phase was the development of external hardware interface and the control and data acquisition software. The last phase was testing of program and the external hardware interface.

From the result of the study, the centronic printer port along with the developed external hardware interface can efficiently control and monitor the power circuit breaker status through software manipulation.

This study is a significant contribution in the field of data acquisition and control for small-scale application at marginal cost compared to an expensive proprietary products which provide both hardware and software. Further, this will pave the way to extensive application other than its original purpose such as development of signal conditioning circuits to measure various real-world variables including weight, temperature pressure, volume, liquid level and flow measurements. The digital output of signal conditioning circuit can be connected to the eight-bit input of the developed hardware interface. The measured parameters such as temperature can be controlled by driving its corresponding final element (heater) through the driver relay, which can be done through software manipulation.

Finally, this study will serve as training aid for those who have wanted to learn interfacing using a personal computer to tap its enormous capability.

002
AGUANTA, Eusebio G. 1992. Computer-Aided Model Lessons in Teaching Electric Circuits for Secondary Students. (GT: MTT), 214pp.

This research work was undertaken to find out whether there was a difference on the students' performance when computer-aided model lessons in teaching electric circuit were used in the classroom instruction.

The subjects of this study were composed of the faculty handling electricity class in the seven selected secondary schools in Iligan City and two sections of third year high school students of Iligan City National High School.

The researcher used the non-probability sampling in selecting the two groups of third year high school students. The study made use of two research designs, namely; the research and development (R & D), and quasi-experimental research. The R & D was used in developing the computer-aided model lessons in teaching electric circuit for secondary students; while the quasi-experimental research design was used in the actual testing of the above-mentioned instructional software.

The suggested model lessons were obtained from the brief survey of secondary teachers teaching electricity. The survey was conducted personally by the researcher. Writing of programs followed after the survey. The computer-aided model lessons were pre-tested to the group of electricity teachers and a group of third year students. Modification of programs in the instructional software was made to arrive at exact and accurate answer to all model lessons of electric circuits.

Pretest/post test questions were formulated based on table of specification after the preparation of instructional software. They were examines by researcher's co-teachers in electricity and members of guidance committee for correction and approval. They were then administered to the pre-testing group of third year high school students of MSU-IIT. The U-L index method of item analysis test was employed in analyzing the level of difficulties of each item. The Kuder-Richardson formula no.20 was used to measure the reliability of the test. The reliability of the teacher-made pretest/post test was 0.88.

A pretest was given to the experimental and control group at the beginning of the second grading. A computed t-value indicated that there was no difference between the pretest mean scores of the experimental and the control groups.

The researcher conducted an observation on the teacher and student's interaction between two groups. The Flander's Interaction Analysis Categories was used in recording the teacher and students' responses. The data gathered from the oral behavior students of experimental and control groups were analyzed using Mann-Whitney U test. The computed U value of solicited and initiated talk was 8 and 6, respectively and was significant at 0.05 levels.

A posttest was administered before the end of the second grading period. A computed t value for paired comparison test was 1.768 and was significant at 0.05 levels. This means that there was a significant difference between posttest scores of students of the

experimental and control groups.

A computer Pearson-Product Moment Coefficient of Correlation between posttest scores of experimental and control groups of the control variables age, mental ability and socioeconomic status of students revealed that mental ability of students of both group was significantly correlated to the posttest scores. This finding was also supported using the regression analysis test on combined control variables and posttest scores of both groups. Among these variables, mental ability gave significant contribution to regression with values of significant levels equal to 0.001 for the experimental group and 0.002 for the selection of students of each group was based on their mental ability.

Finally, it is strongly recommended that a similar study be conducted to confirm the findings of this research, particularly on the effectiveness of computer-aided model lessons in teaching electric circuits for secondary students.

003
AMBA, Nemesio F. 1999. Study of the Various Brands of Premium Gasoline and SAE 30 Lubricating Oil on Engine Driveability: A Virtual Instrumentation System. (GT: MTT), 90pp.

This experimental research attempted to determine the differences of the effects of premium gasoline and SAE 30 lubricating oil from Caltex, Petron and Shell on drive-ability using a specimen engine. The study developed virtual instrumentation system using Lab VIEW graphical software and AT-MIO-16E-10 DAQ board to acquire and display the data in real-time. The variables were the engine's oil pressure, speed (rpm), and oil and coolant temperatures. Each pair of gasoline and oil products per brand was tested either as control or as verifier. The engine was set to run 2,000-rpm reference during control testing while the setting was not altered during verifier testing.

The virtual instrumentation system developed for the real-time acquisition and display of data has served its purpose. The study determined the differences on the effects from each pair of gasoline and oil product from Caltex, Petron and Shell on the drive-ability of the specimen engine through the use of the developed virtual instrumentation system. The study showed that, for all the three test conducted for each brand used as either control or verifier: the effects of Caltex products were low oil pressure, high-moderate-moderate speeds (rpm), and moderate-moderate-low oil speeds (rpm), and low-oil coolant temperatures; however, these results were not substantial enough to warrant an overall comparison of effects to determine the advantages or disadvantages of one product brand over the others.

004
AMBOAYAN, Pablito L. 1984. The Building Construction Industry in Iligan City: Its Status and Implications to the Construction Program of the SIED, MSU-IIT. (GT: MTT), 95pp.

The study was designed to identify and establish strategies to strengthen the Building Construction Program of SIED, MSU-IIT. To achieve this objective, a

comprehensive survey of the building construction industry in Iligan City was conducted using the questionnaire as the principal instrument supplemented by actual observations and interviews. The ranking, percentage and calculation of the weight of the means were used in treating the data.

The result on the status of the building construction industry in Iligan City showed that it is composed of four classifications (A, B, C, and D) of contractors. Most of the contractors belong to class D. About 79% of these have college degree. Majority of the manpower in the industry are rough carpenters, masons and interior carpenters. Fifty two percent of the workers had elementary education, 33% high school graduate and 12% had college education. Workers in the industry are most casual and unskilled workers. Very few are permanent. One hundred percent of the contractors and 83% of the workers are competent carpentry. Most are skilled workers. Competencies were generally acquired through experience as a helper. Generally workers in building construction industry receive pay within the minimum labor wage level. Among the contractor respondents 81% provide living allowance to workers. The projected manpower needs in building construction industry in Iligan City will be quite high in the text decade. Rough carpenters (369), helpers (248), masons (256) and steel men (147) are the priority. Workers with specialized skills and multi skilled are preferred.

Some problems of the industry relevant to the SIED program include the unwillingness to accept student trainees. In addition, industry's management feels that student trainees are not capable of handling the job, so they merely serve as helpers and others become utility individuals, except for few trainees who can be skilled and serve as lead men or foremen.

There were 34 activities identified in the industry of which only 27 learning blocks are currently offered at SIED. All these learning blocks are considered very relevant. Activities which are not found in the course content are escalator installation, air conditioning, post tensioning, steel fabrication, wood carving, interior decoration and landscaping. PERT/CPM and combination of all management tools were commonly employed in the industry. Control was the main problem in management.

To strengthen the curriculum, provision of more activities to the program and giving periodic skills tests to graduating students were suggested by contractors in the industry and teachers of building construction program of SIED. As such all activities in the industry which are not offered in the school should be incorporated in the curriculum and delete or phase out some blocks that are too broad and those that are not necessary in the field. In addition, proper evaluation of skills must be required for their graduation.

005
BALALA, Pablo M. 1989. Modular Instructional Materials in Basic Lathe Machine Processes and Application in Mechanical Engineering Technology, MSU-IIT. (GT: MTT), 328pp.

The study primarily aimed to accomplish two important objective, namely: to design and develop modular instructional materials in basic lathe machine processes and

application in mechanical engineering technology, MSU-IIT; and, to ascertain its effectiveness by trying it out to its intending users – the first year Mechanical Engineering Technology students.

To accomplish the objectives, the researcher employed the Research and Development Process (R&D) to accomplish the first objective and a Quasi-experimental Design to attain the second objective. The R & D process composed of six stages as follows: a) Needs assessment phase; b) design and development phase; c) try-out stage; d) assessment period; and e) final try-out stage. In the assessment of the effectiveness of the modular instruction materials, an experiment was conducted wherein two groups of students were taught the same lessons using different instructional approaches. The control group was taught using lecture-demonstration while the experimental group uses the modules. In grouping the subjects, the researcher made use of a person-to-person matching using mental ability as a basis for matching. Randomization was used in the sense that a coin was flipped in determining which pair went which block (Block A and Block B). When the membership of the grouping was completed, again a coin was flipped to determine which block would be control or experimental.

The results of the experiment revealed that the students taught with modular instructional materials achieved much better than the students taught in the conventional method. When the results were statically treated, it was found out that there was a significant difference between the means of post-test scores of the two groups in favor of the experimental group.

Based on the findings, the researcher concluded that the designed modular instructional materials have cause the considerable change in students' academic performance, which in effect, bespeak the modules as very effective and relevant instructional materials.

006
BALBERONA, Cesar T. 1993. Perception on the Status of Instructional Technology and Learning Outcomes. (GT: MTT), 112pp.

This research work has undertaken to find out the status of instructional technology and learning outcomes of the electrical engineering technology students of MSU-Iligan Institute of Technology. The respondents of the study consisted of forty-one (41) first year students, thirty-five (35) second year students, twenty-five (25) third year students, ten (10) faculty members of the department, and ten (10) academic heads or a total population of one-hundred and twenty-one (121) respondents.

The data of this study were gathered through a survey questionnaire and were treated using frequency counts, percentage, simple ranking, mean, ANOVA, t-test, and multiple correlation with t-test.

The findings revealed that the most commonly used instructional aids and devices, ranked according to their effectiveness, were as follows: 1) laboratory equipment, 2) tools and instruments, 3) drawings and diagrams, 4) materials and supplies, 5) mock-ups or models, 6) educational field trip, 7) film slides, and 8) transparencies.

The teaching methods frequently used in the electrical engineering technology department and rank according to their effectiveness were as follows: 1) lecture-laboratory-workshop method, 2) demonstration method, 3) lecture method, 4) experimental method, 5) project method.

The respondents agreed unanimously that the existing instructional technology in the electrical department was effective.

There were significant differences among teaching aids and devices used, particularly between the following: mock-ups or models and film slides, film slide and materials and supplies, lab-equipment and materials and supplies, mock-ups or models and transparencies, film slides and laboratory equipment, film slides and tools and instruments, transparencies and materials and supplies, laboratory equipment and fields trips, and between tools and instruments and field trips.

Moreover, there was no significant difference between the teaching aids and devices used and the various teaching methods employed by the faculty in the teaching-learning process. However, the remedial teaching aids and devices available, and the teaching methods employed in the department.

It was also found that there was no significant relationship between birth order, educational attainment of parents, and monthly income, versus the learning outcome; on the other hand, there was a significant relationship between MSU-SASE score specifically on science and technical abilities versus the GPA of the first year students. However, among second year students, there was significant relationship between verbal ability and mathematics score versus their corresponding GPA.

Furthermore, there was significant relationship between highest educational attainment of faculty and perceived learning outcomes, but there is no significant relationship between learning outcomes versus formal training in technology courses and teaching experience of the faculty.

The findings also indicated that there was consistency in the responses of the students and the faculty and Academic Heads used in the study when tested separately, pointing out an unbiased description of the status of instructional technology and learning outcomes of the electrical engineering technology students of MSU-Iligan Institute of Technology.

Based of these findings, the following recommendations were endorsed; develop a sustainable system of producing teaching aids and devices; conduct constant curricular enrichment of the technology program; conduct research studies on the relevance of MSU-SASE to the technology program; a similar study be counted to confirm the finding in this research undertaking.

007

BARRERA, Joel A. 1993. Expert System in Digital Hardware Troubleshooting. (GT: MTT), 117pp.

This paper sought to develop an expert system in digital hardware troubleshooting that computerized the work of human being in judging whether or not the digital IC functioned normally.

The method employed was set in three phases. The first phase was the gathering and tabulation of the information contained in the schematic diagram of a selected digital IC. The second phase was the representation and organization of the structural and behavioral information of the digital IC. The last phase was the development and testing of the program.

The were fourteen (14) digital ICs under TTL family. The structural and behavioral information of each digital IC were gathered, tabulated, and represented in Prolog syntax.

The development of the program using Prolog language was accomplished by creating a knowledge base, inference engine and user interface, all combined to form an expert system in digital hardware troubleshooting.

From the findings of the study, the developed expert system in digital hardware troubleshooting could diagnose fourteen digital IC. It could also diagnose other ICs as long as their information were properly represented in the knowledge base of the expert system. The developed expert system had an explanation facility and allowed the user to update, edit, and list its knowledge base.

This expert system for digital hardware troubleshooting is a significant contribution in the field of Electronics and Artificial Intelligence.

008

BUENAVISTA, Rafaela U. 1988. Resource Material for Basic Tailoring. (GT: MTT), 194pp.

This study was designed primarily to develop a resource material that would serve as a reference material to both instructors and students in GHT 318-Basic Tailoring, a course offered in the Bachelor of Science in Industrial Education, MSU-Iligan Institute of Technology, Iligan City, and other schools offering Garment technology. It sought to identify the appropriated in the resource material. A survey conducted among libraries of four schools offering Garment Technology and bookstore in Iligan City and Cagayan de Oro City revealed the inadequacy of textbooks and reference books for the course written by Filipino authors. To achieve the objectives the researcher examined and analyzed the suggested topic as supplied by the respondents. Weighted mean was used to determine the subject/topic contents that the respondents would want incorporated in the resource material. The same treatment was applied in the evaluation of the resource material to arrive at the degree of sufficiency on its content. A panel of experts composed of teachers

teaching Garment Technology evaluated the resource material.

The evaluation revealed that the resource material would serve the purpose for which it was designed. This can be very helpful to out-of-school youths or adult who may use it in non-formal classes for the development of basic skills and knowledge in tailoring. Based on the findings, some recommendations were drawn foremost of which is that this resource material be used as a reference material for Basic Tailoring as offered in the BSIED curriculum of the College of Education, MSU-Iligan Institute of Technology, Iligan City, and to other schools offering Garment Technology.

009
BUOT, Elmer R. 1987. Design and Fabrication of a Drill Grinding Device. (GT: MTT), 73pp.

This study is to design and fabricate a drill-grinding device, which is simple, inexpensive and indigenous. This project was conceived by the researcher in order to improve the existing practices in sharpening the drill bits.

The survey questionnaire was the major tool used in gathering the needed data. The survey was launched October 17, 1986 and ended November 17, 1986. The survey covered nine (9) industries, seven (7) machine shop establishments, and one (1) academic institution in the city of Iligan. The survey questionnaire was personally distributed and administered by the researcher. It was supplemented with personal interview with the respondents.

The respondents of the study were lathe operators, drill press operators, machinists in the shops and industry, technicians and machine shop teachers.

The data gathered were tabulated and were treated using statistical tools such as percentage and mean.

The survey revealed that all the establishments surveyed do not have a drill-grinding device to use in order to aid the workers in sharpening the drill bit. The sharpening of the drill bit is left alone on the skills of the workers. It is sad to note, that most of the machine shop workers do not use tools or instruments in checking the angles of the drill after sharpening.

There were four (4) problems encountered by the workers in sharpening the drill bit. These were:

1. cutting angles not equal
2. cutting lips not equal
3. points need thinning
4. lip clearance not equal

Testing results indicate that with the use of the drill-grinding device the time spend will greatly be reduced.

Finally, the results indicate that the sharpened drill bit using the device could produce more holes and reduce time spent in drilling.

010
CABILI, Mariliz P. 1992. Some Factors Affecting the Meal Patterns and Practices of Urban and Rural Coconut Farming Villages: A Comparison. (GT: MTT), 148pp.

This study seeks to find out the meal patterns and practices of selected urban and rural coconut farming villages, such as Barangay Kiwalan, Hinaplanon and Tipanoy for the urban areas and Barangay Libertad, Titunod and Karomatan for the rural areas involving 180 respondents. Specifically, it aims to: (1) find out the food habits of coconut farmers from the rural and urban areas; (2) find out the difference between the rural and urban coconut farmers in terms of food habit, meal practices and food beliefs; (3) find out if there is a significant relationship between rural and urban coconut farmers in terms of personal factors such as: religion, ethnic group, education, age, number of dependents, income per day, size of farm, distance of house from the farm, membership in organization, number of trainings/seminars attended and level of living; (4) determine whether there is a significant relationship between the person factors.

The mean was used to find out the meal patterns and practices of the coconut farmers. The Chi-square was used to find the relationship of some data involving the personal factor and meal practices. Person-Product Moment of Correlation was used to treat the relationship of the data for personal factors, food, habits, meal practices and food beliefs. Multiple Regression was used to find out the relationship between personal factors, food habits, meal practices and food beliefs. Mann-U-Whitney test was used to show if there is a significant difference of meal patterns, religion, ethnic group and educational background of farmers. T-test was used to show the difference between the two means of data involving the different factors while analysis of variance (ANOVA) for differences of more than three means.

Urban and rural coconut farmers differ in their food habits in eating and table manners and on how they do not differ in food beliefs and meal patterns. They also differ in some personal factors such as: age of wives, number of dependents, income per day, size of farm, distance of house from farm, membership of organization, number of seminars and training attended and levels of living.

Personal factors such as age of husbands, distance of house from the farm, income per day, size of farm, membership in organization are related to meal practices. Food eating habits, food pads and fallacies to meal patterns. On the other hand, the combination of personal factors significantly affects meal practices. Meal practices differ among ethnic group, levels of living, membership in organization, land ownership, size of their lands, distance of their house from the farm.

There is then, the need to conduct nutrition education programs to the areas concerned to improve their level of living. Furthermore, a recent trend on coconut harvests. A similar study using bigger sample group in farming villages should be conducted.

011

DARUNDAY, Ciriaco Jr. A. 1999. Performance Evaluation of a Locally-Fabricated Tensile Testing Machine. (GT: MTT), 111pp.

The study dealt with the design, fabrication and performance evaluation of an adaptation of the tensile testing machine with the premise that a tensile tester intended specifically for instructional use need not be as sophisticated and expensive as the standard universal testing machine. Engineering schools surveyed by the study demanded that locally fabricated testing equipment to be used for teaching must be functional, can effectively demonstrate the concept it intends to teach, must be inexpensive, must be easy to operate and maintain, and if possible can measure with precision and accuracy.

The developed tensile tester consisted of an assembly of retained, replaced and fabricated parts. The study involved the search in the school shop for general-purpose equipment and readily available tools to be used for the retained and replaced parts and the fabrication of a sub-press. Thus, the complete adapted tensile tester utilized an existing hydraulic press, the available linear measuring tools and the fabricated sub-press.

The performance testing revealed that the developed tester possessed the qualities required for an acceptable alternative tensile testing apparatus.

012

DE LA PEÑA, Rogelio S. 1986. The Coconut Milk Extractor: Its Design and Development. (GT: MTT), 92pp.

The main objective of this study is to design and fabricate a low-cost coconut milk extractor that could efficiently ease the drudgery of extracting coconut milk. This project was conceived on the dire need to improve the existing practices and offer a solution to problems met by households and market vendors in educing coconut milk for culinary purpose.

To affirm these observations, the researcher conducted a survey to this effect covering Linamon, Lanao del Norte down to Iligan City and Lugait, Misamis Oriental sometime in October 1984.

The findings revealed that the conventional manual method has been commonly adopted by households and market vendors in extracting coconut milk, i.e., by hand squeezing which shows a very significant result. In addition, they pointes out the following problems inherent in the use of the conventional method:

1.   Time consuming in preparing and in doing the work.
2.   Aqueous and insipid result in the extracted milk.
3.   No total extraction of coconut milk hence uneconomical.

The fabrication of the machine was done following the systematic procedure

based on the working drawing and specification of materials. Its cost was computed based on the material, labor and overhead cost during the stage of fabrication.

Finally, the subsequent and final testing of the fabricated machine which is comparable to the standard industrial machines favorable results of performing the coconut extracting job than the conventional method.

013
DOCUMENTO, Nora B. 1985. Practices and Problems in Implementing Home Economics for Boys in Public Elementary Schools in Iligan City. (GT: MTT), 65pp.

This aimed to identify the practices and problems in implementing home economics for boys in public elementary schools in Iligan City. To achieve this objective, a survey was conducted to home economics teachers who had been teaching home economics from 1979-1984. There were 41 home economics teachers in public elementary schools in Iligan City. For statistical analysis, simple ranking, percentage distribution and weighted scores are used.

Elementary home economics education for boys is handled by qualified teacher most of whom have teaching experience below five and up to nine years; a majority possess permanent appointment status and are married. This profile of the teaching manpower indicates that the implementation of the Home Economics program for boys in Iligan City is effective.

The philosophy, objectives and learning content of the Home Economics for Boys were perceived by the teachers to be very important and relevant to the education and needs for boys at the elementary level who are growing up. Therefore, there is a need to continue the program.

There is a need to limit the teaching and work assignment of teachers only to home economics in order to attain greater efficiency in teaching. In addition the holding of classes 80 minutes once per week was found to be commonly practiced. The practice among teachers of planning the course content, developing learning activities and use of instructional methods should be enhanced.

Some problems in implementing home economics for boys related to the teaching-learning process involved planning course content, developing learning activities and instructional methodology. Learning activities interrupted with extra-co-curricular activities, the lack or absence of textbooks and references and inadequate available resources were greatly felt thus a need for more time in planning activities for boys as well as for developing learning materials for teachers was highly commendable.

Based on the findings, strategies were offered by home economics teachers in improving the implementation of home economics for boys in terms of 1) granting home economics teaching assignments related to home economics teachers 2) allowing more academic freedom 3) providing allotment for textbooks, references and physical resources and 4) more in-service training organized towards: course innovation; teaching

methodology; content; human behavior and skill development.

014
DOLEGUEZ, Felixberto S. 1983. An Amplitude and Frequency Modulated Broadcast Receiver Signal Tracer: Design and Development. (GT: MTT), 181pp.

The study was specifically aimed to design and fabricate amplitude and frequency modulated broadcast receiver signal tracer. The attainment of this objective was based on the research and development (R&D) process.

The survey on the existing electronic instruments used in signal tracing was conducted in the different small-scale electronic industries and technical Institutions of Iligan City and Cagayan de Oro City. This was followed by the actual designing and development using experimentation method and later the fabrication and performance testing.

The study revealed that the existing electronic instruments were mostly sophisticated. Most of the electronic technicians, faculty, and practitioners were using different types of sophisticated instruments to monitor troubles in the AM-FM broadcast receivers. Not a single innovation electronic instrument was used to troubleshoot the AM-FM broadcast receiver.

The design of the fabricated AM-FM broadcast receiver signal tracer was based on the different factors to consider such as the RF frequency, the AF frequency and the speaker as the output transducer. Such factors resemble the function of a signal tracer.

The different circuit configurations were set up to perform the function of AM-FM broadcast receiver signal tracer. These circuit configurations were properly selected on the basis of the survey conducted and experimentation process.

The fabrication of the developed electronic instrument was properly experimented to attain the expected input and output of each stage in the AM-FM broadcast receiver. The modulated signal generator and the signal amplifier were included in the process of experimentation.

The demonstration showed that the signal-tracing test could substitute the function of the oscilloscope and a sophisticated signal generator to analyze the troubles of AM-FM broadcast receiver.

The economical implication of the fabricated instrument was computed on the bases of electronic components, material cost, and contingencies. The total fabrication cost was very small compared to the price of the sophisticated instrument.

As a result, the entire study revealed that the utilization of the existing and properly selected AM-FM broadcast receiver including the auxiliary circuit configuration can perform the trouble analysis in the AM-FM broadcast receiver with minimal fabrication cost and perform similar function as that of the sophisticated electronic devices for serving.

015

EUGENIO, Fredy P. 1985. Prefabricated Reinforced Concrete Door Jambs and Window Jambs. (GT: MTT), 125pp.

This study was primarily aimed to design and fabricate a reinforced concrete door jambs and window jambs that can efficiently substitute a wooden door and window jambs in construction industry. To attain this objective the research and development (R&D) process in conducting research was used. The study started with the survey of the existing designs construction of reinforced concrete door and window jambs in selected construction firms in Iligan City and its suburbs, followed by the actual designing and development of the designed prefabricated reinforced concrete door and window jambs.

The study revealed that the reinforced concrete rectangular shape-whole unit door jambs and reinforced concrete window with arch-shape transom was a design most with the observed special features of: 1) architectural compatibility, 2) aesthetics, and 3) fire resistance.

Based on the findings, the project was made in accordance with the design features of strength and rigidity, appearance, construction of forms, cross-section of jambs, schedule of reinforcing bars, and the factors of availability of materials and fabrication techniques, jambs sizes, material used, design and construction and the problems met by architects, contractors and masons.

In fabricating the designed reinforced concrete door and window jambs, the working drawings and specifications were basically followed.

It was found out that the material cost in fabricating the prefabricated reinforced concrete door jamb was P 385.3553 and P 365.7935 for prefabricated reinforced concrete window jamb. The labor cost of the reinforced concrete doorjamb was 98.435 and 97. 341 for reinforced concrete window jamb. The fabrication cost of the designed reinforced concrete door and window jambs was computed on the basis of material cost, labor cost, surcharges and contingencies. Consequently, the total fabrication cost of the designed reinforced concrete door jamb was P 513.2533 and for reinforced concrete window jamb was P 491.3395.

In the fabrication of door and window jambs, the prefabricated reinforced concrete should be chosen in terms of material and labor cost, strength and durability, architectural compatibility, aesthetics and fire resistance.

016

FERMIN, Bernabe Jr. M. 1988. Design and Development of a Modular Training-Set for Automotive Electricity. (GT: MTT), 101pp.

This study was undertaken to design and develop a low-cost modular training-set for Automotive Electricity that could perform a number of laboratory/workshop activities.

The concept of clustering varied systems into one system was conceptualized on the belief that this modular training-set could greatly reduce the trainer cost, and also solve the existing problems encountered by teachers actually teaching the course.

To justify this study the researcher conducted a survey in six (6) selected government schools and colleges and two (2) vocational schools to find out the existing training-set in Automotive Electricity.

Finding revealed that most of the schools have inadequate training-set and equipment in their laboratory / workshop.

The design of the fabricated modular training-set was based on the suggestions of teachers/instructors teaching the course, and the results of the survey conducted by the researcher.

On the technical aspect this modular training-set can be easily fabricated in the sense that all spare parts and hardware's used can be purchased locally. Furthermore this training-set can simulate three (3) major systems in Automotive Electrical System, and can stand further modification.

As a result, the study revealed that the utilization of modular training-set would enrich the teaching process in Automotive laboratory/workshop, and could perform the same function of sophisticated Automotive teaching device for servicing.

017
GABO, Cesar S. 1992. Factors Affecting the Electrical Wiring Installations on Residential Building in Iligan City. (GT: MTT), 118pp.

This research work was undertaken to find out the conditions of existing wiring system of residential buildings in Iligan City particularly the factors affecting proper wiring installation. The respondents of this study, with their corresponding sample size were as follows: a) nine (9) inspectors from the implementing agencies; b) forty (40) electricians from the Iligan Electrician Association; and c) one hundred ninety seven (197) residential building owners.

The data of this study were obtained through a survey questionnaire supplemented with an informal interview and actual inspection conducted by the researcher on the household units drawn out from the sample barangays. Then data were treated using frequency counts, percentages, weighted mean, chi-square, multiple correlation matrix, ANOVA and multiple regression.

The findings revealed that the Electrical and Safety inspectors and the Electrician Practitioners were mostly on the college level. They have training that is within their field of specialization which had a bearing on the specification of their functions.

Majority of the Electrician Practitioners cannot assume full responsibility of their work since most of them do not have Master Electrician's License. They are, therefore,

quite dependent on licensed electricians.

The Electrical and Safety Inspectors are more experienced than the Electricians practitioners.

The residential building occupants are not protected against electrical shock in the event of grounded electrical equipment and accidental grounding since there is no good grounding system applied in most residential buildings.

Residential wiring installation at present are generally safe in terms of wiring methods, over current protection, materials used and the current-carrying capacity of the conductors.

There is a possibility that the electrical wiring system of the residential buildings will be overloaded in the future since unauthorized extensions were evident although minimal.

The Electrical Inspectors and the Electrician Practitioners knew the importance of a grounding system but failed to consider it in actual electrical wiring installations.

When all factors considered were correlated to proper wiring installation, statistical result revealed that only years of experience, wiring method and over current protection were found to affect the dependent variable. The other factors like educational attainment, P.R.C. license, specialized training and grounding were found to be not significantly related to proper wiring installation. These results, however, would still be verified through a similar study as stated in the recommendation.

Based on the findings, it is recommended that certificate of inspection be issued only after the residential wiring installations are thoroughly inspected to determine Electrical Code. Moreover, a regular inspections, repairs or alternations of existing electrical wiring installations that might overload the present system. Residential wiring installations that are found to have violated one or all of the wiring installation restrictions should be penalized by disconnecting their electrical wiring system from the service line.

It is also recommended that seminars regarding the proper use of an electrical system for the residential building owners be conducted by the electric utility company concerned. Likewise, the Electrician Practitioners must also hold regular seminars on the latest update on wiring techniques, interpretation, importance and application of the provisions of the Philippine Electrical application of the provisions of the Philippine Electrical Code.

Furthermore, a list of approved and certifies wiring materials from the Bureau of Product Standard should be made available to those whose functions are related to electrical engineering as well as to the consuming public to ensure precise specifications and the use of approved wiring materials. This bureau should likewise conduct an information campaign among the users stressing the importance of approved and certified wiring materials.

And finally, it is strongly recommended that a similar study be conducted to confirm the findings of this research, particularly on the relationship of proper wiring installation to the competence of the inspectors and electricians in terms of educational attainment, Professional Regulation Commission License, training and years of experience in the trade.

018
GABUCO, Merlina A. 1993. Food Service Management, Operation and Problems of Hospitals in Iligan City. (GT: MTT), 97pp.

This study was undertaken to find out the management, operational practices, and problems of the food service department/unit of hospitals in Iligan City. Specifically it sought answers to the following questions:

1. What is the general profile of the food service department of hospitals in Iligan City in terms of organization, administration, personnel, and services rendered?

2. What are the operational practices of the service department's vis-à-vis recruitment, termination of employment, setting up of objectives, nutritional care polices and sanitation practices in terms of use of space and facilities and equipment?

3. What are the problems confronting the food service units in relation to menu planning, food purchasing, receiving food items, food storage, food preparation and service?

4. Is there a relationship between the personnel profile (sex, age, educational attainment, and length of service) and the problem encountered in food service?

5. What are the suggestions given to further improve the management and operation of food service departments?

The study used the descriptive survey method with the questionnaire as the main tool in gathering data. The development of the questionnaire was based on the instrument used by Florencio & Galang in their unpublished master's thesis conducted at UP (1979).

Criteria were set to identify the hospital to be involved in the study. Based on these criteria, the hospitals that qualified to be subjects in this study were the Mindanao Sanitarium & Hospital, Iligan City Hospital, Dr. Uy Hospital, Iligan Medical Center and Mercy Community Center.

Only the hospital administrators, the heads of the food services units and their staffs were involved in the study.

The data gathered were tailed, analyzed and interpreted using appropriate statistical measures such as frequency and percentage distribution, weighted mean, Fisher's Probability test for independence and 2 x 2 contingency chi-square statistics.

The findings of the study revealed that the food service units have been operating for some time ranging from 11 years to 34 years; each unit is operating as an independent part of the Hospital; is operated by hospital owners themselves; and all food service units practice a centralized form of operation.

It was also revealed that food service unit/department is headed by a qualified nutritionist or dietitian who exercises over-all administrative supervision in operation of the food department.

The data further showed that the food service personnel comprise only 33.7% out of a total of 440 employees in the five hospitals involved in the study, majority of them female workers with ages ranging from 21 to 60 years old. A large number of these workers were in the college level, while some were in the high school and elementary levels. Only 8 of the 33 food service employees were college graduates. Moreover, each personnel occupied a job position or title with a specific job description so that the employee knows his responsibilities and definite work assignment.

The study revealed that the food services departments had established operational practices in the recruitment and termination of employees, in setting up objectives, nutritional care policies, and sanitation practices, in the use of space, equipment and facilities.

The food services units also had problems which were mostly finance-related, has inadequate budget, lack of equipment and pilferage.

Findings further revealed that there was no significant relationship between the problems encountered and the personnel profile (sex, age, educational attainment, number of years in service).

The respondents also gave valuable suggestions on how to further improve the management and operation of the food service units of the hospitals.

It can be safety concluded that the management and operation of the food service departments under study were functional evidenced by the fact that generally, the food service departments were achieving the objectives for which they have been patients, employees and to the hospital in general could attest to this finding.

The researcher highly recommends that a follow-up study be conducted to involve the patients as respondents in order to come up with more useful data.

019
GAPASIN, Hermini O. 1999. Designing a "Dual Industrial-Tech" Training Program for MSU-Iligan Institute of Technology and Industries within the Cagayan-Iligan Corridor (CIC). (GT: MTT), 90pp.

The study aimed to design a "Dual Industrial-Tech." Training Program for MSU-Iligan Institute of Technology and Industries within the Cagayan- Iligan Corridor (CIC).

Ninety-two (92) industries within the Cagayan – Iligan Corridor (CIC) were included in the survey conducted. Of the ninety-two (92) industries, twenty four (24) industries expressed willingness to adopt the Dual Training System. Of the twenty four (24) fourteen (14) are in Iligan City, four (4) in Misamis Oriental and six (6) in Cagayan de Oro City. The survey determined the needs of the industries in terms of manpower skills and abilities as well as the required training programs.

The identified skills and abilities needed by the industries that are common to all the technologies are trouble shooting, repair, servicing and preventive maintenance of equipment. The Mechanical, Electrical, Electronics, Chemical, Industrial Automation and Control, Civil and Computer Technologies are the most needed training programs in all the industries. Fourteen (14) industries out of twenty four (24) or 58.33% of the respondent industries were not aware of existing policies on administration; supervision training schemes, and funding of the Dual Training System and six (6) or 25% of the industries have not indicated awareness about the Dual Training System. The reasons for the lack of awareness about the Dual Training System were simply no knowledge in, and no experience on the Dual Training System.

Twenty three of the twenty four industries were not amenable to the existing policies stipulated under the Memorandum of Agreement of Republic Act 7686.

020
GARCIA, Yolanda P. 1998. Physico- Chemical Characteristics of Candied Chayote. (GT: MTT), 88pp.

Dehydrated, flavored candy was produced from *Sechium edule*, Swartz, locally known as chayote, at the optimum drying time in a cabinet dryer. Four (4) dehydrated products were produced: one product without flavor and the rest flavored with orange, strawberry, or pandan. The accessibility of the dehydrated products in terms of textures, taste, flavor and overall acceptability were evaluated by a panel of tasters using the standard score sheet. The most acceptable product and to microbiological analysis for the determination of microbial contaminants.

Statistical analysis for the sensory evaluation showed that the dehydrated product with strawberry flavor was the most acceptable. Drying candied chayote for 12 hours in a cabinet dryer obtained a moisture content of 14.8%. A highly acceptable quality characteristic produced a firm but not tender texture, very sweet taste and a very pleasant flavor, can be obtained by using the step-up method of syruping. The increase and decrease in the nutritive contents such as Vitamin C, calcium and ash were accounted for during the processing. It was found out that the shelf life of the product could last for 90 days at normal room temperature. Presence of Neurospora and Rhizopus molds were noted after 3 months of storage.

021
GONZALES, Remegio B. 1987. Three-Phase Motor Stator Winding Trainer: Its Design and Development. (GT: MTT), 167pp.

The study was primarily to design and develop a three-phase motor stator-winding trainer. Direct rewinding activity by the students on real motor requires specific skills. These skills can be acquired by using this trainer and following a suggested procedure.

The trainer is composed of two main parts: the console and four modules. The console, which houses the modules, serves as the controlling desk. The circuit breakers, switches, signal lights, power terminal, meters, transformer and three-phase induction motor were installed. The console has its own capability to control and protect its circuitry and serves to centralize the trainer unit. The four modules are detachable boards that fit a designed console. This is where the students will undertake their skills training activity.

The design concept of this trainer was the result of the integration and collation of data taken from the survey questionnaires, ocular observation, related literature, and suggestions from colleagues and from personal experiences.

The questionnaire was designed to determine the techniques used by the different technical-vocational teachers in motor skills training, the problems encountered by shop teachers in teaching rewinding, the types of rewinding trainers that are existing, the cost of these trainers and to solicit some suggestions from the respondents on how to design and develop a proto-type trainer.

The result of the survey indicated that there were four 94) basic types of trainers that existed, namely: the rewinding boards simulator, the full-winding diagram, the polar presentation and circular diagram. The researcher observed that they had limited educational applications. The result also revealed that lack of equipment was the main problem of the teachers, so most teachers supplemented their classes by commercial/shop and plant visits, and direct rewinding activity on a real motor.

Ocular inspections and personal interviews were included to augment the data. Books and related literature were liberally used as alternative sources of data for the special project.

Suggestions from colleague and the researcher's adviser, as well as his own personal experiences were taken into consideration and thereby influenced the final draft of the trainer design.

The main idea in designing the proto-type trainer was integrate the four (4) existing basic types of trainer thus crossing out the limitation of by the present of the other trainers. The innovation included the fabrication of four (4) different modules to fit a single console.

The trainer development included the fabrication of the main components and its smaller parts. The researcher used the PERT-CPM technique in the execution of the design.

The cost of fabrication for the whole project amounted to P14, 430.25 while the average cost of the existing trainer was P 14, 807.70. Considering that the project was as integration of four different trainers, the trainer was comparably four times cheaper.

The testing process revealed that there were four basic connections possible in

preparation for the actual motor rewinding. These are the single-wye high voltage connection, the double-wye low voltage connection, the single-delta high voltage connection and double-delta low voltage connection. Aside from the basic usage of the trainer described above, there were eight (8) experimental activity starting and no-load characteristics of the motor, determining techniques in troubleshooting, simulated activity for other motors, motor resistance test, motor reversing theory, efficiency calculation, effects of long and short jumpering and repair and maintenance technique in a motor.

In the design, provisions for future expansion were considered. The power and instrument panel and provisions for an additional DC source. For other motors, there are six (6) motors that could possibly fit into the console if provided with modules, namely: split-phase motor, repulsion start induction motor, wound rotor induction motor, synchronous machine, DC machine and universal motor.

Based on the findings of the study, the researcher has recommended to the school administrators the creation of a Research and Development (R & D), the encouragement of faculty members to design and fabrication of trainers, and more government support for vocational and technical schools.

The users of the trainer, the researcher recommended additional modules for others and the preparation of laboratory manuals.

022
JUMAWAN, Ferdinand S. 1998. Utilization of Madre of Cacao and Panyawan as Pesticides to Some Household and Agricultural Pests. (GT: MTT), 68pp.

Homemade pesticides were prepared from pure extracts of madre de cacao and panyawan. The pesticidal effects of the extracts were tested on ants, corn weevils, and termites using the thigmomethod and the odor-smell method. The effects were measured according to the number of pests killed by the pesticide within one day. The data were recorded on the scorecard and were interpreted using the analysis of variance.

The results showed that pure panyawan extracts (T4) can kill termites within one hour. Pure madre de cacao extract (T5) can kill ants and termites within 8 to 24 hours. The corn weevils can be killed when they get in contact with 50% madre de cacao and 50% panyawan (T2) mixture within 24 hours. This further indicates that the thigmomethod gives direct pesticidal effect while the odor-smell method, takes some more time. At 24 hours of observation, a large number of killed ants, corn weevils, and termites were observed.

The extracts and their mixture should be promoted for home pests protection. Besides, they are bioenvironmental friendly and economical. A further study should be conducted focusing on the storage quality and marketability of the products; as well as an analysis of the chemical composition of madre de cacao and panyawan plants.

023

KILAT, Miguel T. 1986. The Industrial Arts Shop Building of Public Elementary Schools in Iligan City: An Appraisal. (GT: MTT), 70pp.

This study was designed to identify the actual condition of the industrial arts buildings in Iligan City and the problems met by the industrial arts teachers. To achieve these objectives, a comprehensive survey of the industrial arts shop buildings in Iligan City was conducted, using questionnaire as the principal instrument in gathering needed data.

The result of the survey showed that there were 44 complete elementary schools, with 43 industrial arts shop teachers and 21 industrial arts shop buildings distributed in the seven districts in the following order: North District has four complete elementary schools with five shop teachers and two buildings; East District, five complete elementary schools, four shop teachers and two shop building; Northeast I District, six complete elementary schools with five shop teachers and five shop buildings; Northeast II District, eight complete elementary schools with eight shop teachers and three shop buildings; Central District, eight complete elementary schools with nine shop teachers and seven buildings; South District, eight complete elementary schools with seven shop teachers and six shop buildings and in West District, five complete elementary schools with five shop teachers and five shop buildings.

Out of 43 shop teachers only 33 or 77 percent responded. Of the 33 respondents only 21 have shop buildings. Thirteen of these industrial arts shop were utilized by the other classes aside from industrial arts classes during vacant time. They are being used by the elementary agriculture classes, grade IV classes, home economics, mathematics and social studies classes. Only the industrial arts shop in the North District was not utilized by the other classes.

There were seven shop buildings whose age range from 5 to 10 years old, and six from 16 to 20 years old. Of the twenty-one shop buildings 4 were permanent, 13 semi-permanent and 4 were temporary.

Nine industrial arts shop buildings were made of wooden materials; eight, of wood and concrete and four were reinforced concrete. Most of the shop buildings in Iligan City were made of pre-fabricated type, following by Marcos type, Bagong Lipunan and RP-US type. Nine or 43 percent of the industrial arts shop buildings needs improvements, seven or 33 percent needs replacement and five or 24 percent needs repair.

Of the 21 industrial arts shop, 13 have an average of 18 square meters which is below the public schools standard of 105 square meters per 25 pupils or 4.2 square meters per pupil. The remaining 8 industrial arts shops were ideal with respect to floor area.

Most of the industrial arts shop teachers claimed that the shop buildings are not secured, and poorly ventilated. They also added that the buildings are characterized to have a limited space, noisy environment and are classified as temporary shop buildings.

Majority of the industrial arts shop teachers suggested that the administration should provide them more adequate materials and supplies for teaching aids. Periodic seminar workshops need to be conducted to improve their skills in preparing the necessary

teaching aids and devices. It is urged that industrial arts shop buildings be constructed in every complete elementary schools.

024

LAHOYLAHOY, Rafael G. 1996. Design, Fabrication, and Evaluation of All Multi-Purpose Woodwoking Machine. (GT: MTT), 309pp.

This study is an attempt to design and fabricate a low-cost multi-purpose woodworking machine that would perform efficiently a number of important machine functions.

This was conceived as a result of the writer's experience and observations that woodworking machines used locally are costly and generally singular in function. The concept of clustering varied machine functions into one system was premised on the belief that it could greatly reduce machine cost and also solve existing problems encountered by machine operators.

To affirm these belief and observations, the researcher conducted a survey of all cottage and small-scale woodworking establishments in Iligan City in the latter part of September 1984.

The findings revealed that most establishments utilized a singular function machine except for a few who used machines with a maximum of two functions. Circular saw, jointer-planer, and tool/general purpose grinding machines rank as the most dominantly used machines with a limited number of establishments using a disk sanding and spindle sanding machine. Most of the machine utilized in the various local woodworking shops were made locally and were designed closely similar to each other. The survey revealed further the following common problems besetting the operators in the operation of their machines:

1. Excessive machine vibration.
2. Difficulty in mounting and moving circular saw blade.
3. Excessive circular blade wobbling.
4. Difficulty in raising or lowering circular saw table.
5. Difficulty in removing and mounting jointer-planers' cutting knives.
6. Difficulty in adjusting jointer-planers' depth of cut.
7. Difficulty in planning long stock.

The finding of the survey and the ideas advanced by machine authorities were considered as bases for designing the multi-purpose woodworking machine, including material strength and availability as well as the cost estimate of fabrication.

Organized procedures were followed in constructing the machine based on the comprehensive working drawing and specification of materials. The total cost of the machine (P18, 503.85) was determined based on the combined cost of materials and labor including the overhead cost and the profit of fabrication.

Finally, the testing and evaluation results of the multi-purpose woodworking machine revealed a significant performance and with more efficiency than the woodworking machine utilized in the locality.

025

LAROT, Gaudelia C. 1984. Practices and Problems of Garment Trades Teachers of Selected Public Schools in Lanao del Norte. (GT: MTT), 80pp.

This study was designed to identify the practices and problems in teaching content and skills in garment trades and to determine the relationship between the practices and problems. A preliminary survey was conducted to determine the practices and problems encountered by teachers in the teaching-learning processes. The respondents of this study were 25 garments trades teachers in Lanao del Norte. For statistical analysis, percentage distribution, simple mean, the point biserial correlation coefficient and phi-correlation coefficient were used.

The study showed that most teachers holders of B.S. Industrial Education, garments trades major and not all were eligible and have earned graduate units, but none holders of master's degree.

The facilities and equipment for garments trades are very inadequate in schools in Lanao del Norte.

All schools in college offered all the major courses in garment trades but not in all secondary schools. Majority of the high schools teachers were handling major courses and few were assigned to teach related and unrelated courses in addition to their major courses.

Teachers employ the process approach more often and prefer to use the project, laboratory, demonstration and lecture method in teaching the skills and competencies in garment trades. Not all skills were given much emphasis by the teachers although teachers provided the students opportunities for actual practice to augment classroom activities. Different types of students' performance were also used.

Major problems encountered includes: students failure to provide materials for the project on time; inadequacy of sewing equipment and facilities, lack of lecture and laboratory rooms; insufficient time and too many intervening activities. In addition, too many extra-curricular activities, inadequate instructional materials; tardiness and insufficient background and orientation of the course were found to be serious problems.

The number of years in teaching garment trades and academic qualification were not significantly related to teachers ability in finishing the syllabus.

Based on the findings, suggestions were offered by teachers as powerful device in strengthening the program which are: the increase of laboratory hours; attendance to seminars; enrollment to graduate courses; limitation of class size and employment of demonstration and laboratory method more often.

026

LAURITO, Benito C. 1983. Resource Material for Drawing 101 - Introduction to Design. (GT: MTT), 369pp.

This study aimed primarily to design a resource material that could be used as basic reference and text for both instructors and students in Drawing 101 – Introduction to Design which is one of the drawing courses requires in the Bachelor of Science in Industrial Education curriculum.

The study started with a survey of libraries of the different trade and technical schools in Northern Mindanao region to determine the adequacy of reference books for drawing and the need to develop a resource material. It was followed by the development of the material using the research and development (R&D). The resource material developed was evaluated by a panel of experts using an evaluation questionnaire as guide. It was revised based on the evaluation results and suggestions given by the project adviser and finally approved by the guidance committee.

This material was developed by reviewing different library files including books, magazines, journals and unpublished seminar papers. The concepts, information and knowledge gathered from these materials were incorporated with those of the researcher to form as the major part of the experts were also incorporated in its final form. The important points deemed necessary to develop the cognitive, psychomotor and affective domains are the center of interest of the research.

The study covered nine units as major scope of the subject, namely: a) line sketching; b) lettering; c) instruments and materials: their uses and care; d) geometrical forms and constructions; e) orthographic projection; f) dimensioning; g) isometric projection; h) sectioning; and I) auxiliary projection. In developing each unit, the following steps were taken to come out in this final form: 1) development of the introductory statement; 2) identification and listing of general and specific objective; 3) discussions of the basic information; 4) illustration of the idea discussed; 5) listing of the basic skills to be developed; 6) designing of sample plates; 7) constructions of sample test items; and 8) listing of reference materials used in the study.

Majority of the evaluators found the objectives to be simple enough for students to understand and the sufficiency of the concepts included throughout the resource material. The lessons are easy to understand since they are design within the level of understanding of our students. The plate designs for each lesson are sufficient in number and they pose enough challenge to amateur draftsmen. Each unit is supported with clear and simple sketches illustrating the basic ideas. The procedures and processes adopted in the resource material are those that are used in the drafting industry. The sample plates are sufficient and valid for the purpose of the resource material.

In the light of the survey results and evaluation of the resource material, it is recommended that resource materials for drawing and drafting courses in the instructors of the subject. Vocational; and technical school administrators should encourage their drawing and other vocational teachers to develop resource materials that are appropriate for their respective courses and level of students, by appropriating funds for this purpose.

Moreover, the revision of instructional materials should be done by the concerned instructor at least once every five years.

An ad hoc committee should be found to improve the old drawing and drafting curriculum to suit to the present needs of the community before the development of the resource material is done.

027
LEE, Mary Grace O. 1984. A Feasibility Study to Offer Short Term Garment Trade Courses at MSU-Iligan Institute of Technology. (GT: MTT), 123pp.

This study was design to determine the feasibility of offering short-term courses in garment trades at MSU-Iligan Institute of Technology. Specifically, it attempted to: a) investigate the need to offer short term garment trades courses in the Institute; b) determine the resources available and other requirements needed to offer short term garment trades courses; and c) determine the possible employment and business ventures of garment trades graduate in the city of Iligan.

The study used the descriptive survey method with the questionnaire as the principal tool for gathering data and information. This method was supplemented by interviews and observations.

The sampling techniques used to select the respondents used in the study were simple random sampling, quota sampling and complete enumeration sampling.

The sources of data and information were 186 fourth year high school students from both pubic and private secondary schools in Iligan City; 170 out-of-school youths and 200 mothers/fathers/unemployed adults/professional, all of whom are from 17 barangays in Iligan City; 23 managers/owners of garment establishments in the city; and seven (7) garment trades faculty members of MSU-IIT, a total of 586 respondents served as subjects of the study.

The study revealed that the garment industry in Iligan City is in its pioneering stage. The records showed that there were 60 registered garment business establishments in 1983. Most of the surveyed garment firms were established between 1979-1983. Although, the industry is in its pioneering stage the managers/owners indicated that one of their problems in the industry is the scarcity of well-trained garment workers. Based on their plans of expanding their garments business, the managers projected that they would have a need of sewers, hand finishers, master cutters, pressers and fashion designers in the next five years. Along this line, they highly recommended that the educational sector should provide a good training program to train skilled workers for the industry. So far, except for one (1) private school in the city and the NMYC that intermittently conduct training courses in garment trades, there is no vocational and technical school offering specialized training program in garment trades in Iligan City.

MSU-IIT, being a technological school offering vocational courses in garment trades in its secondary and undergraduate programs is in the position to offer specialized short term and technical programs in garment trades. Basically, the Institute has the

following resources which can initially be utilized to start the operation of the program: a) six (6) competent full time garment trades instructors and one (1) practical arts teacher specialized in embroidery; b) working laboratory equipment, facilities and tools; c) classrooms which can serve as lecture and laboratory rooms; and d) library books and references on garments and clothing.

The results of the baseline survey on student clientele revealed the enthusiasm and interest of the 453 respondents (out-of-school-youth, unemployed adults/professionals and fourth year students) in the proposed training program. Of this number 82.3% signified their willingness to enroll and pursue to completion should the specialized training courses be offered at MSU-IIT.

The respondents chose the 2-3 month specialized program and indicated the following subject areas as their priorities in ranked order: Basic Dressmaking, Embroidery, Advance Dressmaking, Basic Tailoring, Advance Master Tailoring, T-Shirt Making for Mass Production and RTW Lessons of Children's and Infant's Wear.

While the finding showed that the prospective graduates have limited job opportunities in the garment industries at Iligan City, they can have possible job placements in nearby places like Cebu City where the garments business in better established and more progressive. On the other hand, graduates of this specialized course have more prospects in gainful self-employed ventures and entrepreneurship.

Cognizant of the benefits derived in offering short-term garment trades courses, the MSU-IIT as a vocational technological school should offer this course. Garment trades as a vocational of technical course is very relevant in equipping the youth and unemployed adults of Iligan City in skills and competencies that will allow them to have gained self-employed. Besides, garment trades is emerging as one of the important dollar earner in the country particularly in the export of ready-to-wear apparels.

028
LERADO, Bonifacio L. 1981. The Sandblaster Machine: Its Design and Development. (GT: MTT), 176pp.

The study was primarily aimed to design and to fabricate a sandblasting machine that can efficiently perform a sandblast finish. To attain this objective the research was used. The study started with a survey of conventional sandblasting machines in selected construction sites in Iligan City, followed by the actual designing and development of the improved sandblasting machine and testing its performance.

The study revealed that the whistle-type sandblasting machine is the design popularly used because of the availability of the materials. The survey revealed that not one of the conventional sandblasting machine survey used gears, pulleys, bearings and electric motors to increase shaft revolution, which will contribute to early completion of sandblasting works. Although these machines produced sandblast finish which is fine there were problems met by masons, and fore most among these problems is its difficulty to clean the inside portion of the body and to change the spreader.

The design of the fabricated sandblasting machine is a whistle-type and factors considered in the designing were: appearance, strength and rigidity, weight and space limitations, availability of materials and fabrication techniques. Also considered in designing were the results of the survey on conventional sandblasting machine sizes, materials used, machine construction, machine performance, and the problems met by masons on its usage.

In fabricating the designed sandblasting machine, the working drawings and specifications were basically followed.

The study revealed that the effective distance of the machine from the surface sandblasted is from 10 to 14 inches and the machine is generally moved in circular manner while doing the sandblast.

As shown in the test, the motorized sandblasting machine could sandblast wider surface area, with cheaper sandblast labor cost per square mater and could produce finer sandblast spread compared to the manually operated sandblasting machine.

The fabrication cost of the sandblasting machine was computed on the basis of material cost, labor cost, surcharge and contingencies. The total fabrication cost of a motorized sandblasting machine was about twice the cost of a manually operated one.

As a whole the result of this study revealed that a motorized sandblasting machine could finish sandblasting work earlier than a manual operated sandblasting machine could, thus reducing sandblasting labor cost but producing more.

029
LIOZO, Ugmal A. 1985. The Surface Sanding Machine: Its Design and Development. (GT: MTT), 87pp.

The objective of this study was to design and fabricate a wood surface sanding machine. The study was conducted using the research development (R&D) method. The study started with the survey of the existing home-made wood sanding machine on selected furniture and cabinet making shop in Iligan City, then followed by the designing and fabrication of the surface sanding machine.

The survey revealed that the type of homemade sander used in furniture and cabinetmakers is the floor type.

In the design and fabrication of the surface of sanding machine some factors were considered, namely: (1) design; (2) availability of materials; (3) fabrication procedure; (4) fabrication techniques; (5) rigidity and strength of materials; and (6) appearance of the machine.

The fabrication of the machine was done following the established procedure

based on working drawings and specifications.

The study revealed that the average mean time spent to sandpaper the ten (10) pieces of wood 0.762x0.9144 meter in size was 1.32 minutes using the surface sander and 2.3 minutes by the use of the drum sander.

The conclusions and recommendations derived from this study which deserve consideration are the following:

1. In sanding flat surface, the fabricated surface sander is more efficient than the drum sander and manual sanding.
2. The design features of the fabricated surface sander entail more rigidity in terms of replacement and installation of spare parts and maneuverability in the in feeding and out feeding of pieces of wood than the homemade sander.

3. The quality and quantity of finished product done in the fabricated surface sander, to a large extent, is better than the drum sander.
4. The cost in the fabrication of the fabricated surface sander is P 1,156.51, while of that of the homemade is P 1,500,00.
5. The fabricated surface sander is within the financial capability of average furniture and cabinetmaker or has a bright market prospect for elementary and secondary high school shops as well as the schools of Arts and Trades and Technical schools.

This study further indicated that there was a significant difference between the homemade drum and fabricated surface sander during the performance test of both machines on 10 specimens at 15 level of significance. The computed or obtained t-value was 3.7, higher than the Table t-value of 2.88.

On its limitation, the fabricated surface sander can effectively perform flat and straight surface sanding with limited thickness and width of wood. In addition, when compared with the homemade drum sander on sanding curve surface of wood, it was revealed that the mean time spent was 1.467 minutes for the fabricated surface sander as against 1.19 minutes for the drum sander.

030
LOPEZ, Raquel F. 1999. Development of a Drop Weight Impact Wear Tester. (GT: MTT), 67pp.

The study was conducted to develop a device for impact wear testing of two steel materials. This device which is the drop weight impact tester is used to investigate the impact wear resistance of the steel ball and a P-20 tool steel.

Detailed examination of the worn surfaces using scanning electron microscopy (SEM), revealed that fractures formed in steel ball after dropping 200 times of 2.0 kg. Load at 1 meter height unto altered basalt and altered andesite are intergranular or tansgranular type while P-20 Steel behaved in a ductile manner.

An analysis of the results showed that the major wear process of steel ball is impact damage plus the contribution of fatigue wear and for the P-20 tool steel, it is through plastic deformation.

The drop weight impact tester can provide useful information on the wear capabilities of materials as well as its wear behavior in actual field of application.

031
MACARIMBANG, Norania T. 1999. Product Development of Potato-Durian Cookie Bar. (GT: MTT), 46pp.

Product development of cookie bar was done on *Solanum tuberosum* and *Durio zibethinus*, locally known as potato and durian, at moderate temperature in the oven. Prior to the standardization of cookie bar series of initial recipe formulations was conducted to determine the acceptability of potato and durian preparation of doughnut, moist chocolate cake and cheese sticks. Teachers in the T.H.E. Department of Integrated Development Schools (IDS) and college faculty of MSU-IIT evaluated the initial formulations. Based on the comments and suggestions of evaluators the experiment was redirected towards production of potato durian cookie bars.

Following the standard procedure for cookie bar, four (4) samples of cookie bars containing varying amounts of durian paste were prepared. The acceptability was evaluated by a panel of tasters using the standard score sheet. The most acceptable cookie bar was subjected to chemical analysis to determine its nutritive content and microbial analysis to determine its shelf life.

Statistical analysis for the sensory evaluation showed that the cookie bar made of ¼ cup + 2 teaspoon durian paste was the most acceptable. A highly acceptable quality product has lightly browned color, with a slightly moist tender texture, rich durian flavor, and a very pleasant taste that is extremely liked by the panel of tasters. Chemical analysis showed that potato and durian can be a good source of protein and calcium. The shelf life of cookie bar was 30 days at normal room temperature.

032
MACODI, Mona P. 1990. Nutrition Knowledge, Attitudes, and Practices of Public Secondary School Teachers in Marawi City: An Analysis. (GT: MTT), 140pp.

The researcher attempted to determine the relationship of nutrition knowledge, attitudes and practices of public secondary school teachers to some selected variables. Specifically, the study endeavored to (1) find out the prevailing nutrition knowledge, attitudes and practices of the public secondary school teachers; (2) determine the relationship of nutrition knowledge, attitudes and practices; (3) correlate nutrition knowledge, attitudes and practices with some selected variable such as age, educational attainment, length of experience and trainings attended on nutrition; and (4) look into the significant difference in nutrition knowledge, attitudes and practices of Muslim and Christian teachers.

The subject of the study consisted of 181 teachers and principals/head teacher of the public secondary schools in Marawi City, which is a part of Lanao del Sur.

The finding showed that most of the respondents were very adequately informed about nutrition. The mean and perfect scores in nutrition test were 29.97 out of 40 items for knowledge; 104.68 out of 150 for attitudes; 73.69 out of 100 practices reflecting subjects, very good practices.

The z-test showed no significant difference in knowledge and practices between Muslim and Christian teaches on nutrition. However, Christian respondents had favorable nutrition attitudes compared with the Muslim respondents.

The Scatter diagrams indicated no significant relationship between the respondents' age and their length of experience, to their nutrition knowledge and practices, but there was a slight significant relationship between respondents' age and their attitudes. It also indicated that there was a significant relationship between the respondents' educational attainment, nutrition training attended in college and experience to their three dependent variables (KAP). Nutrition practices were further influenced by the teachers' food and nutrition training learned in college.

033
MADRAZO, Redempto P. 1989. Perception of On-The-Job MSU-Iligan Institutes of Technology Electrical Engineering Technicians and Faculty Members on the Ladderization of Electrical Engineering Technology Curricula. (GT: MTT), 144pp.

This study attempted to determines the opinions or perceptions of both the on-the-job technician graduates and faculty members of MSU-IIT on the ladderization of the Electrical Engineering Technology (EET) curricula.

This study revealed significantly that of the 71 technician graduated and 67 faculty members surveyed, both of them were in favor of: a) converting the electrical engineering curricula into a non-terminal course, b) accrediting the subjects and units towards BSEE, and c) revising and ladderizing the SET curricula.

The findings of this study pointed on the factors that influenced their opinion on the ladderization of the MSU-IIT on-the-job technician are as follows: recruitment preference, more promotion after employment, and job mobility.

Based on the findings of this study, the curricular implications on the ladderization of the EET curricula revealed that the existing EET curricula call for an immediate need for ladderization and the cost of ladderization would eventually cancel out because of better quality and sellable graduates in the future.

Based on the findings, the conclusions are:

1. The existing EET curriculum had caused, to a great extent, dissatisfaction among the MSU-IIT on-the-job technician graduates.

2. There is a very close congruence on the responses of both the technician graduates and faculty members in terms of their perceptions and on the factors that influenced their opinion on the ladderization.

3. The quality of the inputs (i.e., admission policy) was adversely affected by the lowering of the cut-off score or percentage rank of 63 as well as in admitting a sizeable number of "Free Tuition Fees" and "Paying" students which lower the quality of inputs.

4. The existing EET curriculum is wasteful in terms of drop-outs resulting to an average yearly wasted investment cost of P79, 428.00 with only 66.19 percent graduates per year.

5. The curriculum implications of the ladderization mean better quality and competitive graduates.

In the light of the foregoing findings and conclusions, the recommendations offered are as follows:

1. Request the present MSU Board of Regents (BOR) to amend the EET or SET (School of Engineering Technology) curricula to non-terminal.

2. Submit the proposed ladder-type curriculum to the BOR, for early approval and implementation.

3. Admission of MSU-IIT should be reviewed and revised to admit the cream of applicants.

4. Representatives from the industries should participate in the curriculum development as well as in a vigorous information dissemination drive in order that industries will be made aware of what a technician really is, does and where in the organization he belongs.

5. A follow-up study should be pursued by other SET departments on social benefit-cost analysis of their programs for future use or reference.

034

MARAJAS, Antonio S. 1996. An Evaluation on Computer Technicians' Skills Needed by Industries and Commercial Establishments and Its Significance to MSU-IIT Computer Electronics Technology Curriculum. (GT: MTT), 148pp.

This study attempted to determine the skills needed by computer technicians in industrial and commercial establishments and its significance to computer electronics curriculum offerings of the Electronics Technology Curriculum of the ESET Department of MSU-Iligan Institute of Technology. The Study employed the following statistical tools: percentages mean, T-test and F-test.

The study revealed the following:

1. Most of the skills suggested on the hardware and software components of computer Center and MSU-IIT, while of both the Commercial Computer Center and MSU-IIT, while "moderately needed" by part in Iligan Bay Industries.

2. The researcher found out that the existing curriculum in computer electronics technology offered only thirty seven percent (37%) of the skills suggested by commercial establishments and forty three percent (43%) of the skills suggested by Iligan Bay Industries.

3. A lower level of needs by Iligan Bay Industries in hardware aspect of computer resulted in a significant difference. A no significant difference however occurs on level of needs between commercial computer establishments and MSU-IIT.

4. In software aspect of computer, there were cases wherein lower ratings provided by Iligan Bay Industries resulted in a significant difference with MSU-IIT and commercial computer center. But in most cases the level of needs of commercial computer center and MSU-IIT did not differ significantly.

5. The test shows a no significant difference on the responses between administrative and rank and file employees of both Iligan Bay Industries and commercial computer establishments in hardware and software aspects of computer.

6. A no significant difference resulted in a test of difference on the responses between administrative employees of both the Iligan Bay Industries and commercial computer establishments. A significant difference however occurred between rank and file employees.

The following are the conclusions:

1. Most of the skills suggested under hardware and software components were needed by computer experts of commercial computer establishments and MSU-IIT.

2. The skills of computer technician offered by the existing curriculum did not satisfy the needs of the different industries and commercial computer establishments.

3. In most cases, a lower rating provided by Iligan Bay Industries in hardware component of computer resulted in a significant difference.

4. In the software aspect of computer and rank and file employees of both the Iligan Bay Industries and commercial computer establishments on the hardware and software aspects of computer did not differ significantly.

5. A no significant difference resulted between the administrative employees while a significant difference occurred between rank and file employees of both commercial computer establishments and Iligan Bay Industries.

035
MARAJAS, Erman S. 1992. Analysis and Design of a Computerized Student Information System. (GT: MTT), 237pp.

This research was undertaken primarily to analyze and design a computerized student information system for MSU-IIT School of Engineering Technology. Specifically, this study aimed to: 1) understand the current environment in management of student records in the MSU-IIT School of Engineering Technology; 2) define the user's

requirements for the new system; 3) transform the user's requirements into a functional specification for the new system; 4) design the effective organization of the system software in terms of modules and sub-modules; 5) determine the computer hardware requirements and cost estimate for the proposed system; and 6) develop a prototype of the system software.

In order to achieve its objective, the study of the current environment was made initially in order to gather data and information of the current system's management of student records and develop a verifiable model of the current system reflecting the analyst's understanding of the current system of operation.

The data gathered in the initial phase was reviewed and analyzed to define the user's requirements for a new system identifying the functions in the current system to be computerized and new functions to be added for computerization. This function includes information storage, retrieval, updating, sorting, indexing, computation facilities, generation of reports, and others.

The defined user requirements was used in modeling of the user's environment to build a functional specification for the propose system. The model documentation included the statement of the purpose, context diagram, complete set of leveled dataflow diagrams and data dictionary. The functional specification was broken down into five (5) main systems: the File Maintenance System, Report, the Data Utilities, History and Payroll System.

The leveled dataflow diagram was used in deriving the system's organization in term of modules and sub-modules. The output was composed of hierarchy charts illustrating the effective organization of the system software architecture in top down fashion. In addition, the structure of the database files (DBF) was created to define the typed and structures of attributes (or fields) that made up the databases. A total of forty one (41) files of normalized database file were created for the system.

The computerization of MSU-IIT School of Engineering Technology was highly suggested to make use of the latest available technology with personal computer interconnected in Local Area Network (LAN). The system will need at least ten (10) workstations and one (1) server. A list of computer hardware requirements was also prepared and cost data were gathered and assembled to estimate the cost needed to implement the system. Roughly P1, 198,482.39 will be needed to implement the system.

The systems prototype that was developed consisted mostly of selected modules from File Maintenance and Data Utilities. The prototype was written, using programming software's and others, and the computer facilities of the Department of Electronics Engineering technology. Roughly one hundred twenty (120) modules were coded to simulate some of the prototype and was not presented as part of the system's documentation as were not the real system's software.

036
MARZO, Rhode B. 1999. Instructional Board Drafter: Its Design and Construction.
    (GT: MTT), 47pp.

This study dealt with the design, construction and performance evaluation of an Instructional Board drafter (IBD) with the purpose that the IBD would be used by graphic or drawing instructors in teaching graphics or mechanical drawing. The gadget is not as sophisticated and expensive as the imported drafting machine rather it is simple, easy to manipulate, and inexpensive. The design will not only greatly enhance accuracy in the technical preparation of mechanical drawings but also it will improve the teacher's effectiveness in classroom demonstration.

The study made use of Research and Development which was consisted of two phases, namely; the survey of the existing designs of the IBD used by institutions of higher learning in Iligan City and the designing and construction of the proposed IBD.

All graphics or drawing instructors from tertiary institutions in Iligan City were invited to assess the performance of the IBD in terms of its structure, cost, utility, time efficiency, and convenience after the demonstration by the researcher. The assessment revealed that the constructed gadget is highly acceptable to all graphics or drawing instructors for classroom use. They recommended the production of the gadget so as to provide the graphics or drawing instructors in Iligan City at least one IBD per institution.

037
MATIONG, Ma. Luisa E. 1999. Faculty Scheduling Using Artificial Intelligence. (GT: MTT), 89pp.

The study sought to develop a computer-based Faculty Scheduler using Artificial Intelligence with the Department of Electronics Engineering Technology as the pilot area.

The method employed to achieve its objective was set to four (4) phases. The initial phase was the data gathering and identification of the user's requirements. The second phase involves system analysis and program designing. The third phase of the study was the building of the knowledge base of the proposed system and development of different programs. The last phase was the prototyping of the system.

The computer-based faculty scheduler can produce subject loading and schedules and can generate reports for faculty loading and scheduling for individual faculty. The system ensures that no overlapping of schedules would happen by referring to its knowledge base.

This study would be a significant contribution to every department in transforming the task of faculty scheduling from conventional way to a computer-aided system. The system and procedures in the development of the computer-based faculty scheduler would serve as guide to computer instructors, programmers, system analysts, and those who have interest in the computer-based system development and in the field of artificial intelligence.

038
MERCA, Antonio M. 1999. Comparative Study on the Compressive Strength of

Foundry Sand Using Iligan City Clays as Binder. (GT: MTT), 80pp.

The feasibility of utilizing Pugaan and Sta. Filomena clays as green and dry sand binders of the molding sand was investigated.

The Palawan-silica sand with A.F.S. Clay of 1.67% was used as foundry sand. The foundry sand mixtures were tested for green an dry compressive strengths at different levels of clay ranging from 2%-20% and at different levels of tempering water ranging from 2%-12%. The compressive strengths using local binders were compared with that of commercial bentonite.

The maximum mean green compressive strength were 86.96 KPa for bentonite at 8% water an d20% clay, 92.08 KPa for Sta. Filomena and 57.84 KPa for Pugaan both at 4% water ad 20% clay. For dry compression, the maximum dry compressive strengths were 542.08 KPa, 531.29 KPa and 508.09 KPa for bentonite, Sta. Filomena and Pugaan clays at 20% clay and 12% water. The values obtained were within the required green and dry compressive strength.

039
MIGUEL, Jorge L. 1984. Assessment of Programs Factors and the Relationship to the Level of Effectiveness of the BSIED Automotive and Machine Shop Technology Program of MSU-Iligan Institute of Technology. (GT: MTT), 95pp.

The problem of the study is to evaluate the relationship of the program factors and the level of the effectiveness of the Bachelor of Science in Industrial Education Automotive and Machine Shop Technology, from 1981 to 1983. To attain the objectives, a survey to the graduate was made. The data gathered were tabulated, analyzed, interpreted and presented by using appropriate statistical tools such as the weighted mean, percentage distribution, ranking, Pearson-Product-Moment correlation and Point-biserial correlation.

The program factors evaluated were: 1) selection and admission of student entrants; 2) curriculum contents; 3) faculty qualifications and competencies; and 4) physical facilities against the level of effectiveness in terms of employment opportunities and scholastic achievement of graduates.

The respondents were twelve (12) graduates and ten (10) faculty members actually teaching the course.

The findings revealed that the selection and admission system of MSU-IIT was to a great extent or adequately administered; the curriculum contents are attainable; responsive and relevant to the needs of the clientele; the qualifications and competencies are very high and to a great extent are capable of teaching the courses; and the existing facilities are adequate.

Specifically, the programs factors were related to the nature and status of employment, category of school and academic levels taught, average length of service employment in related and unrelated fields to major fields of specialization, in the major

course, in the professional subjects, and in the related subjects. It also dealt with the interrelationship between the nature and employment and scholastic achievement. The findings revealed that: 1) there was no relationship between the NCEE and the general grade point average in all courses; 2) there was a significant positive relationship between the grade point average in the major course, professional course, and the related subjects except on the nature and status of employment. The conclusions drawn were: 1) the program factors are adequate; 2) the level of effectiveness was also high; 3) there was a significant positive relationship between the program factors and the level of effectiveness of the programs except between the general grade point average and the nature and status of employment of graduates.

The implications of the study articulate and accentuate on the strengths and weaknesses of the two programs in terms of the employment of the graduates. The employment opportunities of the graduates are considerably high. Hence, their scholastic achievements do not significantly influence the nature and status of their employment.

040

MIÑOZA, Ma. Faye O. 1998. Factors Affecting Women's Perceptions on Gender Equality and the Decision Making Style in the Family. (GT: MTT), 116pp.

This investigation was conducted to determine the factors affecting women's perceptions on gender equality and the decision making style in the family.

The respondents, drawn by systematic random sampling, consisted of one hundred sixty-eight (168) professional workingwomen employed in three (3) selected Industrial plants in Iligan City.

The researcher made use of the descriptive method of research and the correlational technique. The self-constructed opinionnaire checklist was the major tool in collecting the necessary information. The percentage, mean, chi square and multiple regression were used to treat the data.

The women's uncertainties towards perceptions on most of the gender equality factors showed that traditional segregation of roles is still strong despite the changes that are taking place in the Philippine society today.

041

MONOY, Eduarda C. 1984. The Garments Industry in Iligan: Its Implications to the Garment Technology Courses Offered in MSU-IIT. (GT: MTT), 114pp.

The study aimed to identify the garments industry in Iligan City and its implications to the garment technology courses (secondary, collegiate and master's program) offered in MSU-IIT. To achieve this objective, a survey of the garment factories, dress shops and tailor shops was made. The data gathered were tabulated, interpreted and presented by simple ranking and percentage distribution.

The findings showed that the garments industry provide more employment opportunities for the people. The entrepreneurs have undergone formal education and special training along their product line.

There is no age requirement nor formal training requirements for garment workers in order to be employed in the industry. The job entry requirement is a competency test on the trade specifically on the area where they are applying for. However, it is the desire of entrepreneurs to have workers with varied skills and knowledge of the trade.

There are several jobs involved in the production of garments and these jobs are interrelated. The workers are assigned to a specific job, yet do otherwise as the need arises. The garment workers displayed competence in their line of work, but still they need further skill development in some related fields.

The entrepreneur encountered some problems in managing the industry, and the most difficult is the high prices of raw materials or the sewing supplies.

The production of garments involved major processes and several minor operations or skills. The study revealed that there are minor operations that are employed in dress shops and not in tailor shops or vice versa. Moreover, there are minor operations that are employed in the industry but not in school because of facilities constraint. This effect, there is a need to equip the school with these facilities in order to carry out the objectives of the school more effectively.

The garment technology courses offered at MSU-IIT, which consist of the vocational elective in the secondary program, the BSIED and MTT programs major in garment technology play a very important role in the development of manpower needed by the garment industries. The findings showed that there is a need to strengthen all these educational programs offered at MSU-IIT.

042
NOYNAY, Ma. Edna B. 1991. Food Beliefs, Attitudes and Practices in Relation to Intake Adequacy of MSU-IIT College Students for the 2nd Semester School Year 1986 – 1987. (GT: MTT), 96pp.

The study assessed the nutritional status of college students. Specifically, it compared the actual dietary intake of the students to the ideal or standard food requirements; compared nutrient intake of students staying with parents/relatives; self/group cooking and those eating in restaurants/carenderia; correlated intake adequate to height, weight, age, allowance, food beliefs and attitudes; and, formulated recommendations to college students and policy makers based on the results of the study.

There were a total of 298 respondents distributed from the five colleges that were included in the study. The questionnaire was the principal instrument in gathering pertinent data and information. In measuring food beliefs and attitudes of students the researcher used the Linker format. Data on food intake were collected through the food recall method. Questions for the dietary practices were formatted.

Nutritional adequacy was estimated by comparing the amounts of foods eaten in household measures to the Average Daily Requirement.

Multiple regression and partial correlation were used in finding out the relationships between percent intake adequacy to the different variables like weight, height, age, monthly allowance, number of children, food beliefs and food attitudes. Frequency and percentage distribution were also used in computing related data on dietary practices.

Results of the study showed that majority of the samples stayed with parents/relatives (56%), self/group cooking followed (33%) and the least were those eating in restaurant/carenderia (9.7%). Almost all of them were single with the mean age of 21. The average monthly allowance was P270.89, while the average number of siblings in the family is 6. Other findings showed that students reached a 90 percent mark to the ideal body weight. The respondents showed favorable food and nutrition attitudes and beliefs as shown by the above 60 scores. However, respondents got higher food attitude (70.6) than food belief score (66.5).

For the diet rating it was revealed that in all colleges energy and body building foods were excellent in rating. But in the regulating food the students got poor rating. Because of this the over-all rating for all the colleges was pulled down to an average of 76.5 percent.

Regression analysis showed that at $\alpha = 0.05$ the independent variable s such as height, weight, age, meal allowance, number of children or siblings, food attitude, food beliefs and education are not significantly related to dietary rating. Although at $\alpha = 0.10$, height and food beliefs display a significant correlation to dietary rating with value of R = 0.1843, a low correlation.

043
OLE, Patricio Jr. A. 1993. Comparative Study of the Trade Performance of Electrical Technology Students Exposed to Two Types of Laboratory Equipment. (GT: MTT), 57pp.

The research was done to determine and compare the trade skill performance levels of second year Electrical Engineering Technology students using two different types of Industrials Control Laboratory Equipment in the subject Industrial Controls (ELT 272) at MSU-IIT.

The samples were purposively drawn from second year Electrical students major in Machineries and Power Production and Distribution enrolled during the second semester of the SY 1992-1993. There were (17) majored in Machineries and sixteen (16) in Power Production and Distribution.

In this study, the students were grouped into three to four students in each group. They were also grouped heterogeneously based on their latest grade Point Average (GPA). The Power Production students were used as the experimental group while the Machineries students were used as the control group. Rotation of leadership was strictly implement during laboratory classes scheduled in the morning.

At the start of the study, students were pre-tested on knowledge. Other performance indicators were observed during mid and posttest. To measure their performance levels, the researcher used two types of equipment, the Lab-Volt and non Lab-Volt, which were used during the practical examination. Moreover, during practical examination, test items were picked up (with respective equipment used) randomly.

Test materials used in knowledge cognitive taxonomic level was validated using KR-20 with reliability coefficient of 75%. However, diagramming, wiring connection and troubleshooting test item had undergone scrutiny from teachers handling the subject in the past. The aptitude examination was conducted by the guidance personnel using the Otis-Lennon School Ability test. The data were then analyzed using average, standard deviations, correlation Spearman's rank coefficient, one-way and two-way ANOVA and the non-parametric Mann-Whitney U test.

The findings revealed that both equipment had the positive effect to the average and below average students based on their Aptitude and GPA's

The data also revealed that Lab-Volt equipment lead to mastery learning on knowledge, diagramming, wiring connection accuracy, troubleshooting accuracy and speed. Non Lab-Volt equipment lead to the mastery learning of wiring connection accuracy and speed and troubleshooting speed.

The performance level of students using Lab-Volt and non Lab-Volt equipment differed significantly on the wiring connection accuracy and troubleshooting accuracy performance component. Using non Lab-Volt equipment facilitated better wiring connection and troubleshooting accuracy performance.

Furthermore with high-level concepts in industrial control group the very high (VH) attitude students using Lab-Volt equipment had better performance than the experimental group using non Lab-Volt equipment. The data shows that the Lab-Volt equipment could be used in self-paced instruction to very high (VH) attitude students.

The research recommended:

1. The use of industrial non Lab-Volt control equipment side by side with the Lab-Volt control equipment for effective teaching-learning outcome and familiarity of students to actual industrial control equipment.

2. The use of Lab-Volt equipment on the early part of the semester with the non Lab-Volt equipment on the later part of the semester. This acquaints the students with the equipment and masters it in the later part of the semester.

3. The use of Lab-Volt equipment in self-paced instruction or Modular program of very high (VH) attitude students with above average GPA and Aptitude result.

4. An in-depth study of Lab-Volt and non Lab-Volt equipment in the

teaching-learning process, utilizing students in the vocational schools.

044
QUIÑONES, Marylou E. 1995. Chico Utilization in the Production of Jelly and Dehydrated Candy: A Baseline Data for Technology Transfer. (GT: MTT), 196pp.

This study was conducted primarily to utilize Chico fruit in the Production of Chico Jelly and Dehydrated Candied Chico as a based data for technology transfer. Specifically, it aimed to: 1) develop standard procedure for processing Chico Jelly and Dehydrated Candied Chico, 2) determine the shelf-life of finished products, 3) find out the nutritive value of the finished products in terms of a) calcium, b) iron, c) vitamin C and d) moisture content (candy only) and 4) to determine acceptability.

There were two finished products in this study, using Chico fruit as a raw material. The usual procedure in preparing jelly and dehydrated candy was followed. For dehydrated candied Chico, there were three samples with different preservative used. Sample A had no preservative, Sample B had sodium benzoate, and Sample C had sodium metabisulfite. While for the Chico jelly, there were also three samples with different sugar concentration. Sample A with 1: 3/4 (1 cup of Chico juice to 3/4 cup sugar), Sample B with 1:1/2 (1 cup of Chico juice to 1/2 cup of sugar), and Sample C with 1: 1/4 (1 cup of Chico juice to 1/4 cup sugar).

Ten respondents considered as food experts evaluated the products using the standard scorecard as the main instrument in gathering the data for acceptability. There were two score cards provided; one for the Chico jelly and one for the dehydrated candied Chico. It was divided into parts. The first portion dealt with determination of palatability and quality of the products which included the color, flavor, and texture. The second portion dealt with the degree of preference on the over-all acceptability of the products. At the end portion of the scorecard, the respondents were asked to give comments.

Mean and ranking were used to determine the sample to be subjected to microbiological and chemical analyses. Analysis of Variance (ANOVA) was then used, to test the data for significance. For data with high significant difference, the Duncan Multiple Range Test (DMRT) was used to locate the difference.

Analysis revealed that when the two products were analyzed, Sample B (Chico jelly and dehydrated candy Chico) ranked first when the six samples were ranked based on the sensory evaluation.

Based on the finding of the study, it was found out that it is possible to utilize Chico fruit in the production of Chico jelly and dehydrated candied Chico. The shelf-life of the finished products could last for more than 113 days at a normal room temperature condition. It showed that after 113 days the Chico jelly and dehydrated candied Chico was still edible. Microbiological analysis indicated the presence of "Bacillus Subtilis", non-pathogenic bacteria that will not cause any harmful effect to the body when taken in.

The study also revealed that there was an increase of nutritive content in both

Chico jelly and dehydrated candied Chico from raw to finished product due to the additives that were added during the process.

This study would be a baseline data for technology transfer for entrepreneurs and investors who will engage in mass production of Chico jelly and dehydrated candied Chico for commercial intent. Furthermore, instructors and teachers in Food technology and other related subjects could use this as a reference to introduce innovations in food preservation.

045
SALOMA, Mariano Jr. T. 1984. Design and Development of a Forging Furnace. (GT: MTT), 116pp.

The main objective of this study is to design and develop a forging furnace that could be operated both manually and by electrical power. This is anchored on the observations by this writer that the forging furnaces presently used by the local blacksmiths could be improved to perform efficiently at less expense of the operator.

The writer also believes that metal working shops of vocational schools as well as small-scale commercial forging shops will be benefited by this study.

The study was conducted using research and development (R&D) method. This includes a survey of the existing design of forging furnaces from Iligan City to Manticao, Misamis Oriental. The survey includes problems encountered by local blacksmiths in using their forging furnaces. This was conducted last November 7, 1983.

The finding revealed that there are two types of forging furnaces used locally in terms of operation. These are manual and motorized. The data revealed further that the forging furnaces used locally, either manual or motorized were installed permanently in the forging shop. In addition, some problems met by local blacksmiths were identified as follows:

1. Difficulty in transferring their forging furnaces from one place to another.
2. Difficulty in cleaning the air passage.
3. Difficulty in repairing the blower.
4. Relatively high cost of general repair.
5. More time and effort required performing the work.

Based on the findings of the study and ideas advocated by some authors, the following factors such as strength, safety, fabrication cost and portability were considered in the designing and fabricating of the machine.

The fabrication of the machine was done following the systematic procedures based on the working drawing and specification of the materials. The types and quality of finishing materials were considered for safety purposes.

The fabrication cost of the machine was determined based on the total cost of materials used, labor cost, surcharges and contingencies.

The testing results revealed that the fabricated forging furnace could heat a greater volume at a given time.

Finally, the results of the study revealed that the fabricated forging furnace performs the work better than manually operated forging furnace used locally.

046
SAMSON, Leo L. 1989. Weathered Limestone as Mortar Aggregate. (GT: MTT), 140pp.

Weathered limestone is prominent bedding and filling material for construction and repair works. It is also used to improve the stability of a building's foundation system and serves as intact bed for concretes ground floors. Its abundance in deposit and the state on being lower in acquisition cost may propel anyone's initiative and interest to search for further areas of application thereby maximizing its utility value.

This study was launched to find out the feasibility of utilizing weathered limestone as an aggregate of mortar intended for setting concrete hollow blocks. Specifically, it seeks to evaluate the following hypotheses: a) Weathered limestone as an aggregate will increase the compressive strength of mortar, and b) Using weather limestone aggregate in lieu of sand will decrease the cost of mortar.

The experiment was patterned to a completely randomized design with equal number of replications and was conducted at the Material Testing Laboratory of the Department of Civil Engineering Technology, MSU-Iligan Institute of Technology, Iligan City. The procedures applied in the conduct of the various components of the experiment were based on standards introduced by the American Standard for testing and materials (ASTM). All the mortar ingredients were taken within the bounds of Iligan City. The data obtained were statistically analyzed with the used of parametric tests and the significance level was established at 5% with the corresponding degrees of freedom.

The results indicated that: a) the compressive strength of the mortar is inversely proportional to the quantity of weathered limestone; and b) the cost of mortar in inversely proportional to the quantity of mortar limestone.

Considering the capability of the mortar of weathered limestone aggregate withstand compression it is recommended that such kind of mortar may be used for setting concrete hollow blocks of non-bearing wall units. It is further recommended that more researches should be conducted about the feasibility of utilizing weathered limestone for other areas of masonry works. The study may cover the determination of the functional characteristics of the mortar such as; consistency, plasticity and workability, water retentively, constant of volume, extent bond and freedom from efflorescence.

047
SANCHEZ, Bernabe Q. 1999. Development of a Coconut Shell Charcoal Burner as Alternative Heat Generator for Absorption Refrigerators. (GT: MTT), 74pp.

The feasibility of operating absorption refrigerators with coconut shell charcoal as fuel. It is identified that the dominant factors affecting and controlling the design of small solid fuel burners are the following: grate area, insulation thickness, fuel bed deepness, and the volume of the combustion zone. Design information for large industrial scale solid fuel burners are used as basis in the experimental model reveals that small solid fuel burners are used as basis in the experimental model of coconut shell charcoal burner. The actual performance of the experimental model reveals that small solid fuel burners do not behave as; rage industrial scale fuel burners do. The experimental model reveals that small solid fuel burners do not behave as large industrial scale solid fuel burners do. The experimental model is designed at 25 lbs. /ft^2 –hr, which is the optimum firing rate of industrial scale solid fuel burners, however, the model unit operates optimally at 15 lbs./ft^2-hr.

Response Surface Methodology (RSM) was applied in the treatment of the experimental data.

Finally, the actual coconut shell charcoal burner is fabricated using the optimized dimensions. The fabricated burner is fabricated using the optimized dimensions. The fabricated burner is fitted to the absorption refrigerator that has been operated with liquefied petroleum gas as fuel utilizing a Bunsen burner. It should be noted that there are 2 Bunsen burners tested. The first bigger Bunsen burner failed to produce ice in evaporator of the absorption refrigerator. The second smaller Bunsen burner performs better with –4^0 C minimum temperature reached in the evaporator after 6 hours of operation. When the absorption refrigerator is fitted with the coconut shell charcoal burner and fired with coconut shell charcoal as fuel, the minimum temperature produced in the evaporator is –10^0 C after hours of operation.

Although coconut shell charcoal fuel results in an erratic operation compared to liquefied petroleum gas operation, it is strongly believed that only time and more intensive research investigations are needed to perfect this new and innovative technology.

048

SARUCAM, Albino D. 1992. A Critical Review of the Automotive Engineering Technology Curriculum at MSU-IIT to Industry Needs Using Skills Mix and Skills Match Parameters. (GT: MTT), 174pp.

Conducted among 36 managers/supervisors and 174 technicians/skilled workers of various industrial establishments in the cities of Ozamis, Iligan, Cagayan de Oro, and provincial areas of Ozamis Oriental, this study was an attempt to review and evaluate the effectiveness and relevance of the Automotive Engineering Technology (AET) curriculum of MSU-IIT to the needs of the industry using skills mix and skills match parameters.

The study answered the following questions:

1. How relevant is the Automotive Engineering Technology (AET) curriculum of MSU-IIT particularly the Transport Services Option to the needs of the industry related to:
   1.1. Skills mix based on curriculum emphasis.
   1.2. Skills match, based on skills trained in school and those required by industry.
2. What training blocks are considered relevant by the industry and the curriculum or academy?
3. How skills are mixes in one industry significantly different from that of the other industry?

The hypothesis of this study were: (1) the Automotive Engineering Technology (AET) curriculum of MSU-IIT particularly the Transport Services Option is still relevant to the needs of the industry, (2) there is a significant skills match in terms of training skills and training blocks between the curriculum and industry, and (3) the curricular skills mix in the school curriculum significantly affects the needs of the industry, the reason why every industry have its own particularly of needed skills.

The study employed the descriptive-normative-survey through unscheduled interview and a closed-form type of research questionnaire. In determining the sample size from a large population and a widely scattered geographic distribution, cluster sampling was used. Skills identified in this study was categorized into Very Relevant, Relevant, and Not Relevant, and was rated by supervisors and technicians/skilled workers according to their own perceptions. Each category given a weight of three, two, and one respectively.

Statistical treatment applied in this research was computed mean after limits were determined based on the three-point scale, the test of significance, and the analysis of variance (ANOVA).

Finding of the study include the following, first, there were varied perceptions between supervisor and technicians/skilled workers in all the industrials sectors with regards to curricular skills gained in school and those needed/required by industry. Second, except for Overhauling/Tune-up, almost all the skills considered in the study were not equally matched between the curriculum and the industry. Third, the degree if relevance of the present Automotive Engineering Technology curriculum of MSU-IIT particularly the Transport Services Option is moderately low, hence the need for revision and improvement.

The overall implications of this study suggested that before a curriculum is planned, developed, and implemented, first and foremost, it should take into consideration the needs of the industry in particular, as well as the needs of the community in general.

049
SAYADI, Nadzmi S. 1999. Development of a Non-Ferrous Metal Melting Furnace. (GT: MTT), 70pp.

A wood-Fired Non-Ferrous Melting Furnace, was developed using locally available firebricks, green clay and powdered firebricks of grog as fabricating materials. The furnace developed was used to melt non-ferrous metals such as Aluminum, Copper alloys and other non-ferrous metal whose melting temperature does not exceed 1000^0C.

The results showed that the furnace can melt aluminum metal and brass (60% copper, and 40% Zn), with minimum amount of fuel at lesser time than expected. The efficiency of the development furnace for melting 5 kilograms of Aluminum was found out to be 67%.

050
SIENES, Ana Belen T. 1996. Utilization of Tomato into Prunes a Product Improvement. (GT: MTT), 161pp.

This study was conducted primarily to utilize tomato in the production tomato prunes. Specifically, it aimed to 1) determine the standard for processing Improved Tomato Prunes particularly on its drying time and kind of preservatives to be used; 2) determine the level of acceptability in terms of color, flavor, texture and acceptability; 3) determine the shelf-life of Improved Tomato Prunes; and 4) find out the nutritive value of Improved Tomato Prunes in terms of a) calcium, b) protein, c) vitamin C d) ash, and e) moisture content.

The study utilized tomato as a raw material for processing Improved Tomato Prunes. The usual procedure in preparing tomato prunes was followed. However, some applications on culinary cases were utilized such as removing the core and peeling the tomato. There were four samples and each has three replications with different preservatives used. Sample A had no preservative, Sample B had sodium benzoate plus citric acid added while preparing the syrup, Sample C had sodium metabisulfite and citric acid added in preparing the syrup, and Sample D had sodium benzoate and sodium metabisulfite plus citric acid in preparing the syrup.

Ten respondents who were considered as food experts, evaluated the products using the standard score sheet which was the main instrument in data gathering for acceptability. The score sheet was divided in two parts. The first part was for palatability and quality of the finished products which included the color, flavor, and texture. The second part was for the degree of preference on the overall acceptability of the products. The end part of the score sheet provided space for the panelists' comments.

Mean and ranking were used to determine the sample to be subjected to microbiological and chemical analyses. Analysis of Variance (ANOVA) was then used to test the significance of the data. The Duncan Multiple Range Test (DMRT) was used to locate the difference of data with high significant difference.

Analysis revealed that Sample D ranked first when the four samples were ranked based on the sensory evaluation.

Moreover, the study found out that it was possible to improve the standard drying time procedure in processing tomato prunes with an optimum drying time of 18 hours and

the use of preservatives as sodium benzoate and sodium metabisulfite plus citric acid added while preparing the syrup. The shelf-life of Improved Tomato Prunes could last for more than 84 days at normal room temperature. It showed that after 84 days, right after the microbial analysis was made, the Improved Tomato Prunes was still edible. Further, Microbiological analysis indicated the presence of <u>Rhizonpus</u>, a common contaminant of food which does not produce any known toxin and does not cause any harm to the body once taken in.

The study also revealed that there was a decrease and increase of the nutritive contents from raw to finished product cause by stages of processing and storage.

This study would be a baseline data for entrepreneurs and investors who would venture in mass production of Improved Tomato Prunes for commercial purposes. In addition, the study provides a benchmark information for teachers in Food Technology course and other related for student s and those from allied courses, and women in the rural area especially those who are engaged in farming and in processing of fruits or vegetables for producing recipes in which is aimed at avoiding wastage during abundant harvests.

051
SOLANTE, Jane A. 1997. Factors Affecting Teaching Efficiency of Elementary in Home Economics Teachers in Iligan City. (GT: MTT), 43pp.

This study attempted to determine the factors affecting the teaching efficiency of elementary Home Economics Teachers in Iligan City. Specifically, this study sought to: 1) determine the relationship between the teaching efficiency of Home Economics Teachers and personal factors such as age, civil status, professional status, educational qualification, length of teaching experience, socio-economic status, membership in professional organizations, research activities involvement and choice of Home Economics as profession; 2) find out as to how these Home Economics Teachers adjust themselves to the following school factors: school facilities, social climate, leadership style, rewards and type of school; 3) find the level of teaching skills of elementary Home Economics teachers based on the following skills: knowledge of subject matter, ability to explain clearly, possessing rapport with the class, enthusiasm in the job and job related functions; and 4) identify what factor is most significantly related to the teaching efficiency of Home Economics teachers.

The subjects of this study were forty seven (47) elementary Home Economics teachers in public and some private in Iligan City. The data gathering instruments employed were the questionnaires and teachers' efficiency rating records available in the school. The data gathered were tabulated, interpreted and analyzed using appropriate statistical tools such as weighted mean, percentage and frequency distribution, chi-square and multiple regression or statistic (SX 31) using the software.

It was found out that most of the teachers in Home Economics were within the age bracket ranging from 40-49 years of age. Majority of the respondents were married. It was noteworthy to find that teachers had permanent status. In terms of the educational qualifications, most of the respondents were holders of master's degree but not exactly full-pledge holders. Many of the Home Economics teachers had teaching experience below 5

years. The findings also indicate that the underlying socio-economic status of Home Economics teachers belong to average status. As to membership of professional organization is concerned, respondents were members of professional organizations. Moreover, almost one half were involved in research activities.

With regards to the other related opinions on the physical facilities, the respondents perceived themselves as having adequate facilities. The social climate of the respondents were found to be wholesome. Immediate superiors often demonstrated the ten items pertaining the leadership style. Perceptions regarding the rewards received, respondents were uncertain. Likewise, the respondents strongly agreed that when there are school activities, Home Economics teachers are always assigned in doing cooking activities. They also agreed that they are happy with their additional task. Respondents were uncertain that when preparing/maintaining reports for students' performance, students are left behind with their lessons. Respondents strongly agreed that the daily lesson plan helps improve their teaching performance. They disagreed that community extension service is intended for Home Economics teachers only. The implies that the respondents had relatively demonstrated all the teaching skills required in a work-oriented teacher with an overall rating of very good.

Based on the data gathered, the researcher found out that reward, teaching skills and length of teaching experience are the only significant factors affecting the teaching efficiency of elementary Home Economics teachers.

052
SORIANO, Lita F. 1986. Carenderias in Iligan City Poblacion: Their Health and Nutrition Practices. (GT: MTT), 155pp.

A study was conducted to find out the health and nutrition practices of carenderia owners, operators, and cooks in Iligan City poblacion. Specifically it tries to: (1) determine the profile of the carenderia owners, operators, and cooks in terms of age, sex civil status, educational attainment, monthly income and training; (2) identify the health and nutrition practices of carenderia in Iligan City poblacion as perceived by the operators and cooks; (3) find out the nutritive contents of these foods prepared and sold in these carenderia as to basic food groups; and (4) determine the extent of correlation between the perceived health practices and the variables: age, sex, civil status, educational attainment, monthly income, and training.

The respondents of this study consisted of one hundred six (106) carenderia owners, operators, and cooks in the different strategic zones in the poblacion of Iligan City.

A researcher-constructed questionnaire was used to gather relevant data after a series of ocular inspection, interview and observation was conducted.

The study revealed that the greater bulk of the entire population (94.33%) were married with and average age of 49.5. Majority (87.83%) were female; 73.57% had barely finished elementary and high school; and a greater percentage (64.15%) had a monthly income below P2, 000.00; 84.90% of the respondents had no formal training related to carenderia/ food service operation. The prevailing kitchen type used by the majority

(84.90%) of the respondent was I-shape; less than one half (42.53%) relied on kerosene as fuel with which to cook their food. More than one half (61.81%) of them used compact stand wherein casseroles or saucepans were the main facility used to display cooked foods; 70.75% of the respondents' water supply was from the NAWASA; 66.03% had sufficient drainage while 61.32% of the respondents used empty cans with cover for garbage disposal. A little over half of the population (56.60%) had comfort rooms. The respondents (100%) prevailing practice was to rinse their utensils with hot water before putting them into use; while majority (83.97%) of them as a common practice washed the rice three times regardless of its variety. The respondents varied in their prepared soup; vegetable dishes; fish dishes and meat dishes. Less than fifty percent (48.93%) of the respondents prepared and served "pancit miki". Generally, carinderias served soft drinks as their beverage.

The point-biserial coefficient correlation and the phi-coefficient correlation showed the extent of relationship between the respondent's selected variables and their practices. Such variables as civil status, educational attainment and training of the respondents exercised a little influence on the respondents on the perceived health and nutrition practices of the respondents. While such variables as age, sex, and monthly income did not influence their perceived practices.

In the light of the findings of the study the writer believes that this book would be of help to the current carenderia/food service operators and those who plan to venture on food service entrepreneurship.

053

SUELO, Ofelia S. 1988. Development of a Modular Laboratory Manual on Semiconductors in Basic Electronics. (GT: MTT), 52pp.

This study aimed to develop a modular laboratory manual for instructors and student in basic electronics. The study was conducted using the Research and Development (R&D) process.

The development of the laboratory manual consisted of four (4) phases, namely: namely: (a) gathering of baseline data; (b) development of the resource modules; (c) assessment of developed resource material and (d) revision of the developed modules.

The results of the interview conducted to gather baseline data showed that problem of inadequacy and lack of resource materials for Electronics technology courses is a perennial problem of technological schools offering this field of specialization. Hence, the development of a laboratory manual was identified as one best alternative to the solution of the problem.

The development of the laboratory manual includes the preparation of the course outline which was evolved from Electronic. The preparation of the modules centered on the

semiconductor devices. Various concepts taken from the existing laboratory manual and electronic books were incorporated in the development of the modules. Innovations were made in order to fit to the needs of the students while at the same time considering the availability of materials and equipment. The development of the modules included the following components: Title, Introductory, General and Specific Objectives, Literature Cited, Pre-Test, Learning Experiences, Post-test, Checklist Table, Additional Readings and Answer to Pre-Test, Practice Task, Procedure and Post-Test.

The modules constructed were:

Module 1	-	Introduction to Modular Laboratory manual on Semiconductors in Basic Electronics
Module 2	-	Understanding Semiconductors Theory
Module 3	-	Zener Diode
Module 4	-	Types of Rectifiers
Module 5	-	Power Supply Filters and Voltage Doubler
Module 6	-	Bipolar Transistor Familiarization and Testing
Module 7	-	Types of Transistor Amplifier Configuration

The evaluation made on the developed manual yield positive results. As perceived by the evaluators the introductory manual contained a "very clear and concise" introduction; the introductory statement was "very well" related to other modules; the prerequisites "very well" specified what the students should need to know and do before proceeding with the module; the objectives of the modules were started in "very clear and simple" terms; the pre-tests and post-tests were "very much" aligned with the objectives; the learning experiences were "adequately" presented and the resource materials or references used were listed "very sufficiently".

On the whole, the manual was considered "suitable" and was written at the reading level of understanding of the intended learner; there was continuity between the various segments of the modules and its technical contents were considered accurate and up-to-date with the latest trend in industry.

Based on the results of the evaluation, the researcher could safety conclude that the manual may be a helpful and acceptable teaching aid in Basic Electronics. However, to obtain maximum results in the used of the laboratory manual, the researcher would like to give the following recommendations: 1) The learner or user of the laboratory manual must provide himself with an experiences board. The learner may construct his own experience board by using the model shown in Appendix E. 2) The test items in the Pre-test, Post-Test and practice task be validated first to establish the reliability and validity of the test items. Only then, shall the laboratory manual be tried out to students enrolled in basic Electronics at MSU-Iligan Institute of technology. It may also be tried to students in other schools to obtain more conclusive results. Consequently, revisions and modifications for further improvement of the modules shall be undertaken before mass production of the laboratory manual.

054
SUMAYLO, Gaspar N. 1986. Television Receiver Training Set: Its Design and Development. (GT: MTT), 107pp.

The objective of this study is to design and fabricate a television receiver training set. The research and development (R&D) process was used in conducting this study.

A survey to look into existing television trainer and to find out the problems of electronics teachers was conducted in different institutions offering Electronics Technology in the cities of Iligan, Cagayan de Oro and Zamboanga. Design and fabrication of television receiver training set as based on the different suggestions of the respondents and on the actual observations and experiences of the researcher in the field of electronics communication.

As revealed in the survey, the major problems of the electronics shop instructors were inadequate instructional materials and supplies, and lack of facilities and equipment necessary for quality instruction. there were only three (3) schools that had their own TV training sets namely: the MSU-IIT Iligan City, the Filipinas Institute of Technology and the Zamboanga School of Arts and Trades, Zamboanga City, but were not functioning due to unavailability of replacements for defective parts and no instructional manual available for the training set.

Majority or 75 percent of the respondents indicated the response of "strongly agree" to the statement that there is a need for all electronics communication shops to be provided with television receiver training set.

The most common methods of instruction adopted by electronics instructors in the shops were illustrated-lecture method and demonstration method through the use of pictures, diagrams and field trip.

The design of the T.V. receiver training set was an exploded actual and functional component mounted on a multipurpose bench desk with a portable stand.

The development cost of the T.V. receiver training set was P4, 642.80 an amount which every vocational school could afford to appropriate to purchase materials for instructional purposes.

The major steps followed in developing the T.V. training set were securing bill of materials and components, cutting materials to the specified dimensions, assembling of parts, installation of different components, circuit assembly and finishing or painting the assembled training.

The monitoring switches (sw) were used to cater to different symptoms or defects that be observed on the screen or picture tube, and the terminal jacks were the test point (Tp) of the B+ and the different waveform of each specified stages with the existing set-up of the project.

The testing of the training set in terms of picture performance, such as picture synchronization, linearity distribution, and contrast and brightness balance was normal and satisfactory.

As a whole, the development trainer could serve as a useful instructional device in

the teaching-learning process since the different stages of TV set components were mounted in module form and operational components were mounted in module form operational making it easy to observe and visible to learning students.

055
TABLON, Valeriano O. 1983. The Masonry Chipping Machine: Its Design and Fabrication. (GT: MTT), 140pp.

The objective of the study was to design and fabricate masonry chipping machine that can perform an efficient masonry chip finish. The study was conducted using the Research and Development (R&D) method. The study started with the survey of the existing masonry chipping hand tools on selected construction sites in Iligan City, then followed by the designing and fabrication of the masonry chipping machine.

The survey showed that the type of masonry chipping hand tools used by masons was the adze-type design because of its appearance and ease of handling.

Since no machine of this type was used by masons in the construction field, several factors were considered in designing and fabrication, as: design, availability of materials, fabrication procedure, fabrication techniques, rigidity and strength of materials and the appearance on the performance of the masonry chipping hand tools and the problem met by masons on its usage were also considered in the designing and fabrication of machine.

The fabrication of the machine was done following the established procedure based on working drawings and specifications.

The study revealed that the effective distance of the machine cutter from the plastered surface was from 1 to 3/4 inches with left to right movement while doing the chipping.

The test showed that the fabricated masonry-chipping machine could chip much surface area than the masonry chipping hand tools could. The test also revealed that the chipped labor cost per square meter by the fabricated machine was cheaper than the labor cost per square meter by the masonry chipping hand tools. The fabricated masonry-chipping machine produced much-uniformed medium cuts.

The fabrication cost of the masonry chipping machine was computed based on labor cost, material cost, surcharges and contingencies.

Finally, the results of the study showed that the fabricated masonry-chipping machine could finish the chipping operation much earlier that the chipping hand tool at reduced cost.

056
TIIN, Lilian S. 1996. Utilization of Lama-Lama Clay for the Manufacture of Structural Clay Products: Roofing Tiles. (GT: MTT), 267pp.

A red clay from Lama-Lama was characterized for possible utilization as raw materials for clay roof tile. The clay was subjected to standard testing procedure to evaluate its physical and chemical properties. After testing, it was found out that Lama-Lama clay contained a high percentage of clay substance and needed opening material to improve the plasticity and shrinkage.

Twenty-four ternary mixtures utilizing Lama-Lama clay as main plastic component, Bukidnon feldspar and three filler materials; quarts, diatomite and rice hulls ash were used to formulate structural clay roofing tile.

Variation in temperature, particle size of the clay, composition (SiO_2: Na_2O ratio) and type of filler material used were the factors considered to affect the properties measured in the study. Rectangular test bars were made from stiff-mud process mixture and dry and fired shrinkage, water absorption, porosity, specific gravity, bulk density, modulus of rupture and color were measured.

Calculation of the formulated bodies used the simultaneous equation found in ceramic calculation books using the MathCAD program.

Of the several trial formulations made, the formulation with 55:4 SIO_2: Na2O of the clay-feldspar-quartz system fired at 1050°C possessed the acceptable properties ascribed by the ideal properties for the clay roofing tiles. The average breaking strength (MOR) of this formulated body was 115 kg/cm^2. Absorption capacity was lower than the maximum allowable limit. Average total shrinkage of the best formulation is 10%. Average apparent bulk density and specific gravity were 1.76 and 2.75, respectively. The formulated body is then formed into actual size roof tiles by plastic pressing in a plaster mold.

The properties of the formulations containing diatomite and rice hull ash of the same SiO_2: Na_2O ratio also possessed commendable properties. Among the factors considered in the conduct of the study; temperature, type of filler material used and the variation in the SiO_2: Na2O were the factors that affect the properties of the clay roofing tiles.

The variation in particle size of the clay material did not significantly affect most of the properties measured. Bodies containing rice hull ash filler material were not lightweight, compared to diatomite and quartz containing bodies. Finally, diatomite-containing bodies were most lightweight but they contracted more.

The study suggests that the results be subjected to simulated testing before actual roof tile production be done. Furthermore, the findings in the study will serve as a starting point for further experimentation on aspects not covered in this study.

057
TOLENTINO, Rosavilla S. 1998. Development of Pin-on-Plate Abrasive Wear Tester.
(GT: MTT), 52pp.

The study was conducted to develop a device for abrasive wear testing of materials. The device developed, a pin-on-plate abrasive wear tester, was used to investigate the abrasive wear resistance of 1020 steel and cast iron against Alumina and Silicon Carbide abrasives. The results showed that the pin-on-plate abrasive tester can be developed which enable to provide clear discrimination between the wear resistance capabilities of various materials. The tester can also produce results which are indicative of how particular materials may perform in the field. The study also identified some of the major factors which affect the wear resistance of a particular material in a given application. Hardness, in isolation, was shown to be a rather unreliable indicator of a material's ability to resist wear, however with certain qualification it did provide somewhat of a guide.

Cast iron was generally found to have superior abrasive wear resistant properties over 1020 steel.

058
TORRES, Saveniano T. 1991. Design and Fabrication of a Motorized Charcoal Stove. (GT: MTT), 76pp.

The study aimed to design and fabricated a motorized charcoal stove that can cook fast at a minimized cost. Before the actual design and fabrication of the stove, a survey was first conducted to determine the different cooking stoves used in Barangay Pala-o, Tibanga, and San Miguel in Iligan City. The study made use of the Research and Development (R&D) approach. The survey questionnaire which was the major instrument in gathering the data was employed and administered personally by the respondents during the ocular inspection of the existing stoves that had been used by the households. The survey was launched on October 10, 1988 and ended on December 20, 1988. The survey revealed that no motorized charcoal stove had been used by the households, carenderia, and restaurants of the three barangays in Iligan City.

The findings of the survey revealed that most households, carenderias, restaurants using cooking stoves such as natural ventilated charcoal stove, kerosene stove, gas/shellane stove, and electric stove have encounter major problems. The common problems that confronted the respondents regarding their cooking stove were the following:

1. The stove takes much time to cook the food;
2. It cost much in terms of fuel consumption;
3. It is not safe as the fuel is flammable;
4. The stove is expensive in terms of maintenance and repair, and;
5. Some spare parts in case of replacement are not locally available.

The findings of the survey were considered as bases for designing a motorized charcoal stove including the availability of materials as well as the estimated cost of fabrication.

Organized procedures were observed in fabricating the stove based on the comprehensive working drawing and specification of materials. The total cost of the stove during the stage of fabrication (1988) was three hundred seventy six pesos (P376.00). The cost covered the expenses on the materials, labor and the overhead cost.

Finally, the testing and evaluation of the motorized charcoal stove revealed a significant performance as it cooked the food fast and at a less cost.

059
UBAGAN, Belen G. 1988. Dress Pattern Drafting and Designing: An Innovative Approach. (GT: MTT), 331pp.

This study primarily dealt with the development of a comprehensive resource material in the form of handbook whose contents focused on the making of dress patterns of various designs. The topics that the handbook contain were selected from the do units of the syllabus used in htg 226-dress designing and garment construction, a required subject in the second year BSIED curriculum major in garment technology.

The study was undertaken through a research and development process. The main contents of the handbook have been built from the concepts, information and procedures gathered from limited sources plus the technical expertise and practical experience of the writer in area of concern. The development of the resource material involved several stages before it was organized to its final form.

The components of the entire handbook are the cover page, preface, table of contents, main body, glossary and references. The main is composed of nine learning units. Each unit has a title page, introduction, the operation and post-test.

The handbook was submitted for an evaluation of its contents to six teachers who have the expertise in drafting and designing of dress patterns. The focus of the evaluation was on the objective, technical information, procedures and the over-all content in terms of sufficiency and presentation.

The handbook has gained favorable comments from the evaluators. The six teachers strongly agreed that, generally, the contents of the handbook are sufficient and well- organized. Majority of them would like to avail themselves of a copy to be used in their respective classes.

To determine the workability and adoptability of the handbook to the subject defined, the instructor or whoever is assigned to teach may use this resource material in the class htg 226-dress designing and garment construction during the first semester of the school year 1988-1989 to reach a conclusion.

In the light of the results of the evaluation, the writer believes that this handbook could be used as a major tool for the development of skill in the pattern making aspect of dress construction. With the easy-to-follow step-by-step procedures coupled with clear illustrations, it is further believed that the handbook becomes a practical guide for everyone who wishes to learn the trade whether for teaching, for industry or for home-sewing

purposes.

060

UBAGAN, Ernesto L. 1991. Factors Affecting the Quality of Workmanship of Automotive Service Shops in the Cities of Iligan and Cagayan de Oro. (GT: MTT), 331pp.

This research work was conducted to find out the effects of various factors influencing the quality of workmanship among the automotive service shop in the Cities of Iligan and Cagayan de Oro. Specifically, it tries to: 1) analyze the factors the enhance or impel quality of workmanship in the automotive service shops; 2) identify human resource factors that predict the quality of workmanship; 3) determine the condition of the physical facilities of automotive service shops; and 4) describe the degree of relationship between some independent variables and the quality of workmanship.

The respondents of this research work consisted of forty (40) automotive service shops which are randomly selected from a total of ninety (90) shops. A stratified random sampling was employed wherein six (6) subgroups of respondents were identified as 1) Operator/Managers; 2) Customers; 3) Automotive Mechanics; 4) Automotive Electricians; 5) Automotive Helpers and 6) Body Builders/Welders. These subgroups comprised a total of 240 respondents.

A second stage random sampling technique was used to obtain a small strata sample size from the first stage sampling data. Such will be used for the evaluation of the mentioned independent variable as employed in the regression analysis.

The data for this study were obtained through a survey questionnaire. This was supplemented with interview, ocular inspection and observation of their set-up. These data were treated using frequency counts, percentage, weighted mean ANOVA, multiple correlation, matrix, full regression and step-wise regression.

The study revealed that the automotive service shop personnel and customers were mostly in their early thirties, males, married Cebuanos, and Roman Catholics. The highest educational attainment of the Operator/Managers and customers was college level while the shop workers was high school.

The positions, specialized skills and training of personnel correspond to the nature of their work. Incidentally those of the customers did not have any bearing with the automotive industry apparently indicating their dependency on the shop services.

The respondent's work experience was slightly more than eight (8) years an average monthly income of almost P4, 000.00.

It was revealed in the study that the educational attainment, length of experience, technical skills and knowledge, tools and equipment, shop layout and capitalization have significant relationships with the quality of workmanship, but the predictors are capital, shop layout, organizing and technical and management skills.

In conclusion, it can be said that there are several factors affecting the quality of

workmanship of the Automotive Service Shop, however, the best predictors are capitalization, shop layout, organizing and technical/management skills (specialized skills).

Based on the findings, these recommendations are advanced:

1. A training program for the Automotive Service Shop workers be sponsored by the government to upgrade their skills and knowledge to meet the demands of the present technology.
2. Interest rates of government lending institutions should be lowered to a level which is affordable to the Automotive Service Shop operators for them to avail of the financial assistance for capitalization.
3. A regular appraisal of the shop's tools and equipment be conducted by the operators to check their serviceability for the jobs to be performed.
4. A parallel study be conducted in other places to confirm the finding of this research.
5. In as much as multicollinearity exists in the "best fit" regression equality using step-wise, it is recommended to use the ridge regression method.

COLLEGE OF ENGINEERING (COE)

Master of Engineering (MOE)

001

ALEMAN, Agnes L. 2001. The Establishment of the Water Quality Management System of Prawn Farming at Tambulig, Zamboanga del Sur. (SP: MOE), 91pp.

Prawn Farming in Mindanao is one oÿÿthe major industries in thnscountry that would contribute inÿÿofo the Philippine economy, if only appropriate technology and systems are employed on the pond operations. The Establishment of the Quality Management System of Prawn farming will surely enhance the productivity of this industry. Aside from Feed Management, Water Environmental Requirements of prawn contributes basically on the successful prawn-farming venture. This study was conducted to determine whether there are differences on these parameter measurements with respect to the site, and time frame.

It was found out the ponds of Tambulig, Zamboanga del Sur have a significant differences on the measured water quality parameters in terms of time intervals of tests, and in terms of site locations. As such, there is a need for daily process control and monitoring of the water quality parameters of every pond to have an immediate corrective measures, and thus would attain a better yield of quality prawns.

Continuous improvement on the systems and learning from the previous operations' records and past experiences are also necessary to sustain and enhance the productivity of the prawn operation.

002

APAO, Dimafranca T. 1999. Phytoextraction Capability of Wild Sunflower for a Pb-Contaminated Soil. (SP: MOE), 95pp.

Wild sunflower (*Helainthus annuus*) was investigated for its ability to remediate a Pb-contaminated soil.

Suing a sandy loam soil with pH of 7.67, wild sunflower was observed to cleaned

up as much as 29.1% and 27.8% Pb at contamination levels of 60 ppm and 160 ppm, respectively, with reference to the non-vegetated control. At these two levels of initial Pb concentration, shoots harvested after 9 weeks found to accumulate corresponding averages of .036% and 0.43% Pb on a dry weight basis.

When the contaminated soil was treated with EDTA at 1.0 g/(kg dry soil) level, the plant Pb translocation was significantly enhanced. EDTA-treated plants translocated 59.9% and 173% more Pb than untreated plants at soil Pb initial concentration of 60 ppm, respectively.

Shoots and roots of wild sunflowers did not show any evidence of stunted growth to the presence of Pb in the soil at both contamination levels considered.

003

BALODO, Albina B. 1999. Evaluation of Electric Furnace Dust a Aggregate in Cement Mortar. (SP: MOE), 96pp.

This study evaluates the electric arc furnace (EAF) dust as partial replacement for sand in cement mortar. This dust possesses lime, alumina, silica and iron oxide; the same oxides that make up the cement. In order to develop a suitable method for mortar mix design, the effects of the following factors were considered: (i) percentage of EAF dust from 0% to 10%, (ii) water-cement ratio of 0.45 and 0.55, and (iii) age of specimen; 3, 7, 14, and 28 days.

The research design applied was a completely randomized design with fixed effects model.

Results show that at age 3 days, 7%-10% EAF dust replacement has very low compressive strength. Higher compressive strength is attained for mixes with 0.45 water-cement ratio than mixes with ratio of 0.55. A maximum EAF dust replacement of 8% gives a compressive strength and density comparable to conventional mortar or control at age 28 days, the design age.

Correlation of compressive strength and density is found to be positive, i.e. the compressive strength of mortar increases with density.

004

BATAY, Junelyn R. 2000. Studies of the Red Clays from Minlanot, Claveria, Misamis Oriental and Bulua, Cagayan de Oro City. (SP: MOE), 119pp.

Characterization and formulation studies of pure Minlanot clay from Claveria, Misamis Oriental were conducted to evaluate its applicability for brick production. Chemical composition and physical properties were investigated utilizing X-Ray Fluorescence method and Philippine Standard Method of tests. The Physical characteristics of pure Bulua clay from Bulua, Cagayan de Oro City were also determined.

Minlanot clay contained 38.25% SiO_2, 32.40% al_2O_3, 11.86% Fe_2O_3 and 1.54%

TiO$_2$ with an average of 48.33% water of plasticity. It had an average of 13.05% total linear shrinkage, 29.73% water of absorption and 185.80 kg./cm^2 compressive strength when fired at 859^{0}C.

Formulation studies on Minlanot clay that at 70:30 clay-sand mixture ratio, fine cracks were eliminated and shrinkage was minimized. The average water of plasticity was reduced to 31.00% and the total linear shrinkage was reduced to 7.98% at 850^{0}C firing temperature. However the water absorption increased to 30.01% and the compressive strength decreased to 49.97kg/cm^2. The fine river sand used had a weak texture bonding.

Based on the specification of common bricks set by the Philippine National Standard, pure Minlanot clay cannot be used solely as the main body for structural bricks. But it showed potential for non-structural products.

005
BAUTISTA, Pinky A. 2002. Discrete Wavelet Features for Classification of Dipterocarpaceae Wood Family. (SP: MOE), 60pp.

Discrete wavelet transform was used to extract textural features from wood images. The extracted energy textural features i.e. OW, STW, ORIAN were used as data for the classification of woods belonging to the Dipterocarpaceae family. The effects on the choice of wavelet functions, energy textural features and wavelet decomposition depth in the classification performance of the LVQ classifier were investigated. Results showed that LVQ classification rating is affected by the choice of the wavelet textural signatures and not on the type of wavelet function employed in the extraction process. The results also showed that the wavelet decomposition depth and the type of energy feature jointly affect the classifier's performance. The ORIAN feature type gave the optimum classification performance at decomposition depth of three.

006
BERAME, Lee T. 2002. Recalculation of Theoretical Stress Concentration Factors Using the Algor Finite Element Analysis Software. (SP: MOE), 47pp.

In this study, theoretical stress concentration factors for plates with a central hole, filleted bars and notched flat bars tension were analyzed using the Algor® Release 12 Finite Element Analysis (FEA) Software. The FEA values were then compared with Published theoretical stress concentration factors compiled by Peterson.

It is shown that Published stress concentration factors for plates with a central hole are practically the same as calculated FEA values; the maximum difference being negligible at less than 5%. Published values for this geometry can therefore be considered accurate.

However, for notched flat bars and filleted bars in tension, Published values are significantly different from calculated FEA values, specifically, for H/h ratios of 1.5 and 2.0. For these ratios, the percent difference range from 7 to 12, big enough to affect design calculations.

From the FEA results, it can be concluded that there is a need to update published theoretical stress concentration factors for some geometries to reflect more accurate values.

007

BERNARDO, Ivyleen C. 2005. Rhizofiltration of Copper (Cu+2) and Cadmium (Cd+2) Contaminated Water at Low pH by Grasses Found in Iligan City. (SP: MOE), 90pp.

Three local grasses Axonopus compressus (carabao grass), Eleusine indica (goose grass) and Brachiaria mutica (paragrass) of Iligan City were studied for phytoremediation of Copper and cadmium contaminated acidic water. Grasses were cultured in semi-hydroponic media without root media and without fertilizer for one week. Grasses were treated either with Copper or cadmium at 10 ppm level of concentration in an acidic medium. The pH was maintained at 2.38 – 4.01 by continuous addition of a stronger acid to the solution. Grasses were harvested after one-, two-, and three- day exposure. Metal content was determined by atomic Absorption Spectrophotometer in MSU – Naawan.

Axonopus compressus had the highest root uptake of copper and the highest to translocate copper to the stem-leaf parts while Eleusine indica had the highest root uptake of cadmium after two day exposure. Brachiaria mutica and Eleusine indica had the highest removal of copper and cadmium from the acidic aqueous solution.

008

BUNGA, Gerneil J. 2001. The Study of the Heating Efficiency of the Coil-Type Electric Stove with Commonly Used Cooking Utensils in Boiling Water. (SP: MOE), 72pp.

A three separate three-factor fixed-effect model experimental design was used to study the heating efficiency of the electric stove in boiling water. Each experimental design used the three factors were, Factor A; Clay Enclosure, Factor B; Stove Setting and Factor C; Water Container. The three volumes of water, an electric fan and a water heater were also considered to determine the effect on the efficiency of the electric stove.

At 95% confidence level, for 1000 ml of water only Factors B and C were statistically significant but their interactions were not. For 2000 ml and 3000 ml of water the three factors and the interactions between Factors B and C were statistically significant. The efficiency of the electric stove increases as the volume of water increases. The efficiency was higher when the stove setting was medium. The clay enclosure did not significantly help in reducing the bulk of heat transfer loss. The water heater gave a higher efficiency compared with all the results using the electric stove. The efficiency of the electric stove decreased when a fan was used in the experiment.

009

CABONITA, Andrea J. 2002. Utilization of Kapatagan Diatomite as Filter Aid and for Used Cooking Oil. (SP: MOE), 68pp.

The effectiveness of naturally occurring diatomaceous earth (*Bacillariophyceae*) from Kapatagan, Lanao del Norte as filter aid to recycle used cooking oil was determined in this study through the process of filtration. The filtration process applied was body feeding in which 0% (control), 5%, 7.5%, 10%, and 15% dry weight of diatomite were added as admixture. Variables such as stirring time and stages of filtration were manipulated to obtain responses as %FFA and color (Hazen Color).

The results showed that different amounts of diatomite used as body feed admixture had significant effect in reducing %FFA with the highest reduction at 15%. Increasing stirring time had significant effect in the reduction of %FFA. Diatomite was also effective in reducing color as measured by Hazen Color, with highest percentage reduction at 15% also. The laundry soap produced using oil filtered with 15% admixture was rated very satisfactory.

010
DEKIRE, Evelyn A. 2002. An Assessment of the Water Quality of Linamon River in Linamon, Lanao del Norte. (SP: MOE), 117pp.

The water quality of Linamon River was assessed by using three different types of data, i.e. physical, chemical and biological parameters, at two different seasons: dry and wet period, of the year.

Water samples were gathered by grab or catch sample collection method during the two distinct seasons from three samples identified strategic sampling sites in three replicates. The water samples were collected only once during the last month of each season.

The parameters considered with seasonal variations were turbidly, total suspended solids (TSS), pH, dissolved oxygen (DO), phosphate, alkalinity, hardness and total coliform (TC). The biochemical oxygen demand (BOD) was determined only during the dry season using the water samples gathered from the third and lower sampling site.

Statistically, the values of turbidity, TSS, pH, DO, phosphate, alkalinity, hardness and TC differ significantly from one station to another at 5% level of significance. The values of these parameters at Station 1, 2, and 3 respectively are: for turbidity: 13.24, 22.02, 33.36 mg SiO_2; TSS: 27.89, 27.56, 24.66 mg/L; pH 7.865, 8.00, 8.42; DO: 4.07, 3.96, 5.18 mg O/L; phosphate-P: 0.098, 0.102, 0.094 mg P/L; alkalinity: 63.4, 59.95, 56.65 mg C_aCO_3/L; hardness: 182, 204, 198 mg CaCO3/L; and TC: 983, 314, 1264 MPN/100ml. The BOD at Station 3 is 13 mg/L. This indicates that topographical condition and distance between sampling stations have significant effect on the quality of the river water.

Seasonal variations show statistically significant difference in the values of turbidity, TSS, DO, phosphate-P, alkalinity, hardness and TC in every station. Only the water pH is not affected by the change in climatic condition. However, the mean values of the above parameters including BOD did not exceed the standard values set by the DENR, Madamba and Peavy.

Based on the results obtained, it can be inferred that the water flowing in Linamon River at Stations 1 and 2 is good for domestic sue or drinking after some application of appropriate treatment and disinfections. While the water flowing at Station 3 is suitable for recreational and for agro-industrial water use.

011

ESPINOSA, Rico T. 2006. Special Protection Scheme for Maria Cristinaswitchyard-Abaga Substation 69-Kv Tie Line. (SP: MOE), 78pp.

The supply of electrical energy occupies a critical position in the life of our modern society today. Commerce, industries, transport, and health services and private households are all dependent on the quality and reliability of the supply of electrical energy. However, the quality of supplied electrical energy also depends on the state of the power system. In the case of the Mindanao Grid, the reliability of the power system will be in jeopardy when Ma Cristina Switchyard – Abaga S/S 138-kV tie lines 1 and 2 experience double-circuit outage, the remaining Ma. Cristina Switchyard – Abaga S/S 69-kV tie line is overloaded and is subsequently tripped by the overcurrent relay. When this happens, the Agus 6 and the Agus 7 hydroelectric power plant (HEPP) with a total net generation of about 162-MW will be isolated from the Grid. This generation deficiency can cause the frequency load shedding to activate and the worst that could happen, is to cause cascaded plant outages that eventually lead to total system blackout. This scenario could be avoided if a special protection scheme (SPS) is added to the System. With the SPS, the reliability and efficiency of the system to deliver power to its customers will be significantly improved. With a reliable and efficient transmission lines, substantial revenues and savings are expected to be achieved because this can prevent unnecessary outages and also reduces the downtime of Agus 6 and 7 generating units.

012

ESTOPEREZ, Noel R. 1999. Development of an Artificial Neural Networks Based Voltage Control. (SP: MOE), 55pp.

This paper presents a new method of voltage control based on artificial neural network (ANN). Input and output data from (9) bus substation model are processed by a load flow software. The process output is fed into the neural network. The neural net, which consists of seventeen (17) input units, eight (8) hidden units and three (3) outputs units used the multi-layered perception using backpropagation algorithm. A set of data is used to train the network after which a test data is fed into the net using only the feedforward phase.

Simulation results show that the multi-layered perception using backpropagation algorithm correctly identified the data. The proposed method of voltage control conforms to the method presently employed in the substation

013

EVASCO, Santiago Jr. A. 2000. Development of a PC-Based Motor Bearing Wear

Analyzer. (SP: MOE), 71pp.

Bearing wear or failure is the major cause of motor winding burnout. Burned motor means production delays, rise in production cost, and eventually loss in the product's competitive edge in price.

An instrument called Bearing Wear Analyzer (BWA) was developed using a dual-face medical stethoscope as vibration sensor, AT-MIO 16E-10 plug-in data acquisition affected by the degree of bearing wear but not by the motor's amount of load.

Deterioration in the wear condition of a bearing corresponds to an increase in the overall vibration of the system. The BWA portrays this condition by the rising of the signal floor of its spectrum and the increase in the vibration level as measured by its vibration meter. Emergence of vibration frequencies, particularly beyond 1 kHz, which is not seen in the spectrum of a brand new bearing, also points to bearing wear.

Another instrument developed called 'BWA Trend Plotter' enhances predictive maintenance by fitting a curve along the data taken using the BWA, and outputs the equation of the fitted curve, which is useful in predicting the number of 'days to failure' of the bearing.

014

FUTALAN, Roberto L. 2002. A Study on the Operation of a Cement Plant Kiln Auxiliary Drive Motor. (SP: MOE), 74pp.

The possibility of improving the operation of the kiln's auxiliary drive motor at Alsons Cement Corporation – Line 2 was studied using the existing main and auxiliary motors, their corresponding gearboxes, one proximity switch, two vibrometers and an infrared thermometer.

A gap of 4-5 mm between the faces of control lever and the proximity switch was found to be appropriate for the study.

Abnormal and unusual effects of vibration, temperature and sound were observed for the test conditions. A cracking sound on the teeth of the gearbox coupling of the main and auxiliary drive motors occurred in all trials. On the other hand, vibration and temperature in all test points gave no significant effects.

Circuit connections of the major components were introduced. Simulation of the proposed system was done using the developed computer program.

Automation of kiln clutching can possibly replace the human in the process of inching the kiln.

015

HAMAK, Leslie T. 1998. Evaluation of Waste Plastics as Aggregate in Cement Mortar. (SP: MOE), 110pp.

This study was conducted to determine the feasibility of waste plastics as aggregate for cement mortar. The mortar strength test for fine aggregates was used to evaluate the compressive strength and density of the mortar with granulated waste plastics having replaced the sand in varied quantities. Two aggregate-cement ratio was used; 1.5 and 2.0, with a water-cement ratio of 0.4. The   plastic content ranged from 0% to 50% of the total volume of aggregates. The laboratory activities were done at the Materials Testing Laboratory of the Department of Civil Engineering Technology, MSU-Iligan Institute of Technology, Iligan City.

The research design applied was a completely randomized design with fixed effects model. The significance level was established at 5%.

The results of the experiment confirmed that the compressive strength and the density of cement mortar are inversely proportional to their plastic level. The mortar with plastic aggregates as high as 50% gave a compressive strength at 18.0 Mpa, and a density of 2031.26 kg/m^3. Compared with the mortar with all natural sand, this strength is reduced by about 50%, while the density is also reduced by about 11 %.

016
LACANG, Gina C. 2000. An Assessment of Pollution Load of Baslayan Creek Using BOD, TSS, and Bacteriological Parameters. (SP: MOE), 77pp.

The water quality of Baslayan creek was assessed using four pollution parameters: Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), Total Bacterial Count (TBC), and Total Coliforms (TC). Water samples were obtained during two different settings from four different sampling sites.

All BOD values exceeded the DENR water quality standards, reaching a maximum value of 65 mg/L. The TSS values were considerably below the standards. Total Bacterial Count and Total Coliforms were exceedingly high. The maximum TC load at the amount of the creek was 2,285 times as great as the standards for class c waters.

Statistically, the change in climatic condition significantly affected the values of BOD, TSS, and TC. However, no significant effect on TBC load was indicated.

017
LAPE, Ramonito G. 1998. Control Strategies for the Minimization of Scale Formation at NSC Hot Strip Mill No. 2 Slab Reheat Furnace. (SP: MOE), 96pp.

This is a study on factors causing excessive accumulation of scales in the Slab Reheat Furnace at National Steel Corporation's Hot Strip Mill. Mainly due to scales accumulation in the furnace hearth, this mill has consistently lagged from its rated its 1.2 million tons per year output, with NSC spending roughly P200M annually in opportunity losses along due to mill shutdowns.

The study identified temperature, furnace atmosphere and residence time as the dominant factors contributing to the formation of scales. Verification of these dominant

factor's contribution to scale formation in Hot Strip Mill No. 2 furnace was done through analysis of actual process data and was statistically significant reduction in scale formation. Recommendations for future research are also established.

018

MAGTAJAS, Ambrosio T. 2007. A Strategy for Controlled Manual Separation of Western Mindanao Power Corporation, Aurora, Sta. Clara, and Sangali Substations from Mindanao Grid to Operate as an Island. (SP:MOE), 65pp.

The 100 MW diesel power plant of Western Mindanao Power Corporation (WMPC) and Aurora, Sta. Clara, and Sangali substations are radially connected to the Mindanao Grid. A scheduled maintenance or repair of Abaga S/S-Aurora S/S and Agus 5 S/W-Aurora S/S 138 kV transmission lines that requires simultaneous shutdown of both lines will separate the electric power plant and the three substations from the grid. To prevent interruption of power supply to the affected customers, an island operation of WMPC and the three substations is required. A strategy for proper separation was developed to ensure successful island operation. Proper separation means that the strategy in splitting the system should guarantee the power balance in the island. A small-signal stability study using the GE-PSLF Dynamic Simulation Software was conducted to verify the dynamic response of the island after the separation. Dynamic simulations were conducted using the different initial islanding conditions obtained from the load-flow simulations to determine the dynamic behaviors of the frequency and voltages of the islanded system. The simulations showed that a controlled separation to operate as an island is possible such that continuous supply of electrical energy to the consumers could be ensured.

019

MANUEL, Novel V. 2005. Chemical Equilibria for Direct Reduction of Brazilian Iron Ore Using Natural Gas. (SP: MOE), 49pp.

The purpose of this work has been to calculate the stability areas of wustite, hematite, ferrite, and austenite that are represented as plots of partial pressure ratios ρ co, ρ co, ρ co, and ρ co versus temperature and a method of calculating these ratios from an input of gas containing H_2 and CO. these diagrams are of relevance to the direct reduction of iron oxides.

To bring the nation to the status level of an industrialized country in Asia, National Steel Corporation (NSC) has to compare with the best world class steel mills. And it is timely to update the need of alternative method of producing steel economically using natural gas.

This study illuminates a practical approach for a viable and thermodynamically feasible metallurgical manufacturing process specifically direct reduction of Brazilian iron ore using Malampaya natural gas.

The simple heat and mass balance showed the viability of the new technology as compared to scrap-based feed NSC electric arc furnace.

020

MENCHAVEZ, Ruben L. 2002. Suspension Direct Coagulation on Red Clay-Based Powder. (SP: MOE), 77pp.

The applicability of Direct Coagulation (DCC) on red clay-based powder suspension was investigated using locally available raw materials. The formulated powder was 46.7-wt.% Lama-lama Red Clay, 35.3-wt.% Bukidnon Quartz, and 18.0-wt.% Dansolihon Feldspar based on stoneware ceramic body. High solid loading powder suspension was achieved at 65-wt.% solid, with viscosity of 7.31 Pa..Direct Coagulation Casting of the Suspension into the plastic molds with additions of substrate (urea) at 1.0 and 1.5-wt.%, and enzyme (urease) at 36, 90, and 143ppm treatment levels. The resulting rigid ceramic products were then dried, fired at 1200^0C and re-fired at 1200^0C and 1250^0C.

It was found out that Direct Coagulation Casting is applicable on red clay-based powder suspension. The shortest coagulation time was attained at 35.89 hours using 143-ppm urease and 1.5-wt.% urea treatment. Physical properties of the products were satisfactory for stoneware ceramics. SEM photomicrographs revealed homogeneous microstructure of the fired coagulated specimen.

021

NABUA, Michael A. 2001. Baking Furnace Fuzzy Logic Temperature Controller. (SP: MOE), 82pp.

The fuzzy logic technology is widely used developing control systems. It starts with and builds on a set of human language rules supplied by a domain expert. The fuzzy system converts these rules to their mathematical equivalents. This results in much more accurate representations of the way systems behave in the real world.

This paper investigates the applicability of fuzzy logic technique in automating the process of controlling the temperature range required inside a baking furnace. A model for a fuzzy logic temperature controller is developed to maintain the temperature range inside the baking furnace using the Visual C++ version 6.0 programming language. The controller monitors the temperature at the four points inside the baking furnace where the burners are located. The temperature at a burner location is controlled by using a control valve, which regulates the amount of fuel supplied to the burner at that location. The controller uses four stepper motors to adjust the settings of the four control valves. When the temperature at a given burner location is below the reference temperature then the setting of the control valve for that burner is increased. If the temperature is above the reference then the setting of the control valve is decreased. After one complete cycle of operation, all control valves are closed in order to turn-off the burners. Based on the findings of this study, the fuzzy logic temperature controller (FLTC) model can be used to automate the process of controlling the temperature range required inside the baking furnace.

022

NAMOCO, Consorcio Jr. S. 2001. Extractions of Zinc Oxide from BSP-EAF Dust Using Ammonium Chloride Solutions. (SP: MOE), 68pp.

The extraction of zinc oxide from BSP-EAF dust using NH_4Cl solution at 60^0 and 90^0C temperature with 2 particle sizes below 80 mesh. X-ray diffraction analysis of the dust was carried out to determine the mineral forms.

Maximum extraction of about 70 wt.% Zn0 was obtained at 23 wt.% NH_4Cl solution, 90^0C, and –200 mesh size, while a minimum of 15.5 was obtained. Increasing the NH_4Cl concentration decrease in extraction at higher temperature level.

023

NOGAS, Leonardo M. 2006. A Study on Electric Arc Furnace Power Disturbances on Power Quality. (SP: MOE), 52pp.

The reconnection of the two electric arc furnaces of the Treasures Steel Corporation (TSC) back to the supply grid of the National Transmission Corporation (TRANSCO) is found to be contributing disturbances to the system frequency, bringing the value beyond the allowable operating range of $\pm$ 0.05% of the standard nominal value of 60 Hertz (Hz). It is also observed that its erratic loading pattern is contributing to the supply voltage variations at the bus where the line supplying the facility is connected. This found out that the operation of the electric arc furnaces contributes apparent disturbance to the system frequency only when there is abrupt change in power demand of greater magnitude, but not during minimal demand variations. A fitted model shows that the active power and reactive power demand of the electric arc furnaces significantly contributed to the supply voltage variations. The addition of generating units, serving as load-regulating units, could address the system frequency variations and an installation of a voltage-regulating device could likewise enhance the voltage quality.

024

OSTIA, Conrado Jr. F. 2002. Genetic Tuning of Fuzzy Controller. (SP: MOE), 76pp.

A methodology of applying Genetic Algorithm (GA) to optimize a fuzzy controller in a speed control using the integral of the square of the error (ISE) criterion is presented in this study. Motivated by the claim that fuzzy controller is hard to train, this study is conducted on the stretch of a computer simulation using MATLAB.

A cursor exploration has been done to determine the suitable combination of operators to be used in the optimization proper. Since GA is a random process, several trials were done in every exploration as well as the optimization proper. Results showed that GA was able to tune the fuzzy controller. This derivative-free algorithm returned a lower average ISE than what is reported in Chuy's work, that is using derivative-based optimization method, by 2.7 percent.

025

PEKITPEKIT, Richard B. 2007. Reduction of Bacterial Content in Water by Solar Radiation. (SP: MOE), 45pp.

This study investigated the effectiveness of solar radiation in reducing the bacterial content of water. It specifically sought to establish the required length of time at which the water used for drinking by the residents Brgy. San Nicolas, Don Carlos, Bukidnon be exposed to solar radiation in order to reduce its bacterial content close to, if not within, the tolerable limits.

Five water samples were collected from a deep well dug beside Maraymaray Creek and placed in clean, transparent one-liter plastic bottles. The water samples were laid on the metal roof of a building having an inclination angle of approximately 15°. Bacterial analyses were done at zero, 4, 6 and 8- hour exposure times. Before exposure to solar radiation, the bacterial content of the water samples ranged from 22.9 to 38.4 MPN. Solar radiation reduced the bacterial content to an average of 2.6 to 6.2 MPN for the six-hour exposure and reducing the bacterial content by as much as 72.8%. The results have shown that solar radiation can effectively reduce bacterial content and could be used as an alternative water treatment process especially in areas where water treatment facilities are not available.

026

PORRAS, Jerry S. 2001. A Study to Improve the Collection System of Cotabato City's Solid Waste Management Program. (SP: MOE), 153pp.

A study on Cotabato City's solid waste management program was conducted to improve the present collection system.

Data gathering were done on waste characterization, forecast of population and waste generation, and evaluation of the present collection system.

The findings revealed that the present system is generally ineffective and inadequate which can be attributed to: (1) frequent breakdown of collection trucks, (2) limited and inadequate on-site storage containers, (3) overlapping of collection routes, (4) working time is not observed religiously, (5) supervision and monitoring of crew and vehicles are closely observed, (6) same collection route is serviced on the first part of collection period while leaving other areas uncollected, (7) route scheduling and service area of collection are not properly balanced, and (8) lack of regular information, education and communication campaign.

To improve the present collection system, stationary and hauled container systems are proposed as alternative collection methods. Layout of collection routes and barangay clustering are based on the guidelines on heuristic routing rules.

027

SIMBAHON, Alberto G. 1999. Development of Chatter Detection System. (SP: MOE), 66pp.

One of the major causes of low productivity of thin-gage products for Cold Reduction Mill is mill chatter. If the vibration magnitude is severe, chatter can cause strip breakage that further results to roll damage and production delays.

A Chatter Detection System (CDS) was developed at the National Steel Corporation's Five Stand Tandem Cold Mill (5STCM) to warn the operator when chatter is imminent, provided a real time display of the vibration condition of the mill, and automatically reduces the mill speed when chatter magnitude reaches damaging level.

On line test showed that the CDS could suppress the development of chatter quicker than the operator, thereby minimizing the occurrence of a damaging chatter. Since its implementation, the operators are relying in the advance warning from the CDS to pre-empt the development of chatter.

028

SIMBAHON, Emelita V. 1998. The Morphology, Causes and Mechanics of Bandform Rust on Electrolytic-Cleaned Annealed Cold Rolled Coils. (SP: MOE), 130pp.

A study about the morphology, causes and mechanics of the formation of bandform rust on electrolytic-cleaned annealed cold rolled coils was conducted to: (a) determine specific operating conditions and sources of contamination that led to the formation of bandform rust, and (b) describe the morphology of bandform rust and the mechanics of its formation.

Sporadic occurrence of this rusting problem since 1993 had already caused considerable losses to National Steel Corporation due to downgrading of affected products and line revisions and/or remedial measures should be implemented to control the recurrence of the rusting problem.

The findings revealed that the primary cause of bandform rust is the presence of moisture and solid contaminants (e.g., zinc, calcium, iron fines, and chloride) which remained at the sides or near edges of the steel surface after hot air drying at High-Current-Density Electrolytic Cleaning Line (HCD-ECL). Presence of these corrodents on the steel surface was due to excessive fluid carryover (water plus solid contaminants) as influenced by insufficient rinsing, wringing and hot air drying operations at HCD-ECL. The Formation of bandform rust follows the basic mechanics of crevice corrosion.

029

TABACUG, Andres Jr. P. 1999. An Alternative Method of Evaluating the Voltage Flicker Level in all Points of Common Coupling of Mindanao Grid. (SP: MOE), 63pp.

An alternative method of evaluating the existing flicker level at all points of common coupling (pcc) of the Mindanao Grid was developed. This method utilized the weighted average type of measuring flicker level based on the voltage fluctuation

waveform measured and recorded by the dynamic system monitor (DSM). It was tested at Abaga Substation for validation and found to be adequate.

030
TALAM, Joel P. 1999. Investigation of Heat Transfer in a Thermosyphon with Inclined Adiabatic. (SP: MOE), 41pp.

A thermosyphon operating in a vapor-liquid cycle was constructed out of a sealed pipe partially filled with a liquid at vacuum pressure. The operation is gravity dependent so that it has a limitation in its orientat6ion. In situations where the heat source is far from the heat sink, the pipe may necessarily be bent and inclined. The bent and the inclined sections are suspected to alter the heat transfer.

The adiabatic section of the thermosyphon pipe was bent having its evaporator and condenser sections in upright position. Its performance was tested in a constructed test rig at different heat input to the evaporator, mode of cooling of the condenser and inclination angles of the adiabatic section. Heat rate at the condenser section was calculated as the basis for comparison.

Results showed that at 67.5-degree inclination, the thermosyphon performed best (slightly better than the 90-degree straight pipe) especially when operating at relatively higher temperature. Heat rate was found to decrease with decreasing angle of inclination.

031
TEATRO, Angiline L. 2001. Improving Instrumentation Technique on AGC Voltage Level Monitoring Through Automation. (SP: MOE), 65pp.

This project was conducted to improve the manual monitoring system of AGC voltage level of microwave radio equipment at NPC-MRC which link communication system of NPC-Mindanao to NPC-Luzon and Visayas. A data acquisition card interfaces of voltage data of AGC of the radio. A software is also used to acquire and process these data to produce a graphical output and a diagnostic conclusion that is presented to the user of the system or the field engineer.

The project had been tested at NPC-MRC, Ditucalan, Iligan City. Radio A was being isolated from the system and a set of signal level is injected into its baseband receiver port for which the corresponding AGC voltage are being monitored.

032
TORRALBA, Julius M. 2002. A Study on the Electric Arc Furnace Dust for Mn-Zn Ferrite Magnet Formulation. (SP: MOE), 49pp.

The preliminary formulation of Billet Steel making Plant-Electric Arc Furnace dust of the National Steel Corporation, as raw material for the production of manganese-zinc ferrite was studied.

Experimental ferrite powder, of composition $Mn_{(1-x)}Zn_xFe_2O_4$, was prepared from the waste dust of known composition. Three formulations were made by varying the mole fraction (x) to 0.60, 0.58, and 0.42. With 80 kN load, circular disc samples were pressed from the formulated powder using 0.1 wt % carboxymethyl cellulose (CMC) solution as binder. These samples were then sintered to 1250 ^{0}C at four different soaking periods: 1, 3, 5, and 7 hours. Scanning Electron Micrographs of sintered materials were taken. Magnetic permeability was measured using a solenoid of varying field intensity. The discs with green densities ranging from 2.18 to 3.19 g/cm^3 showed paramagnetic characteristic when subjected to magnetic field, however, the sintered materials became diamagnetic.

033
VICENTE, Necitas C. 2002. Recovery of Used Rolling Oil by Supercritical Carbon Dioxide Extraction. (SP: MOE), 71pp.

This study investigates the recovery of used rolling oil from the tandem mill of a steel manufacturing plant by supercritical carbon dioxide (SC – CO_2) extraction done at a constant flow rate of 0.4 Nm^3 per hour and at the maximum allowable equipment operating condition of 300 bar and 70 ^{0}C. oil yield obtained was 84.59%.

The physico – chemical properties of the extract from used oil were determined using American Society for Testing and Materials (ASTM) methods of analyses and compared with that of SC – CO_2 extract from fresh oil and with the fresh oil itself. Results showed that extract from used oil is comparable to that of the extract from the fresh oil in terms of density, refractive index and flash point but differ in viscosity (46.10 vs. 50.36 Cst respectively) and percentage sulfur (0.46% vs. 0.71% respectively).

The chemical composition of the oil samples were determined using ASTM 3238 methods of analyses. Results showed that the percentage carbon distribution of the recovered oil, extract from fresh oil, and the fresh oil itself, are comparable in terms of % paraffinic carbon, % napthenic carbon and percentage aromatic carbon. This is a manifestation that the two – second contact per pass of the oil with the hot rolls and steel strip during cold reduction at 56,700 passes per rolling cycle did not significantly change the base oil composition.

Master of Science In Civil Engineering (MS CE)

001
ACMA, Leoncio Mariano C. 2003. Flexural Response of Slotted Ferrocement Beams to Third – Point Loading. (GT: MSCE), 92pp.

This study aims to determine the flexural response of slotted ferrocement beams to third – point loading. The study is conducted using a Completely Randomized Design with five (5) treatments and seven (7) replications per treatment. A total of thirty-five specimens are tested. The set – ups covered in the study are as follows: use of one layer and two layers of wire mesh reinforcement and use of deformed bar reinforcement and use of both deformed bar and one layer of wire mesh reinforcement. A set of specimen with no

reinforcement is used as control. Flexural strength tests are carried out using a Universal Testing Machine (UTM) at a loading rate of 5kN/sec. Cracks spacing and location are measured using a ruler while crack widths are measured using vernier and micrometer calipers.

The provision of wire mesh in the slotted ferrocement beam increases the flexural strength. One layer of wire mesh has no significant contribution to the flexural strength but deformed bar reinforcement has significant contribution to the flexural strength. The wire reinforcement added to the deformed bar reinforcement significantly increases the moment capacity of the section and the modulus of rupture. Furthermore, the provision of wire mesh decreases the spacing and width of cracks and increases the number of cracks at failure resulting in the increase of moment capacity.

002
BAGUNDOL, Timoteo B. 2007.   Slow Sand Filter Using Labo River Sand for the Treatment of Drinking Water. (MS CE), 105pp.

This study is conducted to determine the appropriateness of using the Labo River aggregates of Misamis Occidental in a slow sand filtration process in treating water with bacterial contamination and with suspended matters causing turbidity.

Sand is extracted from Calabayan, Labo and Clarin both of Labo River of Misamis Occidental. Sand coming from these sources is cleaned thoroughly with water and graded according to the standard specification in a slow sand filter. Equal volumes of sand from these sources are thoroughly mixed and the resulting homogeneous volume is used as medium in a slow sand filter. Three variations of the filter thickness, which are 0.90 m, 0.60 m and 0.30 m, are used and in each variation, the filter is operated at three different rates of flow which are 200, 300 and 400 liters per hr per square meter of filter area. Water samples are collected in each discharge and these are submitted to the laboratory for bacteriological and turbidity tests.

Results show that Labo River sand is feasible for filter medium in a slow sand filter. At 5% level of significance, variations of both filter medium depth and raw water filtration rate in the filter do not statistically affect the coliform count removal in the raw water. At 5% level of significance, variation of filter medium depth affects the turbidity removal while variation of filtration rate does not statistically affect the turbidity removal in the raw water.

003
FLORES, Franco C. 2005. Thermal Insulation of Rice Hull and Waste Polystyrene Foam as a Composite Material. (GT: MSCE), 219pp.

This study is conducted to ascertain the insulation potential of waste materials, namely, rice hull and polystyrene foam combined, and assess their usefulness as alternative construction material \s. it also attempts to determine the properties of the composite materials such as Mass, density and Thermal conductivity Coefficient. Further, it ascertains

whether there is a significant difference of temperature in the model building with and without the composite material installed.

This study utilizes a completely randomized experimental design, which employs the fixed effect model to evaluate the average temperature reduction on the model building.

Three density group variations, namely, 400 kg/m^3, 300 kg/m^3 and 200 kg/m^3 are used for each of the five polystyrene to rice hull proportions by volume, namely, 1:1, 1:3, 1:2, 3:1 and 2:1.

The findings of the study reveal that: (a) the composite material possesses an insulation potential comparable to some common commercial insulation materials; (b) heavier density composition of the composite material cause relatively high temperature reduction in the model building; (c) generally, the composite material develops smaller thermal conductivity coefficient when a lighter density is used; (d) the difference of temperature in the model building with respect to density is statistically significant at 95% confidence level; and (e) the thermal conductivity is statistically significant with respect to density and proportion variations at 95% confidence level.

004
GAMBA, Julius B. 2006. Proposed Housing Project at Lumbia, Cagayan de Oro City. (GT: MSCE), 213pp.

This study is conducted to ascertain the feasibility of the proposed low-cost housing project located in Brgy. Lumbia, Cagayan de Oro City and to assess its marketability. It also attempts to determine the total housing needs in Brgy. Lumbia and Cagayan de Oro City (CDO), the topographic and hydrographic characteristics of the site, design and cost of the project, affordability of the target market, and duration of the project. Further, it ascertains whether the project has the full ability to sustain its operations for the entire project duration and the relevance of the concept of Low Impact Development (LID) to the project.

This study utilizes both descriptive and quantitative approaches to gather necessary data regarding the site and other information needed for land development, house construction, market study, financial analysis and other related matters.

The proposed project site has a total area of 83,540 sq.m. which comprises of low-cost housing units, totaling 354 single-detached units. It is equipped with access road network, open spaces for parks and playground, drainage and sewerage facilities, and waste disposal area based on BP 220 standards.

The findings of the study reveal that: (a) the housing project is both technically and economically feasible and each housing unit is relatively lower in terms of cost per unit area than any other existing housing subdivision in the city; (b) project development is a big help to the total housing needs not only in Brgy. Lumbia but for the entire city of CDO considering its population rate; (c) generally, site topography and hydrologic features are relatively favorable to come up with a lower rate of land development cost; (d) the project is expected to generate a respectable net income without adversely affecting the operation

of the project; (e) the impact of LID to this housing project is significant with respect to water quality, aquatic resources and the natural hydrology of the nearby river and forest.

005
LABADAN, Milon P. 2001. Ultimate Tensile and Compressive Strength of Concrete Containing Coir Fibers. (GT: MSCE), 97pp.

The study was conducted to determine the feasibility of coir (coconut) fibers as reinforcement to concrete, specifically, to evaluate the ultimate tensile and compressive strength of concrete containing coir fibers. The behavior of fresh and hardened concrete was investigated with various amounts and lengths of added coir fibers. Two groups of fibers were added; treated and untreated. The average compressive and tensile strength of plain concrete cylinder samples were taken for strength comparison. Compressive and splitting tensile strength tests were carried on hardened concrete with a Universal Testing machine at a loading rate of 5 kN/s to determine the compressive and tensile strengths. A cement-aggregate ratio of 1:4 was used while a water-cement ratio of 0.48 was chosen.

Two separate three-three factor fixed model experimental designs were used to evaluate the compressive and tensile strength data with the confidence interval established at 95%.

The results of the experiment showed that the addition of the coir fibers has negative influence on the compressive and tensile strength of concrete. The strength of concrete with treated fibers is generally higher than the strength of concrete with untreated fibers.

Coir fibers can be sued as reinforcement to non-structural concrete components subject to tensile load where the control of cracks is important.

006
LAMBERTE, Joseph Cloyd L. 2007. Development of Structural Analysis Software. (GT: MSCE), 410pp.

The objective of this study is to develop a structural analysis software in Visual Basic 6.0, that is capable of analyzing two-dimensional engineering structures, i.e., planar frames, planar trusses, and beams, loaded within the linear-elastic range of material behavior.

The software that is capable of handling six (6) predefined load cases and at least twenty (20) predefined, including user defined, load combinations. The software is designed with a user-friendly graphical interface, with pull down menus and short cut buttons for easy manipulation. The required data may be inputted using the keyboard and/or the mouse of a computer and is displayed in tabular form and graphical layout. Analysis results are displayed in printer-ready tabular format.

The analysis results of the software compare well with the results of other commercially available foreign software.

007

RUBIN, Hermilo V. 2003. Analysis of a Shear Building for Seismic Forces Using Static and Dynamic Lateral Force Procedures. (GT: MS CE), 172pp.

The 1992 National Structural Code of the Philippines (NSCP) and most building codes provide two ways of carrying out analysis for buildings subjected to seismic load, i.e., the static lateral force procedure and dynamic lateral force procedure. In this study, the analytical procedures in the analysis of a shear building for seismic forces are presented. Using a 20 – story, 70 – m high building model, the seismic forces are quantified using these methods. Structural analysis of the structure is carried out for both methods, considering dead, live and earthquake loads and its combinations, using computer software for 3D analysis to determine the member forces. The member forces obtained form each method are compared to determine which method governs in the design.

The results of the study reveal that the lateral seismic forces obtained using the scaled dynamic lateral force procedure are significantly higher by almost 40% than the forces obtained using the static lateral force procedure. Consequently, the dynamic lateral force procedure produces higher member forces especially in the lower levels of the structure.

008

SAGA, Michael A. 2005. Response of Simply Supported Deep Masonry Beams to Third-Point Loading. (GT: MSCE), 132pp.

The study evaluates the response of simply supported deep masonry beams subjected to third point loading. Twelve beam specimens are cast of which each beam consists of two layers of concrete hollow blocks (CHBs) with two pieces in each layer. The overall beam dimension is 135 by 360 by 790 mm. The clear span to depth ratio is approximately 1.85. Six beams are cast using CHBs having a compressive strength of 11.1 MPa (1600 psi) and the other six with a compressive strength of 4.20 MPa (600 psi). For each beam type, three beams are made having single 6 mm diameter tension tie reinforcement and the other three beams with a 10 mm diameter reinforcement.

Results of the test show that all beam specimens fail in shear as manifested by the diagonal cracks originating from end supports. The deep masonry beam's shear strength not only depends on the compressive strength of CHBs but also on the compressive strength of the mortar and grout. Results also show that tension reinforcement has little influence on beam strength on uncracked state.

The Strut and Tie procedure used in the design of deep concrete beams can also be used to design deep masonry beams.

009

SUPREMO, Reinerio P. 2003. Flexural Strength of Bamboo-Reinforced Concrete

Beams. (GT: MSCE), 96pp.

A study on *Dendrocalamus asper,* a bamboo variety, as a concrete reinforcement is conducted. Concrete beams with 10 mm square bamboo reinforcements with and without looping and with and without wire mesh are compared to similar samples with 6 mm, 8mm and 10 mm diameter deformed steel bars. Eight (8) treatments, including the control, each with seven (7) replicates, or a total of fifty six (56) samples are fabricated for study. The flexural test with the third-point loading is performed using the Universal Testing Machine (UTM) of MSU-IIT, with a load rate of 5 kN/sec.

Results of the study show that bamboo reinforcement improves the flexural strength of plain concrete. Values of the bending moment at failure of the bamboo-reinforced beams range 4.959 to 6.08 kN-m. Valued of the bending are not significantly different from that of the bamboo-reinforced concrete beams. Looping with and without chicken wire mesh further improves the flexural strength of bamboo-reinforced concrete beams, although this did not differ significantly among treatments. The values of the modulus of rupture (MOR) of the bamboo-reinforced concrete beams range from 58.364 MPa to 73.541 MPa and are significantly larger than that of the plain concrete beam which is 5.263 MPa. The widths of beams reinforced with bamboo have mean valued from 13.428 mm to 17.000 mm and are not significantly different from those with steel reinforcement which have mean valued ranging from 6.571 mm to 10.857mm.

010

TABLAN, Wilson O. 2002. Flexural Strength of Concrete Beams Containing Coconut Fibers. (GT: MSCE), 69pp.

This study aims to determine the performance of coconut fibers as additives to the concrete beam in relation to the latter's flexural strength and crack length. Seven percentages of coconut fibers by weight of aggregates, each with seven replications, were added to the concrete mix. A fiber length of 5cm is used. Flexural strength tests are carried out using the Universal Testing Machine (UTM) at a loading rate of 5 kN/sec. Cracks are measured using a ruler.

A single-factor effect model experimental design is used to evaluate the flexural strength and crack length data with 95% confidence interval.

Several conclusions are drawn. Flexural strength of plain concrete beam is significantly affected by the addition of coconut fibers with percentages by weight of fibers greater than 0.25%. Addition of coconut fibers has negatively influenced the flexural strength. Crack formations in the concrete beam are also significantly affected by the addition of at least 0.25% of coconut fibers by weight of aggregates. Splitting of the specimens into two sections at failure is likewise controlled.

011

UNIANA, Eugene T. 2002. Compressive Strength of Concrete Hollow Blocks Containing Rice Husks. (GT: MSCE), 92pp.

This research measures the feasibility of rice husks as additives in cement-

aggregate mixture of load-bearing concrete hollow blocks with a compressive strength of at least 6.86 MPa (1,000 psi). The three factors considered were cement-aggregate mix ratio, type of rice husks block samples were tested for compressive strength, water absorption and moisture content at 14 and 28 days. Two separate Three-Factor fixed Effect Model experimental designs for each response variable were used.

Results show that 4% of pulverized rice husks by weight of aggregates, mixed with cement, and aggregates at 1:3 mix ration, plus water, gives a compressive strength of 10.72 MPa (1,555 psi) and 11.39 MPa (1,652 psi) at 14 and 28 days, respectively, which satisfy the requirements of load-bearing concrete hollow blocks, in the ACI, British and Philippine standards.

Concrete hollow blocks containing pulverized rice husks result in higher compressive strengths compared to concrete hollow blocks containing unpulverized rice husks; 1% and 2.6% unpulverized rice husks mixed with 1:3 ratio of cement and aggregates, give 8.64 MPa (1,254 psi) and 7.30 MPa (1,059 psi), respectively, at 28 days. A mix ratio of 1:5 at 1% unpulverized rice husks gives 7.05 MPa (1,023 psi).

012
VILLANUEVA, Belma M. 2004. Compressive Strength and Component Properties of CHBs Containing RHA. (GT: MSCE), 150pp.

This study is conducted to determine the whether the heap-bumt Rice Husk Ash (RHA) used in this study has pozzolanic properties by determining its properties and the mortars of Ordinary Portland cement (OPC) containing varying amounts of RHA. It also aims to measure and evaluate the average compressive strength of concrete hollow blocks of different OPC-RHA mixtures and to determine whether the observed difference in the compressive strength is significant.

This study employs the one-factor completely randomized design, employing the fixed effects model to evaluate the compressive strength with level of confidence established at 95%.

Two binder-aggregate ratios of 1:2 and 1:7 are used. The percent RHA contents which replace the cement are 0%, 10%, 20%, 25%, 30%, 35% and 40% by weight of the cement. The CHB samples are tested for their 28th day compressive strength using a compression machine.

The findings of this study revealed that: (a) the heap-bumt RHA is a weak pozzolan; (b) CHBs with no RHA content attain the highest compressive strength in both binder-aggregate rations; and (c) among CHBs containing RHA, those that contain 25% RHA have the highest compressive strength.

Master of Science in Mechanical Engineering (MS ME)

001

AMBA, Samson Jr. F. 2003. Development of Computer Software for Conduction Heat Transfer. (GT: MSME), 92pp.

Application software for heat transfer is available commercially and sometimes offered free. Acquisition in both cases needs consideration of some relevant issues. Of top importance is cost since commercial software is relatively expensive. Secondly, revision and updates cannot be effected by end-users since program code is usually not included. On the other hand, Free software is mostly intended for demonstration or promotion and hence of limited features. In this light, this study attempted to develop application software for conduction heat transfer.

The software was designed to determine temperature distribution and heat flux for heat conduction problems under the following conditions: 2-dimensional, steady state, no internal heat generation, constant thermal; conductivity, and constant convection coefficient. Moreover, it was aimed to handle prescribe temperature, heat flux, and convections on object boundaries. Finite Element Method was employed to established the necessary equations that will govern the approximate solution and Gaussian Elimination was used in solving the set of simultaneous equations. The programming language used was C in combination with C++.

Important features of the software include mesh generation, nodal display of temperature values, and colored plot of isotherms and contour bands. The present form of the software is simple compared with the commercially available but has essentials qualities that can be helpful enough in many heat conduction problems. As such, it could be useful as an instructional tool to help explain the mechanism of heal conduction.

002

BALANDRA, Ronaldo C. 2007. Computer Software for Thermodynamic Cycle Analysis and Optimization of Thermal Power Plants. (MSME), 78pp.

A computer software was developed for thermodynamic cycle analysis of selected thermal power plants. Simple algebraic equations were derived from Steam Tables using coefficients of an interpolating polynomial and linear interpolation. These equations were then used to develop a computer program to calculate thermodynamic properties of water at different states in every stage of the thermodynamic cycle of the thermal power plant. The generated properties of water were then used to evaluate different types of thermal power plants and making a Temperature-Entropy diagram of the cycle. The software was then used to evaluate different types of Thermal Power plants and determined its optimum performance by varying the number of heaters in regenerative Rankine thermodynamic cycles. The maximum relative error of the results generated from the software compared with the corresponding values from Steam Table by Keenan et. al. was 0.0272%, about 0.8119kJ/kg for enthalpy. The regenerative Rankine cycle with 5 heaters had the optimum performance for ideal thermodynamic analysis.

003

COMALING, Venerando C. 2007. Experimental Analysis on Flow Separation of Air-Water Mixture in a Horizontal and Inclined Pipe Through a 1" Φ Impacting T- Junction. (GT: MSME), 131pp.

An experimental analysis on flow separation of Air-Water mixture in a horizontal and inclined pipe passing through a 1"Φ G.I. pipe impacting Tee Junction was carried out. The experimental rig was fabricated and erected at the Mechanical Technology building of the Mindanao Polytechnic State College. The experiments involved single and two-phase flow splitting in a 1" Φ impacting T-junction.

There were three phases tested i.e. liquid phase (pure water), gas phase (pure air), and two-phase (air-water mixture). A total of 490 data points with three trials each were conducted. The experimental results were analyzed using multiple linear regression and analysis of variance (ANOVA).

In liquid phase (pure water) , five test volumes were conducted1.0, 1.9, 2.7, 3.6, and 4.5 gpm, at swiveled angles of impacting Tee from 0 to 90^0 degrees at 15^0 interval, and main pipe at 0° or laid horizontally and inclined at (15^0) degrees. The results show that there were strong relationships between flow ratios i.e. Q_{w2}/Q_{w1} and Q_{w3}/Q_{w1} for branch two and branch three of the impacting Tee respectively.

On the other hand, for gas phase (pure air), another five test volumes were conducted 1.0, 2.3, 3.0, 3.7, and 4.3 cfm. The results indicate a statistical significant difference and a strong relationship between the flow ratio Q_{a2}/Q_{a1} and Q_{a3}/Q_{a1} for branch two and branch three respectively.

Moreover, twenty five (25) volume flow combinations for air-water mixture were conducted. The result also indicates a statistical significant difference and a strong relationship between the flow ratio Q_{a2}/Q_{a1}, Q_{a3}/Q_{a1} and Qw_2/Qw_1, Qw_3/Qw_1 for air and water at branch two and branch three respectively. The flow ratios of water and air at the two branches vary as the swivel angles, angle of inclination, and the mixture volume flow rates changes.

The multiple regression of the experimental data resulted to a mathematical relationship of the variables which can be used at some range of the volume flow rates and swiveled angles of the impacting Tee junction. Branch two and branch three respectively for the volume

004

CONGRESO, Jose Jr. R. 2005. "Characterization of Portable Ultrasonic Non-Destructive Digital Indicating Tester (Pundit) Mark V for the Detection of Vertical Discontinuity in Steel". (GT: MSME), 52pp.

PUNDIT MARK V is a device used for detecting cracks in concrete materials. Owing to the limitation of the apparatus, a study was made to extend its application to testing vertical discontinuity in steel. For this type of incision, two tests were conducted that established respectively the threshold of PUNDIT's sensitivity and the effects of adjoining area to the transit time. The first test yielded 8 mm as the minimum detectible

depth. The second test indicated that reduction of the adjoining area to 60mm^2 causes scattering of signal. It was also found out that going smaller that this value aggravates pulse cluttering, making it very difficult to arrive at a conclusive and reliable interpretation of results.

005

CUANAN, Jaime M. 2005. An Experimental Study of Single and Two Phase Flows on Horizontal and Inclined Pipe Through a 50 Mm Diameter Impacting T Junction. (GT: MSME), 119pp.

The study of the single and two phase flows on horizontal and inclined pipe through an impacting T – junction was carried out. A rig was designed and fabricated for the experiments. The experiments involved single and two phase flow splitting on an impacting T-junction.

Different test were conducted on this study. A total of eight four (84) batches with five test runs per batch were classified. They are as follows: For single and two phase flow, four variations of the main pipe (i.e. Horizontal, 5^0 to 90^0 at 15^0) with the impacting T rotated 0^0 to 90^0 at 15^0 interval for each variation.

There were three phases tested: air, water, and air-water, mixture the experiments, using LINEST in Microsoft excel program.

The results showed a trend regarding the effects of liquid flow ratio on a liquid splitting through an impacting T-junction. All the trials tested in this experiments resulted an inversely proportional relationship in the impacting t-junction, which further means as Q_2/Q_1 increase Q_3/Q_1 decreases. The findings further revealed that as the flow rate of air was increased there was also a corresponding decrease in the coefficient of determination, for water, as the flow rate was increased there was also a corresponding increase in the coefficient of determination. Likewise for two phase flow:- air –water, generally also indicated that as the flow rate was increased there was also a corresponding increase in the coefficient of determination.

006

EMPESO, Karl. 2002. Determination of the Mechanical Properties of Gemelina Particleboards. (GT: MSME), 70pp.

The mechanical properties of the new Gemelina particleboard were determined using the testing procedures of the manufacturer, the Philippine Compact Board Inc. (PCBI). The Gemelina board is a relatively new product and there are no existing data on its mechanical properties. Specimens used were the off cuts, which were newly produced from the manufacturing plant. The test materials were particleboards of 18 mm thickness. They were classified into two groups as follows: four batches for internal bonding and four batches for bending strength, in which every batch has samples of 20m specimens, except for the fourth batch which has 30.

All boards tested were considered of commercial quality. The investigation of such performance involves the use of universal testing machine, fabricated fulcrum rollers,

and other measuring instruments like steel tape, beam balance and caliper. The stress distribution on the test materials subjected to the test procedures was investigated using the ALGOR software. The ALGOR software is powerful finite element software capable of solving complicated engineering problems.

The test results showed that the density and the internal bonding of the Gemelina particleboard do not vary much for the samples taken within the batch, but vary much if compared with other batches. This may be attributed to variation in the properties of the raw materials. The computer simulations identify the highly stressed areas of the test specimens and were verified in the experiments.

007

ENTERIA, Napoleon A. 2003. The Experimental Investigation of the Impact Absorption Capability of Piston-Cylinder Air-Damper Set-Up Perforated with Tiny Holes.(GT: MSME), 150pp.

An air-damper for impact absorption study was designed and fabricated. It had 32 exit holes, each with a diameter of 5/32 inch. The holes were closed using tin rivet and sealed using grease and insulation tape. The numbers of opened exit holes were varied from 0 to 32 with 17 combinations in horizontal and vertical position. There were five classes of load applied and three trials were done for each opened exit holes position. The theoretical impact was solved using impact equation and the impacts produced were higher compared to the impact produced with the air-damper. The impact produced and the pressure developed inside the air-damper had a direct relationship in which higher impact produced develop higher pressure inside the damper and vice versa, that is, the impact produced was minimum when large amount of applied energy was absorbed by the escaping air and the horizontal and vertical position of the opened exit holes affected the amount of impact produced. The analysis of variance (ANOVA) F test at 0.05 level of significance indicated the significant effect of exit holes opening and position.

008

FAMADOR, Eusebio P. 2006. An Experimental Study of Single and Two Phase Flows in Horizontal and Inclined Pipe Through a Regular Dividing 25 Mm ϕ T- Junction. (GT: MSME), 144pp.

An experimental investigation of the single and two phase flows on horizontal and inclined pipe through a regular dividing T-junction was undertaken. A test rig was designed and fabricated for the experiments. A wide range of inlet air and water flow rates was tested at horizontal and inclined positions. Flow parameters were measured for air – water flow in a T-junction in the horizontal and inclined positions (0°, and 15°). The test section was a 25.0 mm transparent plastic tube attached to the galvanized iron T-coupling. For this study, a total of 294 data points were taken on horizontal and inclined position for the main pipe and with the T-junction tilted from 90° to 270° with 30° interval for each batch, The results were analyzed using multiple linear regression and analysis of variance (ANOVA). The multiple linear regression of the experimental data resulted to a mathematical relationship of the variables which can be used in some range of the volume flow rates &

tilting angles of the regular dividing T- junction.

The flow rates of water and air were measured under a steady state condition ranging from 1.0 to 4.5 gpm for water and from about 10.58 to 32.20 gpm for air. Comparison of the flow rates for single and two phase flow revealed that the flow rate on the junction 2 (run) results were significantly dependent on the water and air, mixture, flow rate, tilting angle and inclination angle. For pure water (single phase flow), horizontal position (zero degree inclination) of the main pipe and at flow rates ranging from 1.0 to 4.5 gpm, the percentage of separation through the run is higher than through the branch at any tilting angle ;i.e. at angles from 90° to 270° and more or less equal in the higher flow rates. It indicated the dominance of momentum over the gravitational pull in the separation through the branch. However at 15° inclination the momentum dominated at tilting angles from 90° to 180° only and the gravitational pull dominated at angles from 180° to 270°. For pure air the momentum dominated at all flow rates, inclination angles and tilting angles. For two phase flows the experimental results indicated a trend of the percentage of separation for water and air at different inclination angles, tilting angles, and flow rates of the water and air. The degree of separation could be calculated using the mathematical relationship derived using the multiple linear regression of the experimental results.

009

GABULE, Diomedes Jr. T. 2003. Machine Element Failure Detection Using Brittle Coating and Finite Element Analysis. (GT: MSME), 66pp.

The study was made to locate the highly stressed area of machine elements using brittle coating. The results were compared with those using finite element analysis. A computer software (Algor) was used in the calculation.

Different forms of machine elements were fabricated from commercially available deformed reinforcement bar. The brittle coating used after a series of testing of different types of locally available coating is the pioneer wood glue.

Thin film of wood glue was applied to the machine members and naturally dried as specified by the manufacturer. Two tests tension and bending, were conducted in the Universal Testing Machine. Torsion test was conducted using torque wrench and bench vise.

The results of the experiment showed that the brittle coating cracks at the smallest cross-sectional area of the specimen. Simulation results indicate that the highly stressed areas are located in the area where the brittle coating started to crack.

010

GODORNES, Heriberto S. 2003. The Experimental Study of Impact Absorption Capability of a Square – Grid Designed Chipboard Material. (GT: MSME), 114pp.

The Study of the impact of a grid designed chipboard material was carried out. A rig was designed and fabricated for the experiments. The experiments involved impact and

deformation measurement with variable load at constant height.

All test specimens were made of a square grid designed chipboard material measuring 20 m by 4 cm. There were six types of specimen each having 4,6,8,10,22 and 34 pieces of 20 cm x 4 cm chipboard material respectively. The materials of each specimen were assembled in a square grid pattern.

There were two groups of specimen: Group I – Specimen 1 to 6 without a glue in its joints and Group II – Specimen 1 to 6 with glue at the top and bottom portion of the joints. A total of 150 test specimens without glue and 60 test specimens with glue were used in the experiment.

The results show a trend with regards to impact, deformation and type of specimen at varying loads. Of the six specimens tested whether glued or not, specimen 4 (thirty six square grid) is considered the best based on the maximum impact absorption and minimum deformation characteristics.

The study recommends to continue exploring the possibility of evaluating and testing the impact absorption capability of materials other than chipboard and using loads greater than 2.5 kilograms and a height greater than 10.16 cm.

011
PABILONA, Leonel L. 2003. An Experimental Study on the Drag of Various Shape Axisymmetric Bodies Using the Mini C-2 Subsonic Wind Tunnel. (GT: MSME), 85pp.

The C-2 subsonic wind tunnel in MSU-IIT College of Engineering is a relatively small wind tunnel resulting to constricted flow of air for large specimen. This constriction resulted to deviation from an open-air environment supposed to be simulated by the wind tunnel. The study focused on this deviation. The drag forces using different sizes and shapes of asymmetric body at different free stream velocities were measured. A correction for the supporting spindle was incorporated in the determination of the drag force. The correction was based on the whole and shortened spindle. The drag force of models was converted into a drag coefficient obtained by dimensional analysis and then compared to the published value found in the available textbooks and online documents.

The results confirm that the drag coefficients of all models with sizes near 50-mm and 75-mm in characteristics lengths consistently fall within the vicinity of the published value with correction based on the whole and shortened spindles. The drag coefficient with sizes near to 15-mm and 25-mm in characteristics lengths are close to the said value only if the correction is based on the shortened spindle. For sizes near 100-mm in characteristics lengths of sharp edged bodies, the results are consistently higher than the published values illustrating the effect of the constriction.

012
POLON, Rey F. 2005. Investigation of the Velocities and Streamlines Around a Model in a Subsonic Mini Wind Tunnel. (GT: MSME), 123pp.

The study was conducted to solve the velocity and steamline distribution around stationary flow model. It aimed to develop Finite Element Analysis (FEA) software to solve the same problem. It also aimed to determine the proper size of specimen to be used in the Armfield wind tunnel C-2 that could give reliable results. Experiment was conducted in a subsonic wind tunnel C-2 in parallel with FEA software simulation and analytical method for spherical model.

Two shapes of specimen were used, a spherical and a conical tip cylinder models with three step sizes of each kind. Each specimen was experimented and the same specimens were simulated using the FEA program.

The results of the experiment, the FEA method and the analytical method for spherical models, agree well with each other when the diameter of the specimen is within the range of 50mm to 75mm. Conversely, the results of the FEA method and experiment for conical tip cylinder models agree well when the diameter of the flow model is 75 mm.

013

SALAS, Vincent L. 2005. An Experimental Study of Single and Two Phase Flows on Horizontal and Inclined Pipe Through a Regular Dividing 50 Mm Φ T Junction. (GT: MSME), 130pp.

The results of an experimental investigation of the single and two phase flows on horizontal and inclined pipe through a regular dividing. Tee junction was undertaken. A test rig was designed and fabricated for the experiments. A wide range of inlet air and water flow rates was tested at various horizontal and inclined position. Flow parameters were measures for air – water flow in a T junction in the horizontal and inclined positions $(0^0, 5^0, 10^0,$ and $15^0)$. The test section was a 50 mm PVC pipe tee with a length to diameter ration of 1. for this study, a total of 184 data points were taken on horizontal and inclined position for the main pipe and with the pipe tee rotated from 0^0 to 90^0 with 15^0 interval for each batch, by carefully coordinating the flow combinations. The flow rate and pressure data were measured under a uniform boundary conditions ranging from 1 to 5 gpm for water measured under a uniform boundary conditions ranging from 1 to 5 gpm for water and from about 0.5 to 2.5 cfm for air. Comparison of the flow rates for ingle and two phase flows revealed that the flow rate on the side arm (junction 20 results were significantly dependent on the water and air, flow rate and inclination angle. The experimental data indicated that, for single phase flow both for water and air, showed a trend with regards to flow ratio, that as the flow rates on the side arm (junction2) decreases the flow rate on the run (junction 3) increases. Similarly, for two phase flows air-water the same trend was noted, that as the flow rates on the side arm decreases, there was also a corresponding increases of flow rates in the run. These results revealed that the flow rate at the side arm is inversely proportional to the flow rate at the run.

COLLEGE OF SCIENCE AND MATHEMATICS (CSM)

Master of Applied Statistics (MAS)

001
ABUBAKAR, Ruayda D. 2000. Statistical Analysis of Ordinal Data. (GT: MAS), 117pp.

An expository study on statistical analysis of ordinal data it aims to present some statistical methods for describing ordinal data, to expose measures of associations involving ordinal data, to explore methods of modeling ordinal data, and apply these various statistical methodologies using sets of secondary data. The concepts are culled from books, journals and Internet information. The statistical software package used is the Statistical Analysis System (SAS).

Methods for analyzing cross-classified ordinal data were essentially based on three types of scoring. Comparison of proportions such as difference, relative risk and odds ratio were applied and results appropriately interpreted. A measures of association patterns based on concordant and discordant pairs of observations were illustrated using gamma, Tau-b and Somers'd statistics, three models which describe association pattern among ordinal variables were discussed, such as the loglinear model when the situation does not require distinguishing between response and explanatory variables, the linear-by-linear association model, which is appropriate when scores of ordinal categories are involved; and the logistic model, which describe the effects of explanatory variables on the response variable.

002
ALIGSAO, Zarinah S. 2007. Direct and Indirect Small Area Estimation Using Survey and Census Data. (GT: MAS), 158pp.

Small area statistics faced a growing demand in the recent years with the decentralization of programs in the government. Most national surveys produced estimates deemed reliable at regional level only because as domain is tapered down to finer level, estimates exhibit undesirable inflated errors.

With this scenario, small area estimation is tapped as a potential approach for the generation of useful local area statistics without the increase in the cost of conducting a nationwide survey.

This study explored three methods applicable to Philippine settings: one traditional direct method and two indirect methods: synthetic and regression. Coefficient of variation and external validation assessed the reliability and performance of the estimates. Results obtained showed that indirect regression method produced improved set of small area estimates.
003

AMORA, Johnny T. 1999. Classical and Bayesian Estimation of Parameters in General Linear Model: A Comparison. (GT: MAS), 68pp.

Bayesian estimation of the general linear model for known and unknown variance is presented using the normal-gamma prior distribution. Mathematical derivations for the estimators of parameters are shown in details. The resulting Bayesian estimators of the parameters in a simple linear model with known variance are compared to the classical estimators via simulation study. Sets of normally distributed random variables, which were generated using the SAS statistical software, are used as error terms in creating data sets for the simulation. The Bayesian and classical estimates for each of the created data set are computed using the computer program which was developed by the author using Turbo Pascal 7.0. The comparison between the two estimators is made using the following criteria: the mean-square error, the width of the interval estimates, and the percentage of the number of intervals that captured the true value of parameter. The results of the simulation study suggest that Bayesian approach when the sample size is small and when the prior information is close to the parameter being estimated.

004

CAHOY, Arlene V. 2005. Application of P-Distance and Jukes Cantor Methods in Determining Pairwise Distances Between Sequences of DNA in the Construction of Phylogenetic Trees. (GT: MAS), 69pp.

This is an expository study that deals with the comparison of P-distance and Jukes Cantor methods of determining pairwise distance between sequences of DNA (nucleotides) as applied to the data set used by Roos and Geissman (2001) "Molecular Phylogency of the Major Hylobatid Division"), in the construction of phylogenetic trees obtained through maximum Parsimony, Neighbor Joining and maximum Likelihood by Roos and Geissman. While Roos and Geissman's paper used PHYLIP and PUZZLE programs for tree reconstruction, this paper uses MEGA2.1 program to reconstruct phylogenetic trees. Each branching pattern of the obtained tree in this study was evaluated using bootstrap, which is also incorporated in the MEGA2.1 software. Results showed that ME gives similar tree topology as that of Maximum Likelihood and also UPGMA to that of Maximum Parsimony using the distance method of Jukes cantor. But using p-distance method, UPGMA and ME produce phylogenetic trees of similar topology. NJ method for both distance measurements gives phylogenetic trees of similar topology as that obtained by Roos and Geissman (2001).

005

CORONADO, Wenceslao A. 2000. Statistical Clustering of Barangays in Iligan City by Water Sources and Quality: Its Implication to Incidence of Water Related Diseases. (GT: MAS), 105pp.

The study employed various data management procedures using the secondary data (1998) from multiple sources on prevalence of water related diseases; number of households served and density by various water sources; and the physical, chemical and bacteriological qualities of water using the multivariate technique called cluster analysis. This technique identifies those barangays possessing similar characteristics with respect to

water quality, resources and water related diseases. Two (2) strategies of cluster analysis were chosen particularly the Ward and Centroid methods. Both methods used squared Euclidean distance as the basis for similarity measures. Statistical softwares such as Statistica, SPSS and SAS produced the cluster dendogram output.

Results of the cluster analysis under Centroid method revealed that barangay Rogongon has the highest incidence rate of malaria and Del Carmen for dengue fever disease. High occurrence for dysentery and diarrhea are shown in barangay San Roque and Tibanga. Barangay Suarez on the other hand, ranked as number one (1) whose water sources are mostly contaminated with coliform bacteria.

Hardness and pH of water have significant negative correlation with dengue disease implying that as the hardness and pH. Of water I a given locality decreases, the occurrence of dengue disease is likely to increase.

006
EYA, Anna Arlene A. 2007. Comparison of the Bootstrap and Jackknife Methods in Making Statistical Inference on Selected Measures of Niche Overlap. (MAS), 95pp.

The statistical properties of the six measures of niche overlap of two fish species namely *Leiognathus splendens* (Danglay) and *Lethrinus insulindicus* (Katambak) were investigated using the Jackknife and Bootstrap Techniques. These are resampling methods used to estimate statistical properties and make statistical inferences of niche overlap indices. The six measures of niche overlap evaluated are MacArthur and Levin's, Pianka's, Percentage Similarity Overlap, Horn's, Simplified Morisita's and Hurlbert's index. The statistical criteria used to describe the behavior of these indices are the mean, standard deviation, variance, bias, z-values and confidence interval. This exploratory study is made possible by developing a computer program created using the Borland Delphi Random Application Development (RAD) Tool Version 7.0. Results showed that the jackknife confidence limits do contain the observed index for the MacArthur and Levin's, Pianka's Index and Simplified Morisita's Index. Thus, these showed a successful jackknife performance for these indices. However, the jackknife confidence limits do not contain the observed index for the Percentage Similarity, Horn's Index and Hurlbert's Index. Thus, these do not exhibit satisfactory result. Low bias and variance were observed for all indices for the jackknife performance. Low bias and variance were also observed in the bootstrap performance for all the indices which revealed reliable and consistent results. However, only MacArthur and Levin's and Hurlbert's index have an efficient confidence interval. Comparison between the Jackknife and Bootstrap techniques resulted to lowest z-value for the Jackknife and Bootstrap performance of the MacArthur and Levin's index. Lowest variance was observed in the Jackknife performance of the Percentage Similarity overlap and lowest bias was observed in the Jackknife performance of the Simplified Morisita's index. As shown in the illustration using fish data, MacArthur and Levin's index is highly favored among all indices based on its statistical properties using Jackknife and Bootstrap techniques.

007

FAMILAR, Russell R. 1999. Local Linear Estimator of Survival Function. (GT: MAS), 52pp.

The local linear estimator is applied to survivorship function. Data were generated from exponential and Weibull distributions and optimized using prior knowledge of the true survivorship function.

The criteria used for comparison of performance of the estimators was the average MSE. In addition, visual comparison were presented in graphical form. Simulations showed that the estimator using Epanichnivok kernel were affected by large values of the random variates and the sample size. When the values of the random variates were large, the estimation displayed a non-monotonic graph, which is not a characteristic of a survivorship function. However, when the values of the random variates were small the resulting graphs were strictly monotone.

Through simulation estimators with Gaussian kernel were not affected by the large values of the random variates. The performance of these estimators was slightly affected by the sample size. The average MSE of almost all estimators decreased when the sample size was increased for the data generated from exponential distribution. Data from Weibull distribution resulted to estimators having decreased average MSE for some values of the parameters.

The study also developed a computer program to estimate survivorship function using Gaussian kernel.

008

GALELA, Rebecca S. 2004. Model Construction and Evaluation of Line Transect Distance Data for Density Estimation. (GT: MAS), 193pp.

Line transect distance sampling for estimating density was simulated in two projects using match sticks as objects of observation. Possible detection functions were constructed and modeled. The selected model in each case was used to estimate the density and compared with the true density. For line transects distance sampling on match sticks ($MSDP_1$), the best model selected was the uniform key function plus one cosine series. It yielded a density estimate of 8.352 match sticks per square meter over the true density of 8.4. for line transects distance sampling on match sticks ($MSDP_2$), the best model selected to estimate the density was the hazard rate key. It gave an estimate of 8.12 match sticks per square meter area over the true density of 8.4. In both cases, selection of the chosen model was based on lowest Akaike's Information criterion (AIC).

The experience form the simulations were used to estimate the density o mangrove trees in Langamon, Anibongan, Gigaquit, Surigao del Norte. The best model selected here was the hazard function without adjustment terms. It yielded as estimate of 116.52 mangroves per hectare.

Results of the study, using the software package DISTANCE 3.5, showed the goodness of the estimate by distance sampling compared to the conventional strip transect

full census methodology. For future research directions, a similar study might be conducted where objects of interest are mobile or clustered.

009
JAMBOY, Norma A. 2000. Outlier Detection in Regression Analysis Using the Least Trimmed Squares (LMS) Methods. (GT: MAS), 114pp.

This is an expository study on some alternative procedures to the least squares (LS) method for the estimation of parameters especcially in multiple linear regression analysis. Two robust procedures such as the least median squares (LMS) and least trimmed squares (LTS) methods described in (Rousseeuw and Leroy, 1987) are exposed and applied to some data sets obtained from secondary references using the Program for Robust Regression (PROGRESS).

The sudy shows that two robust procedures detect more outliers that caused the non-normality of the errors terms. It is also shown that the least trimmed squares and least median squares can tolerate the presence ot outliers to as much as 50% without affectign the estimates.

The results of the study reveal that the LMS and LTS procedures give a better fit to the regression model higher values of R2 compared to the LS method even when sample sizes are reduced.

It further reveals that the estimated regression parameters of the LTS and LMS methods are comparable to the LS method when the errors are normally distributed. Otherwise, the regression estimates are different. The study also shows that these two methods performed better than LS when there is apparent nonnormality of the errors terms.

010
JIMENEZ, EL B. 2003. Logit – Log Linear Models from Contingency Tables. (GT: MAS), 123pp.

An investigation of relationship between two generalized linear models on count data, the study presented separately the two models (logistic regression and log linear); provided derivations; made illustrations by examples; and established their relationships. Equivalent models were discussed and examples were provided. The logistic model was illustrated using secondary data on LET (Licensure Examination for Teachers). The log – linear model was illustrated using secondary data from a study on dengue patients. The secondary data were utilized mainly for illustration purposes. The connections of the two models were investigated based on the SPSS software outputs.

Rasch model as a special case of logistic model is introduced and illustrated in the context of Item Response Theory.

Based on the results of the study, an extension work to polychotomous logistic regression and its equivalent log linear model is recommended. Another direction for research is the integration of reliability index of test items to the item characteristic curve

analysis discussed in this study.

011
JUANITE, Raylee A. 2000. Classical and Bayesian Estimates of a Linear Model with AR (1) Errors: A Comparative Study. (GT: MAS), 75pp.

The problem of estimating the parameters of a linear model with first-order autoregressive errors is analyzed using the Bayesian approach. The results are compared with those of the classical approach using three criteria, to wit: Mean-Squared Error (MSE); width of the confidence interval; and number of confidence intervals which can capture the true parameter values. A computer program for simulation of the data is created using Turbo Pascal. In the determination of the posterior density, a conjugate prior is used where the prior density of β is normal, that is $\beta \sim N(\beta^*, \tau^{-1} I)$ and τ assumes a noninformative prior. This study shows that Bayesian estimators are highly susceptible to changes in the values of the independent variable are concentrated. On the other hand classical estimators gain efficiency hen the values f the independent variable are widely spread and the sample size is large.

012
LUGATIMAN, Vallezar M. 1999. Some Multivariate Techniques Applied to Ecological Data. (GT: MAS), 77pp.

This is an expository work on the three of the well-known Multivariate Techniques with their application to ecological data. These techniques include the Association Analysis and Cluster Analysis which are identified as the classification techniques and Polar Ordination as an ordination technique.

Two sets of ecological data were used for the application of the techniques. A comparison of result using the three techniques was also done. The groups formed by Cluster Analysis were also verified in terms with their relative positions to the axes in Polar Ordination graphical display.

Statistical soft wares SPSS, Stateco and Statistica were used in cluster analysis. Association analysis and Polar Ordination were done using Stateco.

The result showed that Cluster Analysis using abundance data had different set of groups formed as compared with the result in Association Analysis which uses only nominal information in the form of presence-absence data species. The result of Polar Ordination, however, showed that the relative positions of sampling units (Sus) along the X-Y axes are very similar to the order of clustering of the same Sus by Cluster Analysis.

The procedures in applying these techniques were presented in a step-by-step manner. A list of statistical software packages that can be used for multivariate ecological data is also provided.

A glossary of keywords of multivariate techniques designed for researchers in

ecology was also developed.

013

MAGNO, Sonny M. 2001. Development of Classification Model Using Discriminant and Logit Analysis: An Analysis. (GT: MAS), 90pp.

This paper focuses on the development of classification model using the scores of high school students in the MINSUPALA Regions who took the MSU-SASE. Aside from the SASE scores, other variable like sex and type of school were considered in the formulation of the classification model using the multivariate method, Discriminant Analysis, to come up with an alternative procedure in accepting and rejecting students. This method verified by using another statistical technique, which is the Logit Analysis. Also, multiple discriminant analysis was used in the formulation of a classification rule to classify students to different colleges. Results on the study showed that in using the two group linear discriminant analysis, out of 151 students who failed in the SASE, there were 148 (98.0%) who were rejected based on their discriminant scores, and of the 49 students who passed in the SASE, there were 42 (85.7%) who were accepted based on their discriminant scores. The overall correct classification is 95.0%) while the logit analysis showed 100% correct classification.

In multiple discriminant analysis, there were 397 students considered. These students are divided into two groups by using proportionate stratified random sampling. There were two hundred thirty eight students (238) who composed the try out sample group and another one hundred fifty nine (159) who composed the hold out sample group. Results of the analysis for the try-out sample showed that 52.5% of original grouped cases were correctly classified while 45.9% of original grouped cases correctly classified in the holdout sample.

014

PARACHA, Pilar E. 1999. Some Experimental Designs and Optimization Techniques in Response Surface Methodology. (GT: MAS), 95pp.

The Response Surface Methodology, commonly known as RSM, is described and applied.

Response surface methodology has the primary concern of finding a suitable approximation for a true functional relationship between the response and the set of input variables. Usually, a first-order model is employed,

$$y = \beta_o + \sum_{i=1}^{k} \beta_i x_i + \varepsilon$$

If a curvature is present in the system, then a second-order model is used,

$$y = \beta_o + \sum_{i=1}^{k} \beta_i x_i + \sum_{i=1}^{k} \beta_{ii} x_i^2 + \sum_{i=1}^{k-1} \sum_{j=2}^{k} \beta_{ij} x_i x_j + \varepsilon$$

The response surface analysis is then done in terms of the fitted surface using the method of last squares. The model parameters can be estimated most effectively if proper experimental are used to collect the data. The lack of a fit test determines the adequacy of the model. Several different procedures are used to find the settings of the input variables that will produce the most desirable response value.

Three sets of experimental data were analyzed. Different experimental designs were used for each set of data. The data were investigated and analyzed using some statistical packages such as the Statistical Analysis System (SAS) and the Statistica. An optimum response was attained in all applications.

015
RECOPELACION, Ruby Socorro A. 2000. Dichotomous Data and Their Statistical Analysis. (GT: MAS), 106pp.

A survey-expository work on the statistical analysis of dichotomous data, the study explores, presents and illustrates various descriptive statistics as well as inferential procedures appropriate for dichotomous data. Background for inferential principles are established using two distribution functions associated with binary data, the Bernoulli and binomial distributions.

Measures of association and independence for two dichotomous variables are presented and illustrated. Two modeling techniques, the logistic and probit regressions, are presented, illustrated and compared. While probit models are appropriately used for normally distributed grouped binary response data, as in proportions of death varying doses of stimulus, logit models are very flexible and can be used to model both grouped and ungrouped binary response data arising from logistic and any other distributions. These procedures are applied and illustrated using SPSS and SAS programs.

A roadmap for binary data analysis and a glossary of terms are provided as reference for researchers who are non-statisticians.

Expository work on multivariate statistical techniques for binary data is recommended as an extension of this present study. Other modeling techniques for binary

data, the complementary log-log and non-linear logistic transformations may be of special interest to future researchers. Studies on diagnostics and residual analysis are also recommended.

016
SIERAS, Noel C. 2002. Two Models for Longitudinal Data Analysis. (GT: MAS), 92pp.

This study attempts to present two models for longitudinal data analysis, namely Latent Growth Model (LGM) and Hierarchical Linear Model (HLM). The presentation is based in terms of their concept, model specifications, parameter estimation, and computation. These models are applied to some secondary and simulated data sets. The simulation of data is generated using MS Excel and S − Plus 2000. A computer software Statistical Analysis System (SAS), particularly the procedures SAS PROC CALIS and SAS PROC MIXED, is introduced and utilized for data analysis. The comparison between the two models is made based on the following criteria: mean − squared error (MSE) and goodness − of − fit.

The results showed that the two analytic procedures emerged as viable method for the analysis of longitudinal data, and that they present different ways of modeling data with repeated observations. However, it was found out that HLM is better than GLM in terms of MSE and standard errors. Furthermore, an investigation is carried out using F − test to see if the MSE of the two models are not statistically significant. The result shows that the MSE of the two models are not statistically significant. This implies that one is an alternate method of the other.

017
SICAT, Oscar S. 2008. Kriging: Spatial Statistics Application on Power Distribution. (GT: MAS), 107pp.

Kriging interpolation technique was applied in domestic power distribution for prediction of unknown power loads with known locations. The process involved the Least Squares Error method using the Root Mean Square Error, the Residual Sum of Squares, and the Coefficient of Determination criterion for model building. Simple, Ordinary and Universal Kriging with the Isotropic and Anisotropic conditions were tested.

Anisotropic Ordinary Kriging resulted to the least RMSE, RSS and the highest Coefficient of Determination. Predictions were made based on this model which yielded tolerable but overestimated values.

018
UNDE, Susan C. 2005. A Comparison Between Classical Test Theory and Item Response Theory as Applied to Chemistry Achievement Test. (GT: MAS), 165pp.

This study was conducted to present and compare the two theories in item

analysis, namely; the Classical test Theory (CTT) and the Item response Theory (IRT) as applied to Chemistry Achievement Test. A three-parameter logistic model was adopted for the IRT. Specifically, the two theories in item analysis were compared in terms of stability and correlation of indices. Moreover, validation of the three parameter logistic model was considered.

SPSS and the Microsoft Excel were used to calculate the CTT indices while XCALIBRE and BIRT were utilized to obtain the IRT estimated parameters and the Item Characterization Curve (ICC), respectively.

Findings revealed that the IRT estimated parameters were more stable as compared to CTT indices. There was a high negative correlation between IRT estimated difficulty and CTT index of difficulty while no correlation was observed for the IRT estimated discrimination and CTT index of discrimination.

Based on the IRT analysis, 255 of the 75-item Chemistry Achievement test were found to be defective. A validated and reliable test was recommended.

Master of Science in Statistics (MS Stat)

001
GUILLENA, Junge B. 2007. A Modified Quadratic-Based Confidence Interval Estimator for the Binomial Parameter *P*. (GT: MS Stat), 109pp.

This study developed a quadratic-based interval estimator for binomial parameter *p*, as motivated by the works of Casella [9]. The modified method imposed a continuity correction over the confidence interval developed by the said author. An asymptotic expansion of its coverage probability was derived.

This modified quadratic-based interval was compared to the different existing alternative intervals through numerical analysis using the following criteria: coverage of probability, expected width, mean coverage, mean expected width; and root mean squared error (RME), for various values of *n, p* and α.

Empirical results generated the following observations: (1) the coverage probability of modified intervals is larger compared to that of the standard and on non-modified intervals, for any *p* and *n*; (2) the coverage probability of all the methods approaches to the nominal (1- α)100% confidence level as *n* increases, for any *p*; (3) the non-modified and modified intervals have comparable expected width *n* gets larger for any *p*; (4) the expected width of all the methods becomes larger as α gets smaller for fixed *n* and any *p*; (5) the interval that has a coverage probability that closely approximates to the nominal (1- α)100% confidence level, yields a narrower expected width; (6) the modified and non-modified intervals have indistinguishable width differences for any *p* as *n* gets larger; (7) the expected width of the modified and alternative intervals decreases as *n* increases for any α and *p*; (8) the modified and alternative intervals have comparable width for α = 0.01 than α = 0.05 with *p* closer to 0.5 for at least moderate *n;* (9) the alternative

intervals and modified interval have comparable asymptotic mean coverage probability behavior both for 95% and 99% confidence level, respectively; (10) the mean expected width of the modified and alternative methods are comparable and decreases as n increases; (11) the modified interval has desirable RSME property compared to the standard and non-modified intervals; and (12) the RSME behavior of the modified and alternative methods decreases as n increases.

Based on these observations one can say that the modified method is an improvement of the standard method.

002

PAILDEN, Junvie M. 2008. Sequential Confidence Interval Estimation for the Exponential Hazard Rate. (GT: MS Stat), 87pp.

Let $X_1, X_2,...$ be independent and identically distributed random variables from an exponential distribution with unknown scale parameter $\sigma \in (0,+\infty)$. Given $d > 0$ and $\alpha \in (0,1)$, confidence intervals for the hazard rate σ^{-1}, with pre-defined length $2d$ and coverage probability $1-\alpha$, are constructed based on random sample of size n from the exponential population. It is known that no best fixed sample size procedure can be used to estimate the unknown hazard rate. Thus, a sequential procedure to estimate the optimum sample size n^* and consequently, the hazard rate σ^{-1} is proposed. It is shown that the proposed sequential procedure is asymptotically efficient and asymptotically consistent which make it a fully sequential procedure. Second-order approximation of the expected sample size is derived with second-order expansions of the corresponding coverage probability. In addition, an alternative sequential procedure is proposed and is shown to be asymptotically efficient. A second-order approximation of the expected sample size for this alternative sequential procedure is derived with second-order expansions of the corresponding coverage probability. Simulations are considered to see if the procedures are workable and to further verify the properties of the proposed sequential procedures.

003

RASID, Regimar A. 2007. A Gini Criterion Split in a Modified Classification Tree. (GT: MS Stat), 132pp.

This study was conducted to investigate some possible improvements in CART (Classification and Regression Trees) and CRUISE (Classification Rule with Unbiased Interaction Selection and Estimation) in building classification tree and develop a modified classification tree that is a hybrid of the two tree algorithms. Bats' species data is employed in the construction of the classification tree model. The predictive accuracy and resubstitution misclassification cost of CART, CRUISE, and the modified classification trees are being compared to determine which among them produce a desirable tree model. The analysis revealed that the modified classification tree has the lowest resubstitution misclassification cost. In some way, CART produced the smallest tree.

003

VILLETA, Ricky B. 2007. On the Pure Trace and Kernel of a Torsion-Free Abelian Group. (GT: MS Stat), 94pp.

For any torsion-free abelian groups G and H, the pure trace of H in G is tr(H,G) = $\{g \in G : ng \in \langle \sum f$ (H), $f \in$ Hom (H,G)$\rangle$ for some $n \in Z^+\}$ and kernel of H in G is ker(G,H) = $\bigcap\limits_{f \in Hom(H,G)} ker f$. The pure trace and kernel of H in G are pure fully invariant subgroups of G.

This study which is based in the paper of Phill Schultz [11] characterizes these classes of pure fully invariant subgroups of a torsion-free abelian group. Their algebraic and homological properties developed by Phill Schultz [11] led to the concepts of the trace and kernel groups which are defined as follows: A torsion-free abelian group G is said to be a trace group if for every pure fully invariant subgroup M of G, M = tr (M,G) and G is said to be a kernel group if M = ker (G,G/M) for every pure fully invariant subgroup M of G. some interesting results on these groups are established.

A portion of this study is an exposition of a section of the paper of Phill Schultz [11] which are presented in Chapter 3. Moreover, some results on trace and kernel groups generated by theauthor in this paper are established in Chapter 4.

Master of Biology (MOB)

001

BESORO, Edgar T. 2006. The Feasibility of Teaching General Biology in Web-Enhanced Learning Environment. (SP: MOB), 71pp.

This paper explored student's perceptions and attitude towards a web-enhanced learning environment in two classes of General Biology. The study was conducted among students, majority of whom were freshmen, in Xavier University. In this study, a website called Biology Online Book was chosen and utilized in a web-enhanced learning environment in two General Biology classes. This study had three main objectives. The first objective was to study the impact of such an environment on the student's perceptions. Secondly, the impact of such an environment on student's attitudes towards general biology was studied. Lastly, the perceived impact of such learning approach on their understanding in general biology was investigated. The findings revealed that the majority of the students were satisfied with their learning environment based on their perceptions and attitudes. Students appreciated the flexibility of anytime, anywhere learning. Majority of the students were motivated to learn. However, responses on the student-student and student-teacher communication was not satisfactory. Most students still prefer the face-face

lecture or mix the two types of learning approach. Majority of students think their performance improved using online supplement in this course. Therefore, Biology Online Book is perceived by the students as a useful material to enhance learning in a general biology course. The findings have suggested the development of a teacher-developed website which could also enhance the attitude, perception and performance of students.

002
ISRAEL, Susan Leonarda M. 2006. Evaluation of Responses of General Biology Students for Various Teaching Strategies. (SP: MOB), 47pp.

The study made use of the research and development design from which the effectiveness of the instructional materials was determined, compared, and used as basis of developing and recommending which of them proved useful and could be used for a particular teaching methodology namely: carousel brainstorming, guided discovery, and 4Mat strategy. The study used the non-probability sampling design by which 25 respondent-students in general biology and five biology teachers were sampled. The setting of the study was in Capitol University where biology subjects are required for students to take especially in the nursing department, and other colleges/departments as CHED required. The responses of the respondents were based on 5-point and 4-point continuous scale, the average (Mean) of which determined the effectiveness of the instructional materials in terms of the criteria predetermined by the study.

More than (60%) of the time teachers used other methods of teaching while 40% of the time they used the combination of carousel brainstorming, guided discovery, and 4Mat method of instruction.

The study concluded that the 3 methods of teaching are generally very effective in enhancing the students' various learning skills while only typically effective in the quality and effectiveness of instructional materials.

Instructional materials should be designed for 4Mat method, guided discovery, and carousel brainstorming in teaching general biology for topics in biotechnology, histology, and human anatomy, respectively, for further enrichment of teaching strategy on the method of instruction in terms of teaching procedures such as brainstorming, 4MAT, and guided discovery instruction to bring the students toward excellent learning skills.

To make this study more conclusive I would like to recommend that further study shall be done by comparing the pretest and post test results if there is a significant difference to determine the effectiveness of the three strategies in terms of test score, and development of the three skills and should use the same topic for all the three teaching strategies employed.

003
MACALAM, Maricar B. 2006. The Effects of Multimedia on the Students' Performance Rating in Biology. (SP: MOB), 47pp.

The study was undertaken to determine the effects of multimedia as an

instructional material to the performance rating of select Associate in Health Science Education (AHSE) students in Biology at Liceo de Cagayan University.

The 105 respondents came from the three general class sections of the researcher. Lectures on skeletal, digestive and reproductive systems were administered with the used of chalkboards, overhead projectors and PowerPoint presentations in each section. A test was given after each lecture was administered. The mean, median, mode, and standard deviation were used to describe the test scores of the respondents. The analysis of variance (ANOVA) was used to analyze the effect of the multimedia on the performance rating of the respondents.

The results showed of the three topics, the chalkboard is the most effective in discussing the skeletal system. The trend is similar when discussing the digestive system. As regards the reproductive system, the overhead projector is the most effective. Nonetheless, the best instructional material used in the study as perceived by the populations' test scores, ranked the overhead projector as the most effective teaching material in Biology followed by the ranked the chalkboard and PowerPoint.

004
SALAZAR, Soledad R. 2008. Musical Composition as a Motivational Learning Technique in General Microbiology: Its Effect on the Academic Achievement of Non-Biology Major Students of WMSU. (SP: MOB), 55pp.

This study was conducted to determine if the use of musical composition as a motivational learning technique in General Microbiology by non-biology major students of Western Mindanao State University was effective in improving the students' academic performance in the subject.

Two classes of non-biology major students, each consisted of thirty students was utilized in this study. Concepts in Microbiology were taught to both the control and experimental groups employing the traditional lecture method aided with visual aids. The experimental class was clustered in smaller groups and given assignment after every topic to come up with a musical composition using the microbiology concepts as lyrics to the songs/jingles they composed

Both classes were given pre test to determine their mental ability. Post test was administered to both groups after all topics were discussed. Results were subjected to statistical analysis to establish the effect of the introduced motivational tool on the academic achievement of the students.

Statistical analysis showed that a significant difference does not exist between the control and experimental classes in terms of mental ability; a substantial amount of knowledge was gained by both the control and experimental classes; a significant difference exist in the post test scores between the control and experimental classes; and a strong positive correlation exist when the pre and post test scores of both classes was subjected to paired samples correlation.

Based from these findings, it is concluded that musical composition as a motivational learning technique has a positive influence on the academic performance of non-biology major students of the Western Mindanao State University.

Master of Mathematics (MOM)

001
ALBURO, Flordeliza G. 2004. On Some Inscribed and Circumscribed Geometric Figures. (SP: MOM), 51pp.

Questions about when and whether one shape can fit into another are fundamental to the elementary study of shapes in geometry. Among geometric shapes, triangles are of basic importance since they are the simplest of all polygons. Hence, most geometry-related studies such as shape, size, and relationship between figures including "fitting problems" are centered on triangles.

This study is expository in nature. It presents necessary and sufficient conditions when a given square fits into a given triangles of sides *a, b* and *c*. the concept is closely related to a square inscribed in a given triangle. However, in the case of an obtuse triangle, the vertices of the largest square that can fit into it may or may not lie on the sides of the containing triangle depending on whether the obtuse triangle is inwards or outwards.

This paper is enriched by other related topics such as circles in Pythagorean triangles, polygons in a triangle and classification of triangles inscribed in a given circle.

002
APELLANES, Benjamin C. 2000. On Squaring the Circle. (SP: MOM), 37pp.

An exposition on studies about squaring the circle it presents a bibliographic review of this classical mathematics problem. A critical investigation of the relationship between circles and squares with respects to the chords and area of the circle. It gives a detailed exposition on how their relationship provide the solution towards the problem of squaring the circle using geometric construction.

Recommendations include the establishment of similar algorithms for the solution of the problems on doubling the cube, and trisecting an angle.

003
BURANDAY, Carmela A. 2004. Integrating Factors for Non-Homogeneous First-

Order Linear Ordinary Differential Equations. (SP: MOM), 50pp.

This study expands the idea given in an article published in www.mathpages.com on 'Integrating factors" which utilizes the concept of integrating factor to determine the generalized form of solution of any first-order linear ordinary differential equation for both the homogeneous and non-homogeneous cases.

A simplified option of solving non-homogeneous first-order linear ordinary differential equation is discussed by determining an integrating factor. Illustrations are given and applications are provided.

004
CONDE, Rosie L. 2003. An Algorithm on the Enumeration of Chiral and Achiral Graph of Polyheterosubstituted Monocyclic Cycloalkane. (SP: MOM), 98pp.

This paper is expository in nature. It is based on the paper of Robert M. Nemba and Alphonse Emadak entitled *Direct Enumeration of Chiral and Achiral Graphs of a Polyheterosubstituted Cycloalkanes* which was published in 2002.

The article deals with presenting an algorithm which leads to the derivation of a formula to solve for the number of chiral and achiral graphs with an empirical formula $C_nX_{m1}...Y_{mi}...Z_{mk}$ satisfying the condition $m_1+m_2+...+m_i+...+m_k=2n$

A detailed presentation of the algorithm using chemistry and mathematics concepts are given. Examples and illustrations are presented as applications to the algorithm.

005
ESTANILLA, Emily Christie M. 2002. On Generalizing a Conic Theorem. (SP: MOM), 48pp.

This paper presents a concept in which a line-and-conic theorem having a visual correlate is generalized. Some notions on directed angles are discussed, as well as some configuration of line and conics. Many examples and illustrations are given showing how this fundamental theorem can be used to establish more directly some properties of conics.

By viewing the angles as directed and referencing their angular direction to that of any given directed line, we can arrive to the rule that the sums of each pair of these directed angles are equal.

006
 GALEZA, Noel R. 2000. Approximating Derivatives by the Symmetric Difference. (SP: MOM), 31pp.

This paper presents a concept in which the derivative of various functions can be approximated. Symmetric difference plays an important role especially in approximating the derivatives of the functions that are not differentiable. It demonstrates the effect of h on the difference between symmetric difference and actual derivative.

The study provides the readers an idea to draw the hypothesis from polynomial functions including some trigonometric and hyperbolic functions. It gives the proofs to the hypothesis using the Taylor's formula and the Mean Value Theorem.

007

GELLA, Frederick S. 2006. On Clique Cover and Clique Covering Number of a Graph. (SP: MOM), 34pp.

This study seeks to determine the clique covering number of special graphs and graphs which which results from the join and the corona of two graphs.

For a graph G, the family of singleton subsets of $V(G)$ is a clique cover of G. Hence, the order of a graph is an upper bound for its clique covering number. The clique covering number of a graph is equal to its order if and only if it is an empty graph. The clique covering number of a graph is equal to its size if and only if it is a star.

Let G and H be connected graphs. The clique covering number of the join of two graphs is the maximum of their clique covering numbers. The clique covering number of the corona of the two graphs is the product of the clique covering number of the second graph and the order of the first graph.

008

GUINGGUING, Arvin D. A Polynomial Approach to a Diophantine Problem. (SP: MOM), 40pp.

This research answers Diophantine problem which was to find four rational numbers, such that the product of any two increased by one, is the square of a rational number. Many solutions had been presented and one of which is the method presented in this research using polynomial approach by representing algebraically the first three numbers of the 4-tuples Diophantus found and finding a fourth number using the first two numbers that will satisfy the condition of Diophantus. Although Diophantine problem is about finding four rational numbers, this research gives us an infinite set of four integers as a solution to Diophantine problem through the obtained set of four polynomials satisfying the condition of a Diophantine problem.

The main focus of this research is to find a set of four polynomials which consequently give an infinite sets of 4-tuples satisfying Diophantine problem. This research also attempts to find a 5th polynomial, if possible, to create a new set of 5-tuples of polynomials that will still satisfy the condition of Diophantus.

009

GUINITARAN, Irene A. 2003. The Trigonometric Ratios for Angle 15 and the Pell Equation $x^2 - my^2 = 1$. (SP: MOM), 40pp.

This paper is expository in nature. It is based on the paper of Robert J. Clarke entitled Triangles, Surds, and Pell's Equation published in June 1999.

The article of Clarke deals with finding the exact value of trigonometric functions of 15°. Furthermore, some generalizations were achieved which lead to giving solutions to the well – known Pell Equation $x^2 - my^2 = 1$ where x, y, and m are elements of the set of all positive integers.

In this paper a detailed presentation of the results is given and examples or illustrations are supplied.

010

INDANGAN, Raymund A. 2007. On Induced Cycle Decomposability Numbers of Graphs. (SP: MOM), 30pp.

This study seeks to determine the induced k-cycle decomposability number of some special graphs and graphs which result from join and the corona of two graphs.

Artes and Luga [1] presented results on the induced m-path decomposability number o graphs. They have generated results on the induced m-path decomposability number of graphs resulting from the join and the corona of two graphs. Moreover, they established that for every pair o positive integers n and k where k is at most n and n divisible by k, there exists a graph G of order n whose induced m-path decomposability number exactly equal to k.

It is shown in this study that for a graph G of order n, its induced k-cycle decomposability number is equal to n if and only if its vertex set is an induced k-cycle decomposable set. Fro every pair of positive integers n and k where $3 \leq k \leq n$ and k divides n, there exists a connected graph G of order n such that its induced k-cycle decomposability number is exactly equal to n. It is also shown in this study that the induced k-cycle decomposability number of a graph is at least equal to the induced k-cycle decomposability number of its subgraph.

The induced k-cycle decomposability number of the join of two nontrivial graphs G and H is at least the sum of the induced k-cycle decomposability number of H. exact values for the induced k-cycle decomposability number of the complete graph, fan, and wheel are established. Moreover, a lower bound for the induced k-cycle decomposability number of the corona of the two graphs is obtained.

011

MADRID, Marie Ann A. 2005. On Sparse Anti-Magic Squares and Parse Totally Anti-Magic Squares. (SP: MOM), 71pp.

A sparse anti-magic square SAM $(n,d,r,)$ in an $n \times n$ array in which non-zero entries are the integers $1, \ldots, nd - r$ and the row-sums and column-sums from a set of consecutive integers. If the two main diagonal sums are considered and the $2n+2$ sums constitute a set of consecutive integers, then this array is called a sparse totally anti-magic square STAM (n,d,r). This study is mainly an exposition of the results obtain by Gray and MacDougall on sparse anti-magic squares and their application to vertex-magic labeling of bipartite graphs. Furthermore, eight constructions for the different families of SAMs are generated.

Results generated in this study include the investigation of the order n, density d and deficiency r of a SAM(n,d,r) and a STAM$(n,d,r,)$. Applications of SAMs to vertex-magic labeling of complete bipartite graphs and the constructions of families of SAM$(2m,3,0)$, SAM$(2m,3.1)$, SAM$(2m,2u+1,0)$, SAM$(2m,2u+1,1)$, SAM$(8t+6,2,4t+3)$ and square arrays that are both SAM$(8t+6,2,4t+3)$ and STAM$(8t+6,2,4t+3)$ are also included in the investigation.

012
MAGSAYO, Albert C. 2006. Triangle Inequalities. (SP: MOM), 49pp.

A triangle is a three-sided polygon. The study of triangles is sometimes known as triangle geometry and is an area of geometry rich with beautiful results and unexpected connections.

This paper will present several inequalities involving some parts of a triangle such as the length of the sides, radian measure of the interior angles, length of the medians, length of the angle bisectors, length of the altitudes, length of the radii of the inscribed and circumscribed circles.

Some famous triangles formulas are utilized to obtain useful inequalities. Several interesting inequalities are also formulated, these include the Emmerich inequality and one of the oldest inequalities about triangle that relates the radii of the circumscribed and inscribed circles. Also, helpful algebraic inequalities are being used to generate some useful inequalities involving the parts of right, equilateral and oblique triangles.

013
MAÑA, Jude John Sr. S. 2005. On Cycle Derivatives of Power Graphs and Some Special Graphs. (SP: MOM), 105pp.

The (first) cycle derivative of a graph G, denoted by g', is obtained by treating the prime cycles (or chordless cycles) of the graph G as vertices of G' and where two vertices are adjacent if and only if they are prime cycles with a common edge. The paper expounded structurally the characterization of the graphs that behave like the power function $f(x) = x^n$, where n is an integer. Such graphs will be called *power graphs*. In addition, graphs that are not power graphs and other graphs that behave like the function e^x

where also investigated.

The other part (found in Chapter 3), which is an original work, investigates the cycle derivative of some special graphs, such as paths, cycles, fans, wheels, the helm, the ladder, and the book. The effects of an intensive application of cycle derivative to some special graphs and graphs resulting from some unary and binary operations established some interesting results.

Additional interesting results involve the regularity, hamiltonicity, and eulerianity of the cycle derivative of the complete graph K_n, and complete bipartite graph $K_{m,n}$.

014
MOLEÑO, Ruth E. 2005. On Tournaments up to Order 6. (SP: MOM), 78pp.

This study is designed to bring about results related to a special class of digraphs, called tournaments. Specifically, this study accomplished the following;

a.) Show and investigate non-isomorphic tournaments up to order 6.
b.) Identify strong tournaments, non-Hamiltonian tournaments and transitive tournaments up to order 6.
c.) Determine the sequence as score sequence of the tournaments using Landau's Theorem.
d.) Construct higher order tournaments from a lower order or vice-versa.

The researcher was able to identify and investigate the properties of tournaments up to order 6 only. If any one wishes to extent this study, the researcher highly recommends to investigate other properties of tournaments which are not included in this study and to find algorithms on identifying non-isomorphic tournaments and strong tournaments of higher order and translate it through the different situations.

The study is expository for the most part of the paper except in some portions of Chapter V and the findings arrived at will hopefully open new frontiers which other researchers in this particular field of mathematics may undertake.

015
NAHIAL, Wenie L. 2002. Solving Geometric Diophantine Problems by Knowing Some Ratios. (SP: MOM), 42pp.

This paper presents a concept in which the integer solution of a Diophantine problem in geometry can be found in less effort and convenient way. Taking the integer ratio of perimeter and area for plane figures, total surface area and volume for solids, and geometric Diophantine property of one figure to the other helps a lot in terms of its upper and lower integer bounds. This also demonstrates applicability and appropriateness of

algebraic rule and logic in the different types of geometric figures taken into consideration in the study.

The study provides the readers an idea to draw the hypothesis from examples and problems. Proof on the hypothesis is based on the arguments observed in the Diophantine problems

016
PAMAT, Alvin E. 2007. On Reliable Networks. (SP: MOM), 48pp.

This study seeks to determine the reliability number of networks. Dual access and complete access networks are introduced in this study. Basic properties of dual access and complete access networks are established. Moreover, Harary graphs construction are illustrated. Further, the reliability numbers of some special networks and networks resulting from some binary operations are generated.

017
RUFINO, Reme C. 2002. Arranging Numbers Through Centrally Symmetric Rectangle. (SP: MOM), 28pp.

This paper presents a concept of a (4xn)-rectangle R with entries coming from $\{\pm(c+1), \pm(c+2),\ldots, \pm(c+2n)\}$. This rectangle R is called centrally symmetric with threshold c if all row sums and all columns sums of R are equal to zero.

This study is expository in nature, it presents some characterization of centrally symmetric rectangles. It answers the question concerning the existence of centrally symmetric rectangle for specific n and c.

018
SAGOCSOC, Alfredo A. 2003. On the Medial Parallelogram of a Tetrahedron. (SP: MOM), 37pp.

The midpoints of any edges of a regular tetrahedron that form a cycle are coplanar and are the vertices of a parallelogram. This study derives the formula for the area of this medial parallelogram in terms of the lengths of the six edges of the tetrahedron. It is proved that the medial parallelogram formed on a regular tetrahedron is square.

019
TABADA, Bryanpete R. 2008. On The Variance of the Vertex Degrees of Randomly Generated Graphs. (SP: MOM), 41pp.

A random graph is a graph generated by some random procedure. In this paper, the random (n,m)-graph constructed have a fixed number m of edges and only the placement of these edges between vertices is chosen at random. It is a graph with n vertices and m edges, built by starting with the $(n,0)$-graph, selecting in it, uniformly at random, m

vertex pairs and connecting them by m edges, where $0 \leq m \binom{n}{2}$. This construction produces labeled (n,m)-graphs uniformly at random. The collection of all randomly generated (n,m)-graphs is denoted by $G_{n,m}$. The variance of the vertex degree of $G_{n,m}$ and its complement is established by verifying some combinatorial identities and from this formula, the maximum value is shown. Moreover, the variance of the vertex degree of a tree is also established.

020
TABADA, Joel Luis I. 2004. On Iterated Group Actions and Direct Product. (SP: MOM), 52pp.

Given a group G, let it act on itself by conjugation. Consider the corresponding semi-direct product $G \alpha G$. then it is known that $G \alpha G$ is isomorphic to a direct product of G with itself.

This study expands the idea given above. It defines a binary operation on the set G^t consisting of all t-tuples $(a,b,c,d,...)$, where $a,b,c,d,...$ are elements of the group G and $t \geq 2$ is an integer, and shows that G^t has a group structure under the given operation. It also considers iterated group actions on the set G^t and establishes an isomorphism between G^t and the internal direct product of certain subgroups of G^t.

The equivalence of certain commutation conditions are also verified in this paper. Moreover, it is shown that the image of a projection map of a normal subgroup of G^t is a normal subgroup of G

021
TAÑOLA, Emelita C. 2006. On Some Inequalities Involving the Smarandache Function. (SP: MOM), 46pp.

Let n be a positive integer. The Smarandache function, denoted by $S(n)$, is defined by

$$S(n) = \min \{k \in N : n \text{ divides } k! \},$$

Where N is the set of natural numbers $\{1,2,3,...\}$. This function was first considered by Lucas (1883), Neuberg (1887) and Kempner (1918) and subsequently rediscovered by Florentin Smarandache (1970) several studies have been done about this function including its properties and its relationship with other number theoretic functions such as the Euler Phi function, sum of divisors function, number of divisors functions and the Euler totient function.

This paper will try to explore some inequalities involving in the Smarandache

function. Some bounds that include Smarandache function and some useful inequalities in computing $S(n)$. Some values of $S(n)$ are computed and gain some insights on its behavior with respect to certain conditions of n. In particular, formulations of some interesting inequalities are also obtained using the canonical representation of the positive integer $n = p_1^{\alpha 1} p_2^{\alpha 2} \ldots p_r^{\alpha r}$, where $p_1 < p_2 < \ldots < p_r$ are primes and α_i's are positive integers.

022
YRENAYA, Maria Jocelyn O. 2004. On Convex Basic Graphs. (SP: MOM), 42pp.

The study is expository in nature. Its primary aim is to provide detailed proofs for some of the results in the work of Canoy and Gervacio on convex basic graphs.

A short discussion on convex sets and convexity number of some graphs is included in the study. In particular, the study provides proofs for some of the results mentioned without proofs in the recent work of Chartrand, Wall, and Zhang [6]. These results include the convexity number of the complete graph, the path, the cycle, the star, the wheel, and the complete bipartite graphs.

Master of Physics (MOP)

001
ABAO, Marvin T. 2006. Electrostatic Charge Generator: A Classroom Demonstration. (SP: MOP), 31pp.

The research project entitled "Electrostatic Charge Generator: A Classroom Demonstration" was all about electrostatic electricity and how this concept was used in the making of the electrostatic generators. The device that was constructed and fabricated was a modification of the usual model commonly posted in the websites through the internet and in some books. Its materials are readily available in the market so as anyone who wants to produce their own electrostatics machine could copy from the fabricated device. Testing was done in a normal condition to put consideration on a normal classroom setting, since this research project also aims to provide a better demonstration and an efficient aid for teachers in the discussion of electrostatics. Samples of materials were also tested in the apparatus to show comparison in their interaction of charges. Readings were taken for analysis and were analyzed for better comparison.

With the use of the fabricated and constructed electrostatic charge generator, this study was able to attain some findings. 1.) The readings of Electric Potential energy show that mechanical energies are being converted directly to electrical potential in a simplified approach. 2.) That with the increasing revolution per minute, there is also a proportional increase in the electric potential energy generated from the device. 3.) With different

material have different capacity of giving up and gaining electrons and 4.) And with the device fabricated and constructed, it can also help teachers in demonstrating electrostatics to students using simple and readily available materials.

002

ALEGADO, Josie Jr. C. 2007. Construction and Performance Evaluation of Solar Dryer. (SP: MOP), 30pp.

The solar dryer was constructed and tested to determine its capability to demonstrate the principles of thermodynamics system on the three modes of heat transfer namely radiation, conduction and convection.

The fabricated solar dryer set-up was exposed to sunlight and an hourly temperature measurement was taken from 8:00 AM to 4:00 PM for 4 days from different ports of solar dryer including the temperature of the surrounding air. Its temperature was evaluated by calculating temperature gradient ΔT between the drying bin and the surrounding air in each day by varying the shutter opening of the collector.

Results have shown an optimum temperature gradient ΔT of $11C^0$ obtained on the fourth day of measurement when the shutter opening of the collector was fully opened. Data analysis reveals the higher the ΔT result to a more efficient thermodynamics system involved in solar drying.

003

APILAN, Henrilen P. 2006. Generated Voltage Measurement of Constructed Kelvin Water Dropper Generator. (SP: MOP), 58pp.

The Kelvin Water Dropper Generator is constructed and evaluated with almost all metal parts, which is so designed to be disassembled and assembled for portability and comfortability of operation. The general importance of this version of water dropper generator lies on the fact that it does need to be charged with high-voltage machine in order to start the operation. It has the advantage of operating under normal condition which generates voltage increase up to 166 mV in 50 minutes and is expected to rise as the bottom conductor is increased in capacity.

Voltage generated is affected by the type of conductors, speed of water droplets, and distance from nozzle to the conductors. The generated voltage at 5 cm distance from the nozzle and a flow rate range of 2.5 – 3.0 droplets per second showed that stainless conductors provide the highest mean voltage increased of 33.12 mV. No correlation is being established between the voltage generated and the nozzle to conductor distance. Two flow rate range (droplets speed) were tested, which indicated that F1 (2.5-3.0 droplets per sec) produced higher voltage increased than F2 at constant nozzle to conductor distance of

5 cm. At F2 (3.5-4.0 droplets per sec), all types of conductors exhibited an enormous decreased in voltage and an inverse behavior with respect to voltage generated using F1.

004
ARPAY, Ronaldo A. 2007. A Prototype Multimeter for Classroom Demonstration.
         (SP: MOP), 27pp.

This project constructs a prototype multimeter that would be useful in detecting the potential difference between two points, current that flows along the line, and the resistance of a resistor. This assembled prototype multimeter is an analog type that display reading through scaled numbers. With this assembled multimeter specifically aims to aid the teachers as well as the students in having an enrich experience in measurements considering the different circuit elements.

In this project, the performance was tested using two simple circuit diagrams namely Ohm's Law and Kirchhoff's Law. The experiments to test the efficiency of the prototype multimeter was done on the same circuit diagram. All the results shown that the performance and efficiency of this assembled prototype multimeter can par and it worked well accordingly and comparatively like other multimeters do.

005
DAL, Glenmark A. 2006. Building a Sensitive Charge Detector for Demonstration
         Purposes. (SP: MOP), 26pp.

This project constructs a simple charge detector that would be useful in detecting the presence of electric potential in the environment due electric charges. Specifically, this detector is use in demonstrating the different properties and characteristics of "static electricity" and the presence of the electric fields in the environment. With the construction of the said detector, this specifically aims to aid teachers as well as student in having an enriched experience of the charge particles and a better understanding of the properties of charges and static electricity generally on the topic of electrostatic.

In this project, the efficiency of the constructed detector was tested using three dielectric samples namely Teflon (K=2.1), Glass (K=5-10) and Air(K=1.00059 at 20°C). The experiments to test the efficiency of the detector where done in a room with very little humidity. The constructed detector is tested to evaluate the effects or measure the potential across the transistor when a charged object (dielectric samples) is brought near to it. All the results show that as the detector is brought farther away from the fixed source of charge, the measured electric potential across the Field Effect Transistor (FET) decreases. The relationship between the Source-Drain potential across the FET and the distance form the source of charge was plotted.

006

SALA, Jamaluddin S. 2006. Test on Some Electrical Properties of an Improvised Van de Graaff Generator. (SP: MOP), 40pp.

Van de Graaff generator is one of the 20th century emblematic scientific instruments with various application in high energy physics, medicine, and industries. In the field of education, it is commonly used as a demonstration material to reinforce teaching of concepts such as electrostatic and other physical phenomena. In this project, an improvised version is constructed and some of its electrical properties were tested. The test was conducted by varying the distance of one of the probe leads from the condenser. The result of the test revealed conformity to physical laws. However, an improvement of the machine is hereby suggested to increase its voltage production that may be useful to various applications.

Master of Science in Biology (M.S. Bio.)

001

ABRENICA, Liza R. 2002. The Non-Volant Mammals of Mt. Kimangkil Range, Mindanao Island, Philippines. (GT: MS Bio), 112pp.

Field studies were conducted on Mt. Kimangkil Range, Bukidnon, Mindanao Island, Philippines at seven sampling sites from 900 to 1,875 meters above sea level (lowland, montane, transitional montane-mossy, mossy forest, secondary forest and agricultural area) between April 2000 and August 2001 for a total of 65 field days.

Relative abundance, species composition, richness and diversity in relation to elevation and disturbance gradients were determined. Seventeen species of non-volant mammals (eight murid rodents, two squirrels, one two civet shrew, one monkey, one deer, one flying lemur, one wild pig two civet cats) were recorded. Seventy percent of large mammals and 14.67% of small mammals recorded in Mindanao the Faunal Region were found to occur in Mt. Kimangkil. A high endemicity (70%) of small mammals was observed, of which six (85.71%) of the seven endemic species documented are Mindanao Faunal Region endemics. Endemic species of small non-volant mammals were observed to be forest dwellers while non-endemic species predominated the disturbed habitat.

Relative abundance and species diversity of small non-volant mammals were highest at Site 7 (1,750-1,875 masl). Species richness and the number of endemics were highest at higher elevations at Site 6 (1,550-1,650 masl) and Site 7 (1,750-1,875 masl), then gradually declined at decreasing elevation. Among the disturbed sites, Site 3, a highly disturbed site had the highest relative abundance but a corresponding decrease in endemism was observed with increasing degree of disturbance.

Deforestation and unregulated hunting were the major sources of threats to the non-volant mammals that should be stopped immediately to prevent their local extinction in the near future. Failure to do so means biodiversity loss on Mt. Kimangkil.

002

ACUÑA, Ariane January O. 2004. Bioassay of the SC-CO$_2$ Extracted Compounds from *Annona squamosa* LINN. SEEDS. (GT: MS Bio), 189pp.

Bioactive components from *Annona squamosa* seeds were obtained through Supercritical Fluid Extraction using carbon dioxide as the trapping solvent and set at 30 atm, 40°C. The resulting solution was tested for its antimicrobial properties, toxic potentials, and hematological effects. Using the disc diffusion method, the extract showed wide spectrum against Gram positive *Staphylococcus aureus* and *Bacillus cereus,* and Gram negative *Pseudomonas Aeruginosa* and *Proteus vulgaris.* Its antifungal activity against *Candida albicans* and *Aspergillus niger,* though very minimal, was comparable to the standard mycostatin. Probit analysis showed acute toxicity against *Artemia salina* with an LC$_{50}$ of 0.0188%. Hematological assessments on the effect of the extract on *Mus musculus* revealed significant decrease in RBC count, hemoglobin concentration, and hematocrit point which had a strong direct proportional relationship at significant level of a=0.05. Parallel with these decreases, was a number of cell aberrations and the increase of the WBC count with marked neutrophilia and lymphocytopenia between which is a strong inverse proportional relationship with coefficient value of -0.997 at significance level of a=0.05. These hematological change were relatively observed within 56 hours after treatment. Administration through subcutaneous injection at extract's proportions of 2%, 5%, and 8% per sample showed the presence of C-O, O-H, C-H, CH$_2$, -C(CH$_3$), and C=C bonds.

003

ALMAREZ, David Jr. S. 2002. Antibacterial Compounds from *Datura stramonium* L. (GT: MS Bio), 109pp.

Two compounds exhibiting antibacterial properties against *E. coli, S. aureus,* and *B. subtilis* were isolated from methanol extracts of *Datura stramonium* L. collected from Bayug islet, Iligan City employing open column chromatography and reversed-phase High Performance Liquid Chromatography. Stability tests proved that the antibacterial activities of the compounds were not significantly affected by pH and temperature variations. UV/VIS spectra of compounds A and C showed that they have maximum absorption at λ = 324 and λ = 325, respectively. Thin Layer Chromatography revealed the Rf value of Compound A to be 0.36 and Compound C to be 0.42. The aromatic nature of the two compounds were determined by Fluorescence and Infrared (IR) spectroscopy. UV/VIS and Fluorescence absorption spectra show that the two compounds are phenolics, nevertheless they may also be alkaloids. Comparison of the UV/VIS spectra, Fluorescence spectra, and IR spectra as well as the Rf values and retention times of the two compounds indicated that they are not one and the same.

004

ALONZO, Dennis A. 2002. Bioassay of Extracts from Stem of *Dieffenbachia picta* (Lodd.) Schott. (GT: MS Bio), 139pp.

Extracts from Dieffenbachia picta (Lodd.) Schott. were isolated using methanol as starting solvent. Crude extracts were fractionated using ether and chloroform in acidic, basic and neutral form to obtain six fractions. Analysis of variance of toxicity tests of the crude methanol extract and its fractions including water extract against *Oreochromis niloticus* and larvicidal test against *Culex* sp. showed that there are significant differences between extracts/fractions. Probit analysis showed that the most potent fraction against *O. niloticus* is found in the water extract which exhibited the lowest LC_{50} of 1,028.33 ppm and 385.14 ppm at 24 and 96 hours, respectively. There are no antibacterial effects when extracts/fractions were tested against six bacteria species. Using the t – test for independence, the acidic, basic and neutral ether, acidic and neutral chloroform fractions have the potential to increase the hematocrit of the *Mus musculus* while fractions of crude methanol and water extracts decrease the hematocrit indicating abnormality. Crude methanol and water extracts and acidic ether fraction increased the white blood cell count and elicited morphological changes on blood of *Mus musculus* as observed in light microscopy studies showing abnormalities such as myelofibrosis, acanthocytosis, microangiopathic, immature circulating RBC, elliptocytosis, hyper segmentation and nuclei disintegration of neutrophil, contracted neutrophil, chromatin clumping, and monocytes with projected cytoplasm. Spectrophotometric characterization of the crude methanol extract and its fractions showed several peaks indicating the presence of several compounds.

005

ALOOT, Haide May G. 2004. Biomolecular-Chemical Screening of Active Metabolites from Sediment Microorganisms. (GT: MS Bio), 190pp.

The need to produce new drugs lead to the exploration of natural products in the search for novel compounds. Actinomycetes, other bacteria, and filamentous fungi with antimicrobial activity were isolated from estuarine sediment through sediments dilution method. Sediment samples were collected from three sampling sites in Oroquieta City, Misamis Occidental namely: Area 1-Brgy. Poblacion 2; Area 2-mouth of Layawan River; Area 3-Brgy. Tabok. Antimicrobial activity of the isolates were determined through disk diffusion method of the broth supernatant for both bacteria and filamentous fungi, and cross-streaking method for actinomycetes against six representative microorganisms including *Staphylococcus aureus, Bacillus subtilis, Escherichia coli, Pseudomonas aeruginosa, Aspergillus niger,* and *Sacchromyces cerevisiae.* Five isolates from each group with antimicrobial activity were chosen, identified, and extracted. The extracts were diluted and assayed for antibiosis through disk diffusion method. DNA-binding affinity was detected through two-dimensional thin-layer chromatography using salmon sperm deoxyribonucleic acid (DNA).

Extracts produced by the isolates show antimicrobial activity against test microorganisms. Metabolites from crude extracts has DNA-binding affinity as shown in their Rf2/Rf1-ratio. Thus, microorganisms from estuarine sediments are important sources of compounds for drug production.

006

ANIES, Olive S. 2000. Genetic Variability in Local Populations of the American Cockroach, *Periplaneta americana*. (GT: MS Bio), 103pp.

This study involves the analysis and determination of genetic variation in local populations of *P. americana* with respect to the expression of esterase, gene loci, alleles and genotypes. Egg, nymph and adult samples were hand-collected from four barangays of Iligan City, namely, Tambo, Luinab, Tibanga-San-Miguel and Tubod-Bara-as. These were then transported to the MSU-IIT Department of Biological Sciences laboratory and were processed.

Only nymph and adult American cockroaches exhibit elevated esterase activity. There were four gene loci identified but specificity of a particular gene locus or allele to a site or developmental stage was not observed. More heterozygotes than homozygotes were also identified thus, there exists a genetic dissimilarity and diversity among, between and within populations per developmental stage.

Sexual dimorphism was also not observed implying that the cockroach's esterase gene loci identified are not linked to a sex chromosome.

007

APUAN, Dennis A. 2008. Description, Variation and Taxonomic Status of Earthworms from Selected Areas in Misamis Oriental. (GT: MS Bio), 82pp.

The present study describes variations and determines the taxonomic status of the collected earthworms from selected areas in Misamis Oriental and Cagayan de Oro city. Principal Component Analysis, Cluster Analysis and Discriminant Analysis were used to determine variations and groupings. Of the five groups of earthworms determined and described, one group found to be allochthonous and anthropochorous. Cladistic analysis yielded a strict consensus tree with a length of 253 steps, consistency index =50 and retention index =69. Four groups were identified to belong to Megascolecidae family, and one group to Eudrilidae Family. One group was observed to possess characteristics of Genus Eudrilus. Differences observed were attributed to the number and pattern of genital markings, prostomium type, and the number and location of spermathecae. None of the four new Megascolecid groups completely match with the nearest genera of Oriental Megascolecids. The results of the study clearly indicate the existence of the five new species of earthworms, one belonging to genus Eudrilus and four of which may belong to new genera.

008

ASPE, Nonillon M. 2006. Diversity and Distribution of Earthworms in Mt. Malindang, Philippines. (GT: MS Bio), 174pp.

A study on earthworms was undertaken to determine the earthworm species composition in various sampling sites and their distribution in Mt. Malindang. Sampling using abundance assessment method and opportunistic method was conducted in four geographically separated barangays at different elevations in Mt. Malindang. Different ecosystems such as the primary forests, disturbed forests, logged-over forest, agroecosystems and grasslands were considered as sampling sites. The sampling was conducted in October of 2003 in Brgy. Lake Duminagat and February of 2004 in Barangays Sibucal, Toliyok and Small Potongan. Twenty-five species of earthworms were identified, including *Pontoscolex corethrurus*, the only species found to belong to Family Glossoscolecidae. The rest belong to Family Megascolecidae of which twenty were of genus *Pheretima*, three of genus *Pithemera*, and one of genus *Polypheretima*. Temporary number coding was assigned to each species since all twenty-four were found to be new species and have no species names yet. Hierarchical cluster analysis reveals that the forest sampling sites within barangays are more similar in terms of species composition than between barangays. The agricultural and grassland communities in different barangays clustered together while the forest sampling sites formed a different cluster. Correlation between hierarchical cluster analysis of species composition in the sampling sites and hierarchical cluster analysis of the physico-chemical parameters in each sampling site showed no one-to-one correspondence indicating that some underlying factors such as geographical, climatic variation associated with elevation and ecological other than the data collected are more important in shaping the earthworm community structures. Sampling sites situated in higher elevations showed higher diversity compared to the sites in the lower elevations. The destruction of the natural habitat by anthropogenic activities, which drastically affected the soil environment and most likely favored the establishment of the widespread introduced species *P. corethrurus*, may have accounted for the low species diversity of the native earthworms in the sites in the lower elevations as well as the absence of diversity in the grasslands and cultivated areas.

009

ATES, Fritzie B. 2001. The Amphibians of Mt. Kimangkil Range Mindanao Island, Philippines. (GT: MS Bio), 107pp.

Species composition, relative abundance, patterns of species richness, diversity, and endemism in relation to elevation, relationship of habitat quality and disturbance index with species richness and abundance of amphibians in four different elevational ranges of Mt. Kimangkil Range, Bukidnon were determined. Using quadrat and cruising methods, a total of 19 species were recorded to exist in the study area. Twelve of the species are regarded as endemic, four of which are considered as possibly new species. *Kalophrynus pleurostigma* was the most abundant species in site 1, an open area. *Ansonia muelleri* was the most abundant species in site 2, a submontane forest while *Philautus sp. 1* and *Philautus sp. 2* were most abundant in site 3, a transitional montane-mossy forest, and site 4, a mossy forest, respectively. Site 1, an area of low habitat quality and high degree of on-site disturbances obtained the least species richness and diversity of the four sampling sites.

Species richness and diversity were highest in site 2, area of highest habitat quality, and gradually declined with increasing elevation. Chi-square goodness of fit test showed a significant difference in species richness in the different sampling sites. One way Analysis of Variance with unequal sample sizes showed a no significant difference in the abundance of each species in each sampling site.

The results of the study clearly show that Mt. Kimangkil is indeed a habitat of diversified species. The discovery of four possibly new species implies the rich biota that the range harbors. Failure to protect what remains of the habitat of so many species of amphibians would mean a great loss in the diversity of the species especially that of the endemics.

010
BADO, Sheila Marie C. 2006. Antibiotic Producing Microbial Isolates Associated with Some Sponges in Mantigue Islet, Camiguin. (GT: MS Bio), 81pp.

Marine organisms have proven to be a rich source of compounds with diverse structural features and interesting biological activities. Some of the marine natural products isolated have not only served as potential lead compounds for clinically useful drugs but also used as chemical probes useful for basic studies in the fields of life and sciences. This study revealed the presence of antimicrobial substances in the bacterial extract produced by the isolates obtained from the different species of marine sponges: *Theonella* sp., *Acanthella* sp.*1, Dysidea* sp., *Acanthella* sp.2 collected along the subtidal waters of Mantigue islet, Camiguin. There were five microbial isolates obtained from the four marine sponges coded as TY-C5, A1Y*, DY-C1, A1M-C1, and A2M-C3, respectively. These isolated bacteria from the marine sponges exhibited positive inhibition against the growth of the six test microorganisms: two Gram-positive bacteria, *Staphylococcus aureus* and *Bacillus subtilis*, two Gram-negative bacteria, *Escherichia coli* and *Pseudomonas aeruginosa*, and the two fungi: *Saccharomyces cerevisiae*, a yeast and *Aspergillus niger*, a mold using the filter paper disc diffusion technique. Although these five isolates showed varying degrees of inhibition against the test organisms, statistical results showed that some isolates have comparable potency as that of the commercially available antibiotics such as Tetracycline for bacteria and Nystatin for fungi.

The Thin Layer Chromatographic analysis of each active crude extract revealed some bands. Isolate TY-C5 had one band, DY-C1, A1Y*, and A1M-C1 yielded two bands, and A2-C3, yielded one band. Each band from different isolates was assayed against the said test organisms. Results showed that these corresponding bands from each of the isolates showed positive bioactivity against the four bacteria but not for fungal test organisms.

The said extracts were also subjected to another test to determine their minimum concentration in inhibiting the said test organisms. Results showed that the five isolates have varying degrees of concentrations in suppressing the said microorganisms.

011
BATBATAN, Christopher G. 2007. Life History, Optimization of Culture Conditions for Cell Growth and Efficiency of Polyunsaturated Fatty Acid

Productions of *Schizochytrium* sp. OT-01. (GT: MS Bio), 130pp.

Schizochytrium sp. OT-01, a mangrove thraustochytrid isolate, was evaluated for its optimum growth, and production of polyunsaturated fatty acids. Seven carbon sources, glucose, fructose, sucrose, soluble starch, pyruvate rice bran and cellobiose, at varied concentrations ranging from 5 to 30 g/L were tested in the study. Results of the carbon source assay showed that the best substrate for growth of OT-01 cells were glucose and fructose whereby the cell mass increased as the substrate concentration increased. Glucose, at a concentration of 30 g/L, produced the highest biomass of 6.176g/L freeze-dried weight (FDW) after 72 hrs of incubation while sucrose had its optimum biomass yield of 4.56 g/L FDW at a concentration of 15 g/L. Gas chromatographic analysis of the cells cultured in starch, sucrose, cellobiose, fructose and glucose at a concentration of 30 g/L, revealed that starch produced 48.85% DHA of the total fatty acid, 46.24% for sucrose, 45.23% for cellobiose, 31. 17% and 31.14% for fructose and glucose respectively. Due to the poor growth of OT-01 cells in starch its DHA yield was only 52.67 mg/g while glucose had 492.06 mg/g followed by 478.17 mg/g of DHA yield in fructose, which was attributed to its high biomass content. Palmitic acid was the major component of the fatty acids in cells grown with glucose and fructose which comprised 50.01% and 49.44% of the total fatty acid, respectively.

Continuous observation of OT-01 cells using bright field-fluorescence inverted microscope in glucose-rich medium revealed its life history. OT-01 had three distinct cells; the vegetative cells ranged from 6-16 μm, the amoeboid cells were13-26 μm long, zoosporangium had 17-37 μm diameter and the zoospores ranged from 5-7 μm in size. There were three developmental pathways identified in OT-01 cells. In one, the vegetative cells underwent successive binary divisions without cytokinesis to form a cluster of vegetative cells. In the second type, the vegetative cell developed into an amoeboid cell which rounded up to form a zoosporangium that divided to form flagellate zoospores, without a trace of proliferous bodies. However, in some instances this amoeboid cell will also round up to produce a cluster of vegetative cells. The third pathway is the development of the granulated cell from a vegetative cell to form a zoosporangium with cytokinesis. The formation of zoosporangium from a granulated cell was characterized first by a losing of the cell wall and division to form a zoosporangium followed by the released of zoospores with the absence of proliferation bodies. The three developmental pathways of OT-01 in glucose-rich medium occurred simultaneously in single cell-derived in vitro cultures.

012

BERNASOR, Bernadeth A. 2000. Determination of the Efficacy of the Selected Chitinolytic Bacteria Against *Rhizoctonia solani*. (GT: MS Bio), 61pp.

Six chitinolytic bacteria namely *Serratia marcescens* LPC 19 B 1748, *S. marcescens* LPM 42 B 1749, *Streptomyces griseus* B 1562, *Bacillus circulans* B 1037, *B. circulans* B 1045 and *Arthrobacter luteus* B 1077 were screened for their ability to restrict/inhibit the growth of *Rhizoctonia solani* as indicated by the failure of the fungus to overgrow the bacteria.

Using the agar-plate method, the growth of *R. solani* was inhibited most by *S. marcescens* LPC 19B 1748, *S. marcescens* LPM 42 B 1749 and *Streptomyces griseus* B

1562 followed by *Bacillus circulans* B 1037, and *B. circulans* B 1045. *A. luteus* did not inhibit the growth of *R. solani* probably due to low production of chitinase. Of the six chitinolytic bacteria, *Serratia marcescens* LPC 19 B 1748, *Streptomyces griseus* B 1562 and *Bacillus circulans* B 1037 were used for further studies.

Light microscope examination of the hyphae of *R. solani* revealed that the hyphae were distorted and become swollen in contrast to the hyphae grown under control conditions wherein they did not show signs of damage, as judged by their regular shape. The mycelial elongation of *R. solani* was also restricted by the presence of the chitinolytic bacteria in the medium.

Furthermore, it was found out that *S. marcescens* LPC 19 B 1748, followed by *B. circulans* B 1037 then, *S. griseus* B 1562 compared to the negative control significantly inhibited fungal infection of the corn kernels by *R. solani.*

However, it was found out that even though, *S. marcescens* LPC 19 B 1748 and *S. griseus* B 1562 were effective in controlling infection of the corn kernels by *R. solani,* they affected significantly compared to the positive control the percent germination of the corn kernels. The effect however was not significant in *B. circulans*-treated corn kernels.

013
BONACHITA, Marites L. 2006. Quantitative Genetic Analysis of Behavioral Traits in Twins. (GT: MS Bio), 124pp.

Genetic basis of selected morphological and behavioral traits was determined through quantitative genetic analysis utilizing 149 monozygotic and 33 dizygotic twin pairs. These traits include hair whorl, tongue abilities, hand clasping, arm folding, handedness and stuttering. Zygosity difference was found in hair whorl, tongue abilities, arm folding, handedness and stuttering based on prevalence. Handedness was also found significantly prevalent according to sex. Discordance rates were found high in monozygotic twin pairs in hand clasping, handedness and stuttering, suggesting no genetic basis of these traits. However, test for genetic basis utilizing Population Risk Ratios showed genetic attributes in hair whorl, tongue abilities, handedness and stuttering. Moreover, heritability and shared environmental estimates in the behavioral traits showed only hair whorl and stuttering to have genetic effects. Association between two traits showed strong association of right – right or left – left in the direction handedness, with tetrachoric correlations over 0.80 according to zygosity. Furthermore, hair whorl was found strongly associated with handedness with tetrachoric correlations over 0.70 in males.

014
BORRA, Rizalyn G. 2006. Geometric Morphometric and Qualitative Analysis of the Shell in Some Collected Species of Marine, Freshwater and Land Snails. (GT: MS Bio), 565pp.

Shells of marine, freshwater and land snails were randomly collected in selected areas in Mindanao. A total of 68 species of gastropods were obtained with 874 individuals.

Marine snails are most diverse with 41 species followed by freshwater snails with 14 species and land snails with 13 species. Qualitative descriptions of shells and operculum traits showed variation within and among species of gastropods.

Geometric morphometric method using landmark data on shell-digitalized images was employed to understand shape and size differences among gastropods. Landmark-based techniques namely superimposition and deformation methods were used to examine shape variation while linear-based method was employed to determine size differences. These techniques were coupled with various statistical tools namely Principal Component Analysis, Cluster Analysis and Discriminant Analysis. Since shell shapes are variable, shells were group based on the similar traits observed and landmarks digitized differ in each group. A total of seven groups were generated as follows:

a. Group 1 - comprised of freshwater snails namely: *Pila polita, Belamaya angularis, Pomacea canalicuta* and Unknown species e and one marine snail namely *Marmorostoma chrysostomum*. These species have bigger and rotund body whorl with short spire and elongate ovate or rotund aperture.

b. Group 2 – composed of thirteen species of purely marine snails having narrow and long aperture that includes: *Cleobula figulinus, Conus litteralis, Lentigo lentiginosus, Lithoconus litteratus, Oliva* sp., *Strombus bulla, Strombus erythrinus,* Unknown species f, Unknown species j, *Vasum turbinellum,* and *Vexillum plicarium.*

c. Group 3 – comprised of *Terebra sulcata,* Unknown species g and *Cerithium nodulosum* (marine snails)*; Melanoides maculata, Melanoides* sp., *Melanoides torulosa* and *Melanoides granifera* (freshwater snails). Shells are high spired with more than five whorls; cork-like shape and prominent sutures.

d. Group 4 – consists of mainly marine snails namely: *Bufonaria thersites, Bursa gnorima, Bursa rosa, Bursa tuberosissima, Chicoreus brunneus, Cymatium pileare, Pleuroploca trapezium, Rhizomurex capucinus, Triton* sp. and *Tutufa lissostoma.* Shells have siphonal canal with elongated aperture.

e. Group 5 - comprised of ear - shaped shells that are mainly included in Family Neritidae namely: *Clithon oualaniensis, Nerita variegata, Clithon corona,* and *Nerita porcata* (freshwater snails)*; Nerita coromandeliana, Nerita waigiensis, Nerita squamulata,* and *Nerita* sp. (marine snails).

f. Group 6 – composed of *Angaria melanacantha* and *Astrea calcar* (marine snails); *Cyclophorous* sp., *Macrochlamys robsoni, Trochomorpha metcalfei,* Unknown species a, Unknown species k, Unknown species d, *Vitrea crystallina* and *Zenobeilla subrufescens* (land snails). Shell has discoidal or ovate shape, depressed spire, globose body whorl and aperture that coil inward.

g. Group 7 - species included are: *Pseudosuccinae peregrina,* a freshwater snail; *Achatina fulica,* Unknown species c, Unknown species l, Unknown species m

and Unknown species b that are mainly terrestrial snails. Shells have elongate ovate or conic ovate form, roundly lunate aperture with defined and truncated columellar lip.

Although the shells were group based on the similarity in the shell shape still variations were noted within, between and among species of the seven groups as depicted in the shape and size analyses as well as the Multivariate analyses. The broader implications of these findings highlight the value of geometric morphometrics as both an exploratory and analytical approach. The study on variability in the gastropod shell revealed that the recently developed techniques of geometric morphometrics are extremely powerful descriptive tools. Implications of the results in the morphological evolution of the species are discussed.

015
BUMAAT, Maria Albera D. 2003. Genetic Relationship Among Bivalves in Panguil Bay. (GT: MS Bio), 100pp.

This study was conducted to determine genetic relationships among bivalves in Panguil Bay based on electrophoretic analysis of esterase expressions. Twelve species of bivalves namely, *A. trucata, C. tigerina, G. tumidum, P. placenta, Dosinia* sp.*, M. smaragdinus, T. tortousa, S. ensis, T. flavum, Pitar* sp.*, a. inequivales* and *M.meretrix* exhibited variability in esterase expressions. Based on phenotypes expressed in gels, a cluster analysis was made and results showed closer relationship between *P.placenta* with *Dosinia* sp. What is interesting here is that the two species belong to separate order and yet they are genetically similar as compared to other species belonging to the same order. The result of the study helps us understand evolutionary relationships among the species and provide fisheries management an idea of species richness among the bivalves that can be tapped for future breeding and culture activities.

016
CABUGA, Sheila Joy C. 2004. Assessment of Fishes and Their Health Status in Naboc River, Monkayo, Compostela Valley Province, Mindanao Island. (GT: MS Bio), 186pp.

Assessment of fishes and their health status in the three (3) sampling areas (upstream, midstream, downstream) of Naboc River, Monkayo, Compostela Valley Province was conducted. Comparatively, Buay River, Monkayo, Compostela Valley Province, considered to be relatively safe and clean, served as the control in the study. *Tilapia nilotica,* the most abundant species in all sampling areas, represented the samples.

Results from the Analysis of Variance (ANOVA) and Scheffe's Test for Multiple Comparisons showed that the physico-chemical such as width, depth, current velocity, temperature, pH, and dissolved oxygen of the water and *Tilapia nilotica's* length and weight have significant differences among the sampling areas. An abnormal growth of membrane covering the eyes, unusual shortening of fins, and skin discolorations were found on the fishes' external morphology.

The liver analyzed for mercury content using the Analytical Methods for Atomic Absorption Spectroscopy exhibited the elevated concentration of mercury (21.80μg/g). Histologically, degeneration of hepatocytes was commonly observed. In the gills, 2.18μg/g mercury concentrations were analyzed with fusion of the secondary lamellae and hyperplasia accompanied by degeneration of chloride cells. The ovary exhibited also high mercury concentration (1.06μg/g) with the oocytes and their nuclei mostly affected with pyknosis.

017
CALIZO, Marie Rosellynn D. 2000. The Avifauna of Rogongon, Iligan City. (GT: MS Bio), 249pp.

This study was conducted to assess the avifauna of the three sampling sites of Rogongon, Iligan City. The relative abundance, species richness and diversity of birds in the forest were determined based on birds observed and captured. A qualitative description of the nature of each sampling site was done and the different habitat characteristics were indexed based on the defined criteria to determine the rank of the habitat. The relationship of species richness to habitat quality rank and disturbance index of each sampling site was determined using correlation and regression analysis.

A total of 63 bird species were recorded in Rogongon, of which 62 were resident-breeding and one was a winter visitor. Of the total resident-breeding, 27 are Philippine endemics of which seven are Mindanao endemics. There was no linear relationship between bird abundance and habitat quality increasing habitat quality rank and elevation. A negative correlation was observed between species richness and disturbance indices in the three sampling sites of the area.

Forest habitat destruction by human encroachment was the main threat to the bird composition in Rogongon. Two threatened Mindanao endemic species namely, Blue-Capped Kingfisher *Actenoides hombroni* and Wattled Broadbill *Eurylaimus steerii* captured in the area are categorized as Vulnerable under the IUCN (1994) classification and criteria.

018
CAMACHO, Catherine L. 2008. Species Diversity and Distribution of Amphibians in Different Habitats in Mt. Tago Range, Bukidnon, Mindanao Island, Philippines. (GT: MS Bio), 138pp.

Assessment of amphibian fauna and their distribution in the different habitat types was conducted in Mt. Tago Range, Bukidnon Province. Using cruising and quadrat methods, a total of 13 species was recorded, including eight endemic and six vulnerable species from the four sampling sites (agroecosystem, dipterocarp, montane, and mossy forests). *Philautus acutirostris* a vulnerable and Mindanao endemic species consistently dominated the four sampling sites. Agroecosystem, an open area with high degree of on-site disturbance had a lower species richness (R=7) but had the highest Shannon's diversity

index value (H'=1.823). Species richness was highest in dipterocarp forest (R=9) and gradually declined with increasing elevation. Endemism was found directly proportional to elevation. The lowest species richness (R=4) and Shannon's diversity index value (H'= 1.084) were recorded in the mossy forest. Generally, species diversity in Mt. Tago was moderately high (H'= 1.877). Amphibian species were found to thrive in forested sites and utilized arboreal and vertical stratum, leaf axils, ground litter, and aquatic microhabitat types. Ordination analysis showed that distribution of amphibian species was greatly influenced by structural organization of habitat and that species were diverse in forested sites. The results of this study showed that Mt. Tago Range provides a habitat to a diverse species of amphibians in spite of some on-site disturbances occurring in the area.

019
CLAVERO, Celeste A. 2002. Bioassay of Extracts from Whole Plant *Hydrocotyle umbellata* L. (GT: MS Bio), 156pp.

Activity of crude methanol and water extracts and fractions using ether and chloroform in acidic, basic and neutral form derived from *Hydrocotyle umbellata* L. were tested against fry of *Oreochromis niloticus* and larvae of *Culex* sp. Analysis of variance showed that there are significant differences between fractions used against *O. niloticus* and *Culex* sp. Probit analysis showed that the most active fraction both in *O. niloticus* and *Culex* sp. is the acidic ether with lowest LC_{50} at 142.12 ppm and 285.25 ppm for fry and 99.31 ppm and 232.92 ppm for *Culex* larvae for 24 and 96 hours respectively. Crude methanol extract, acidic and basic ether fractions showed antibacterial property against *Escherichia coli, Proteus vulgaris, Bacillus subtilis, Bacillus cereus, Staphyloccus aureus* and *Serratia marcescens*. The highest zone of inhibition was exhibited by 10% acidic ether extract against *B. subtilis*. All extracts/fractions showed significant increase on the hematocrit of *Mus musculus* indicating abnormality. Crude methanol and water extracts, acidic ether and acidic chloroform fractions when injected to *M. musculus* cause abnormal blood cell formations, including homogenous RBC, acanthocytes, nucleated RBC, chromatin clumping, and nuclear material disintegration. Acidic ether, acidic chloroform, and water extracts have the ability to increase the white blood count of *M. musculus*. Spectrophotometric characterization of the crude methanol extract and its fractions showed several peaks indicating the presence of several compounds.

020
DAEL, Ma. Angelita Salome B. 2003. Genetic Variability Among Manobo Tribes of Talacogon Prosperidad and San Francisco, Agusan del Sur. (GT: MS Bio), 89pp.

The study sought to know the genetic variability among Manobo tribes of Prosperidad, Talacogon and San Francisco, Agusan del Sur. A self-constructed questionnaire was used as an instrument for data collection. A total of 152 randomly chosen Manobo families were the respondents consisting of 40% from Prosperidad, 25% from Talacogon and 35% from San Francisco.

Genetic variation within and among the populations of the three study areas were compared and analyzed. Traits observed were divided into categories such as; common

autosomal traits, polygenic traits, sex – related traits and traits that involve some common chromosomal aberrations. The result showed that most of the respondents possess recessive alleles for the traits being considered. Rare physical abnormalities such as syndactyly, albinism, club – foot, cleft palate, and glaucoma were observed but of low frequency. Incidence of diseases was ranked according to their prevalence in the population. Measles was the most prevalent disease in the whole population maybe due to poor extension of health services in the remote areas as well as lack of education with regards to health and sanitation. Other diseases like tuberculosis and anemia are common which may be due to malnutrition and poor health habits. Deafness was more common among paternal side while otitis media was common among offsprings. Generally Manobos are alcohol drinkers, high carbohydrate eaters but low meat eaters.

Statistical analysis revealed that there were significant differences in the traits considered. The population deviated from the expected proportion based on the Hardy – Weinberg Law. Results showed that the populations shared a common gene pool and possible inbreeding occured in the population.

021
DAGONDON, Sheila L. 2005. Construction of a Partial Genomic DNA Library of *Saccharomyces cerevisiae*. (GT: MS Bio), 105pp.

Basic Recombinant DNA techniques facilitate the construction of a partial genomic DNA library of *Saccharomyces cerevisiae*. Molecular cloning studies on the budding yeast *Saccharomyces cerevisiae* are essential to understanding the basics of complex organisms, being a simple eukaryote with small genome. Recombinant DNA molecules were generated through a combination of complex methods. *Escherichia coli* DH5α was employed as the cloning host with pBluescript II (KS$^+$) as the cloning vector.

Total generated inserts of 186 kb partially represented the total genome of *Saccharomyces cerevisiae*. Out of the 108 colonies generated during bacterial transformation, only 34 were detected with inserts. Employing undigested plasmid DNA pBluescript II (KS$^+$) as the molecular size marker, 30 of the recombinant plasmids were known to have an approximate size of 5 kb as revealed by electrophoretic analysis and the remaining four recombinant plasmids carried a much larger insert approximately 9 kb in length.

Because the *S. cerevisiae* genome is very compact, it is chiefly probable that inserts containing either intact of part of a gene have been incorporated in the clones.

022
DEJARME, Sharon M. 2002. Mosses of Mt. Kipandong, Bukidnon, Philippines. (GT: MS Bio), 135pp.

Genera composition, relative abundance, altitudinal distribution, and pattern of species richness and diversity were determined in seven different elevational ranges of Mt. Kipandong, Bukidnon. By sampling along the trail of the mountain, a total of 40 genera belonging to 23 families was recorded to thrive in the sampling area. At an elevation of

1,100 meters above sea level (masl), 1,400 masl and 1,600 masl, 16 genera were identified to exist. Twenty – one genera were found at 1,200 masl, 13 at 1,300 masl, and 1,700 masl, and nine genera were found to be present at 1,500 masl. The most abundant genus in the area was *Acroporium* of Family Sematophyllaceae. The giant moss *Dawsonia* was collected at 1,300 masl – 1,400 masl. Species richness and diversity were highest at an elevation of 1,200 masl and subsequently declined at increasing elevation. However, fluctuation of species richness and species diversity at 1,500 masl was observed which was attributed to the absence of stable substratum for mosses. Two – way analysis of variance showed a highly significant difference in the abundance of each family collected with respect to elevation.

The results of the study showed that Mt. Kipandong supports a rich diversity of mosses. The possibility of finding new and noteworthy species in the area is still vast. Knowledge obtained from the study of alpha taxonomy is crucial to issues dealing with conservation and management of biodiversity.

023
DIANGCO, Maria Cheryl R. 2004. Sex Differentiation in Humans: Population Structure and Fluctuating Asymmetry. (GT: MS Bio), 324pp.

This study was conducted to determine phenotypic, genetic and development instability differences between sexes based on nine selected Mendelian traits, ABO blood groups, FBS levels, dermatypes, and dermal lengths. Data collection was done using questionnaires. Analysis was carried out using multivariate methods such as principal coordinate analysis. Genetic differences between sexes were inferred from data on Mendelian traits using the Hardy-Weinberg formula. Construction of frequency histograms allowed for detection of differences in dermatypes between sexes. Box plots were employed to test for differences in FBS levels. Test for significant differences between sexes based on the genotypic and phenotypic data were carried out using one-way ANOVA. Differences in the level of developmental instabilities between sexes were inferred from level of fluctuating asymmetry of finger lengths. Results showed no significant difference in gene, genotype and phenotype frequencies. This observation was concordant with that of the multivariate analysis. But, both sexes differ in frequency observed between sexes. Results showed that sexual dimorphism in humans is not always manifested in all traits.

024
DIMALEN, Marilu D. 2006. Methallothionein-Like Proteins from Rock Oyster *Saccostrea cucullata*, Born 1778 (Ostreoida: Osteridae) in Iligan Bay and Camiguin. (GT: MS Bio), 74pp.

The concentrations of methallothionein-like proteins (MTLP) in oysters, *Saccostrea cucullata*, collected from the industrial sites in Iligan bay and the unindustrialized sites within the bay and Camiguin during the spawning season were determined by differential pulse polarography. Heavy metals: zinc (Zn), copper (Cu), cadmium (Cd) and lead (Pb) were analyzed by atomic absorption spectrophotometry (AAS) using fraction left from samples analyzed for MTLP. Results showed that the

concentrations of MTLP in Kauswagan samples were significantly (p = 0.000) high compared to the other stations and having a strong correlation ($r^2 = 0.6113$) with cadmium. The condition index of oysters from Kauswagan was the lowest compared to the other sampling stations suggesting that they were stressed. Comparison of present data with data obtained from a related study on oyster MTLP from the bay and Camiguin showed comparable MTLP concentrations despite a wide difference in the concentration of metals. Metal concentrations obtained in the present study were very high suggesting that the oyster have acquired tolerance to cadmium. The present data and previous observations of MTLP in Iligan bay and Camiguin are consistent with the trend expected of MTLP induction. It is recommended that a study of MTLP in the spawning season be pursued at the gene or molecular level and that a monthly monitoring program be done using *Saccostrea cucullata* MTLP as biomarker for heavy metal pollution.

025
ESPINA, Maria Lotus C. 2003. Structure of Mangrove Communities in Selected Barangays Along the Coast of Iligan Bay. (GT: MS Bio), 164pp.

A study was conducted to assess the community structure of mangroves in selected areas along the coast of Iligan Bay using the transect-line plot method. Forty-three (43) coastal barangays were mapped based on their remaining mangrove forest. Mangrove areas were observed to be in "fair" to "poor" conditions. The western coasts of Iligan Bay showed extensive cover than the eastern sides. Closer evaluation of nine (9) coastal barangays revealed that mangrove communities in these areas showed a total of sixteen (16) identified, four (4) unidentified, and four (4) associate species. Species found in almost all stations were *Rhizophora mucronata, Rhizophora apiculata, Sonneratia alba, Avicennia marina, Avicennia lanata* and *Lumnitzera racemosa. Nypa fruticans* was observed to have the highest average destiny of trees/ha followed by *Rhizophora mucronata* and *Avicennia lanata.* The mean height of all mangrove species was 5.3 m.

The variance (S^2) over mean (X) ratio values in most stations indicated that the spatial distribution of mangrove species were aggregated or clumped. Some mangrove species and growth stages specifically saplings were randomly distributed. Low diversity (H' and Ds) values were observed in nine (9) stations. Variations in species composition and vegetation characteristics between communities were being investigated using cluster analysis. Status and implications of the results in mangrove and fishery management were discussed.

026
ESPRA, Aileen S. 2006. Diet Composition of Some Economically Important Reef Fishes in Maigo and Kauswagan, Lanao del Norte. (GT: MS Bio), 164pp.

This study dealt with the diet composition of some economically important reef fishes in Maigo and Kauswagan, Lanao del Norte from July to December 2004. Nine (9) fish species were selected for the gut content study. The nine species belong to seven families, namely, the Gerreidae (*Gerres oyena*), Leiognathidae (*Leiognathus splendens*), Lethrinidae (*Lethrinus insulindicus*), Scaridae (*Scarus bowersi*), Siganidae (*Siganus*

guttatus and *Siganus vermiculatus*), Theraponidae (*Therapon jarbua* and *Therapon* sp.) and Mullidae (*Upeneus caerulus*). The results of the stomach or gut content analysis showed that most of the fish species preyed on zooplankton and benthic animals. These fishes were categorized as generalist species based on Costello's method. They are represented by *Gerres oyena*, *Leiognathus splendens*, *Lethrinus insulindicus*, *Therapon jarbua*, *Therapon* sp. and *Upeneus caerulus*. Fishes belonging to Family Scaridae (*Scarus bowersi*) and Family Siganidae (*Siganus guttatus* and *Siganus vermiculatus*) which exclusively fed on algae were categorized as strictly herbivores. A total of 46 zooplankters were encountered during the July to December 2004 sampling in Maigo and Kauswagan, Lanao del Norte. Comparison between the abundance of zooplankton between stations in Maigo, and Kauswagan, Lanao del Norte showed no significant difference (p < 0.05, One-way ANOVA) in both areas. Pearson Product Moment correlation showed correlation between the abundance of prey items within the diet of the two fish species, namely, *Leiognathus splendens* and *Therapon jarbua* and the natural zooplankton population in the reef areas. Electivity index shows that some of the prey items in the diet of fishes were their prey preference and some were not.

027

EUPEÑA, Roxan G. 2008. Geometric Morphometric Analyses in Determining Cranial, Mandibular, Scapular and Pelvic Girdle Diffrentiation of Selected Species of Rats. (GT: MS Bio), 397pp.

Geometric Morphometrics is used to investigate patterns of differentiations of the cranial, mandible, scapula and pelvic girdle of the four species of Rats representing the two Genera of the Family Muridae. Data is obtain through capturing and digitizing images of the bone specimens and identified landmarks at prominent areas that will define its shape and morpho-functional parts. Landmark based data is then subjected to different geometric morphometrics analyses such as Procrustes superimposition, Thin plate spline (TPS), Partial and Relative Warps, Principal Component (PCA), Cluster and Euclidian Distance Matrix Analysis (EDMA) to reveal variations of differentiations. Results shows that through procrustes superimposition shape variation were extracted free of size differences. TPS on the other hand, explore shapes of the bone architecture of the rats and mice. Sexual dimorphism was assessed via mean shapes and found out that it is not significant to shape but to size. Partial and relative warps produced ordination of species, which reflects the distinct differentiation of the two genera of Family Muridae occupying distinct deviations in shape spaces. Moreover PCA revealed variables that contribute to the differentiation of the two Genera. Cluster analysis of over all morphological distances showed consistency to the differentiation. Lastly EDMA showed differentiations of interlandmark distances, which are significant to the length of the bone architecture. These results suggest that geometric morphometric approach reveal several marked differences on shape and size that reflects disparity of the two genera of Family Muridae that can be accounted to their dietary, behavioral, functional and ecomorphological preferences.

028

FERNANDEZ, Eve V. 2006. The Ecology of the Reptilian Fauna of Mt. Tago Range, Bukidnon, Philippines. (GT: MS Bio), 176pp.

Field ecological study on reptilian fauna using a combination of techniques was conducted in Mt. Tago Range, Bukidnon from May 5 to June 15, 2005. Twenty-one species of reptiles including 17 endemic and seven rare were recorded from the four sampling sites (agricultural ecosystem, mossy, montane, and dipterocarp forests). Agricultural ecosystem had the highest diversity index (H'=1.049) followed by dipterocarp forest (H'=0.808). Lower diversity was recorded in the mossy (H'=0.688) and montane forests (H'=0.709). The results indicate that species richness and diversity decrease as the elevation increases and endemism increases with elevation. The high percentage (80.95%) of Philippine endemic species in the area indicates that the area provides good habitat to a large number of reptiles. Reptilian species were found to thrive in agricultural ecosystem and utilized three types of microhabitats: leaf axils (type II), vertical stratum (type III), and substrate level or ground litter (type IV). Analysis using non-multidimensional scaling showed that the physical factors of each habitat type may have an effect on the species richness, diversity, distribution, and relative abundance of reptiles in Mt. Tago Range.

Nine individuals of *Mabuya multicarinata*, nine of *Sphenomorphus steerei* and five of *Brachymeles boulengeri* of family Scincidae were dissected to examine the diet composition as well as identify the endoparasites. Results showed that skink species are generally insectivorous and predacious, implying that skinks are important in controlling the insect population. Endoparasites belonging to Order Ascarida of Superfamily Ascaridoidea and Superfamily Oxyuroidae were the parasitic nematodes found infesting the small intestines of the skinks. Occurrence of parasites appears to be more or less related to the feeding habit of the skink species.

Mt. Tago Range provides diverse species of reptiles in spite of some disturbances of the natural habitat. Thus, conservation and protection of the forests in Mt. Tago Range should be given priority to safeguard and ensure the reptilian diversity in their natural habitat as well as the whole biodiversity of the area.

029
FERNANDEZ, Lothy R. 2005. Assessment of Variability within the Population of the Vulnerable Mindanao Endemic Blue-Capped Kingfisher, *Actenoides hombroni* Using Polymorphic DNA Markers. (GT: MS Bio), 74pp.

Random amplified polymorphic DNA (RAPD) analysis and agarose gel electrophoresis were used to assess the variability within the population of the vulnerable Mindanao endemic blue-capped kingfisher (*Actenoides hombroni*). DNA samples were obtained from blue-capped kingfishers collected from two sampling sites in Rogongon, Iligan City and one site in Kimangkil, Bukidnon.

The random primer used had generated 25 reproducible RAPD markers showing here distinct banding patterns with low polymorphism. Shared or specific fragments were counted and genetic similarity within population was calculated. The similarity coefficient (F) estimation revealed that there were more pairs of individuals with F values equal to 1 (high genetic similarity) and having no F values equal to 0 (low genetic similarity). Analysis of the RAPD profiles and similarity estimation suggested that there is a considerable low genetic diversity that existed within the population of *A. hombroni*, which could be explained by their geographic proximity. This study is significant in the sense that

it could be of use in the formulation of conservation strategies for this vulnerable and Mindanao endemic *A. hombroni.*

030

GARCIA, Gertrude M. 2001. Assessment of Air Quality of Cagayan de Oro City Using Leaf Yeast as Bioindicator. (GT: MS Bio), 63pp.

The quality of air of Cagayan de Oro was assessed using leaf yeast as a biological indicator. The leaf yeasts were collected from tree species, namely: mahogany (*Swietenia mahogani* and *Swietenia macrophylla),* narra (*Pterocarpus indicus),* Ilang-ilang (*Cananga odorata);* and from shrub species such as cassava (*Manihot esculenta),* and madre de cacao (*Gliricidia sepium).* The tree and shrub hosts were from Poblacion and its adjacent barangays namely Carmen, Kauswagan, Macabalan, Nazareth and Lumbia.

After three months of leaf sampling, i.e., April 1999, August 1999, and January 2000, the data gathered revealed a very low over-all leaf yeast count. The data were subjected to statistical analysis using Chi Square Test and results showed at 95% level of significance, the quality of air of Cagayan de Oro City was very poor.

Gathering of leaves from the few tree and shrub species in assessing air quality employed the spore fall technique. Two leaf yeast species were collected. However, only one species, *Trochosporon cutaneum*, was isolated, purified and identified using API 20 C AUX fast kit (bioMerieux sa) as yeast identification system.

031

GELSANO, Maricel L. 2003. Tropic Analysis and Interactions of Finfishes in Iligan Bay. (GT: MS Bio), 144pp.

Fish samples were collected directly from the fishermen in four selected minor landing sites (Punta Silum, Misamis Oriental, Lugait, Misamis Oriental, Clarin, Misamis Occidental and Jimenez, Misamis Occidental) along Iligan Bay from February to May 2001. Punta Silum showed the biggest volume of catch amounting to 6,461 kg with *Sardinella gibbosa* as the dominant species which is caught using gill nets. The longest fish was *Trichiurus lepturus* (876 mm) while *Thunnus albacares* showed the heaviest weight (2500 kg) *Leiognathus fasciatus* has the shortest (82 mm) and lightest weight (9g).

A total of 66 fishes belonging to 31 families were identified and classified. Stomach content analysis showed 40 kinds of food items which included microscopic plankton, to macrobenthic algae, crustaceans, mollusks, coelenterates, cephalopods, nematodes, echinoderms, poriferans, polychaetes, small fishes, and organic materials. Most of the fish species investigated are carnivores, except for those herbivores species belonging to families Siganidae, Scaridae, Kyphosidae, Acanthuridae, and Pomacentridae. Clupeid species and the carangid species of the genus *Decapterus* belong to the planktivorous group. The kind of dentition, type of gill raker, and the stomachs of fishes showed strong correlation with food type and feeding habits. Cluster analysis based on the degree of similarity of diet revealed three major feeding guilds that indicate strong potential competition among member species. Dietary overlap was observed to be strongest among herbivores species (>90) and moderately strong (>60) in some non – herbivorous

species.

Estimates of consumption to biomass (Q/B) ratio showed that herbivores have higher consumption rates compared to carnivorous species. Based on the food habits of the major species, a simplified food web of Iligan Bay was established. *Tylosurus acus melanotus*, *Chirocentrus dorab*, *Saurida tumbil*, *Sphyraena forsteri*, *Thunnus albacares* and *Trichiurus* were identified as top predators in the food web.

032
GO, Suzanne E. 2004. Biomolecular-Chemical Screening for DNA-Binding Antibiotics from Actinomycetes. (GT: MS Bio), 94pp.

This research study is designed to significantly contribute to the discovery of new broad-spectrum antibiotics with DNA-binding property from actinomycetes isolated from soil samples of BRGY. Santiago garbage dump site. DNA-binding compounds are used and as such play an important role in cancer therapy.

Cross-streaking against *Bacillus cereus, Staphylococcus aureus, Proteus vulgaris, Pseudomonas aeruginosa, Aspergillus niger,* and *Saccharomyces cerevisiae* was performed for the primary evaluation of the antibiotic property of the isolates. The isolates that showed antibiosis were extracted using ethyl acetate as the solvent. The crude microbial extract was used for the determination of the relative inhibitory concentrations and thin - layer chromatography (TLC). Two - dimensional TLC was also performed to determine the DNA-binding property of the compounds from the crude microbial extracts.

Results of the study show that four isolates have an antibiotic property and each one has at least one compound that exhibited binding interactions with DNA. Using the eight edition of Bergey's manual of Determinative Bacteriology, the three isolates were identified to be of the genus *Streptomyces* while the other one is of the genus *Nocardia*.

The study recommends to analyze and elucidate more the properties of the DNA-binding compounds extracted from the actinomycete species. It also recommends that soil analysis of the Brgy. Santiago garbage dump site be continued.

033
GODINEZ, Jenefer A. 2005. Fluctuating Asymmetry and Geometry Morphometrics in a New Species of Whip Spiders (Charontidae, Amblypygi) Collected from Initao National Park, Misamis Oriental, Philippines. (GT: MS Bio), 492pp.

Whip spiders belong to the less well-studied arachnid order *Amblypygi*. Here, fluctuation asymmetry (FA) and geometry morphometrics analyses were used as tools to assess the between-sex differences of the sampled amblypygids that are believed to belong under a new species of the Genus *Charon*. Metric evaluation of the structures corresponding to the left and right sides of the whip spiders was conducted through a series of tests for fluctuating asymmetry (FA) study. Results showed that of the 72 traits measured, only three characters that correspond to leg 3 femur length, leg 3 patellar length

and leg 4 basitibia 3 length are most ideal in FA study because they did not exhibit size dependence, antiasymmetry or directional asymmetry. Geometric morphometrics analyses using centroid size, Procustes fitting, thin plate spline (TPS) and warps functions, Euclidean Distance Matrix Analysis (EDMA), elliptic Fourier analysis (EFA) and eigenshape analysis (EA) showed that the females exhibit greater diversity in the shapes of the carapace, the sternal area and the opisthosoma of whip spiders. Further thorough investigations on the characteristics of the sample collected from Initao National Park, Misamis Oriental have to be done to confirm whether the specimens merit a new species status.

034

HEPOWIT, Nathaniel L. 2006. RAPD-PCR Genomic Fingerprinting, Ultrastructure Cytological Examination, and Fatty Acid Analysis of Mangrove Thraustochytrids from Central and Southern Philippines. (GT: MS Bio), 169pp.

Twenty-four strains of marine microheterotrophic chromists known as thraustochytrids, isolated from selected mangrove areas of central and southern Philippines, were analyzed for fatty acids profile, cytological ultrastructures, and genomic relatedness. Gas chromatograms of total fatty acid methyl esters showed that 15-, 16- and 22-carbon aliphatic acid are most abundant, with palmitic acid (C16:0) being the principal saturated fatty acid and docosahexaenoic acid (DHA;C22:6n3) the major unsaturated fatty acid, comprising about 12 – 48% and 24 – 41%, respectively. All isolates have high PUFA content, ranging from 35 – 54% of TFA yield, and low omega-3 ratio, ranging from 0.20 – 0.58. Based on TEM micrographs, the relatively high DHA content of *Schizochytrium* sp. LEY7 cells (strain from southern Leyte) is attributed by the densely distributed mitochondria in unidentified large intracellular compartments, since DHA biosynthesis occurs in mitochondrial membranes through carnitine-dapendent pathway. PRD-PCR (Randomly Amplified Polymorhic DNA – Polymerase Chain Reaction) genomic fingerprinting, using OPC-02, OPC-05, OPC-07 and OPC-08 random (10-mer) primers, shows different levels variability and relatedness among twenty-four thraustochytrid isolates as indicated by the electrophoretic separation patterns of DNA amplicons. Dendrogram construction through nearest-neighbor analysis grouped the isolates into four major clusters, which were correlated with heterotrophic growth patterns, cytological feature, PUFA profiles and omega-6 / omega-3 ratio.

035

JARANILLA, Loren Grace F. 2008. Outline Analysis of Rice Seeds (*Oryza spp.*) and Its Potential Application in the Numerical Taxonomy and Identification of Wild Rice Varieties. (GT: MS Bio), 99pp.

Rice is one of the world's most important food crops. The aim of this study was to establish a quantitative evaluation method of rice seed shape by elliptic Fourier descriptors and principal component analysis (EF-PCA). This study also determines the systematic relationships of the rice seed varieties. A total of 1,199 hulled and 873 dehulled seeds from 32 accessions belonging to sixteen species were analyzed. Elliptic fourier descriptors described shapes by transforming coordinate information for the contours into coefficients,

and principal component analysis summarized these coefficients. The first three components explained 96.75% and the first five components explained 97.63% of the total variation in the hulled and dehulled rice seed shapes, respectively. The differences among the principal component scores were significant. Cluster analysis using Ward's method has elucidated the relationships among rice accessions, with a high degree of clustering. Most samples from the same accessions were discriminated significantly at the same groups. The dendrogram also showed clear distinctions among the rice accessions according to their geographic origins. This study demonstrated that outline analysis of seed shape based on EF-PCA is effective to identify and classify *Oryza* species. Outline analysis can also be used to supplement traditional morphometric descriptions of wild rice accessions.

036

KWONG, Hazel Joy B. 2007. Shoot-Tip Culture of *Musa acuminata* (var. "lakatan") Under Different Media Preparation with Cytokinin and Auxin Levels of Treatment. (GT: MS Bio), 72pp.

Shoot-tip of suckers of *Musa acuminata* var. Lakatan were used to study the effects of different cytokinin and auxin concentrations on shoot multiplication and rooting within ten (10) weeks of culture. Treatments studied were: Murashige & Skoog or MS + sucrose + 5 ppm BAP (Benzylaminopurine) (treatment 1); MS + sucrose + 4 ppm BAP (treatment 2); MS + sucrose + 3 ppm BAP (treatment 3); MS + sucrose + 2 ppm BAP (treatment 4); MS + sucrose + 1 ppm BAP (treatment 5) for initiation and multiplication stage. Rooting stage used three treatments. These were MS + 30% sucrose + 6 ppm 2,4-Dichlorophenoxyacetic acid (treatment 1); MS + 30% sucrose + 5 ppm 2,4-D (treatment 2); MS + 30% sucrose + 6 ppm 2,4-D (treatment 3).

Callus formation significantly ($\leq$0.05) responded to various concentrations of BAP after two weeks of culture. Media I yielded the highest growth rate in terms of length and width increment of explants in all treatments, but was not significant ($\geq$ 0.05) when BAP concentration was lowered to 60-80 %. Shoot proliferation and elongation were significantly ($\leq$0.05) greater in the medium with 5ppm BAP than other treatments after ten weeks of culture, while lower concentration of BAP promoted rooting. In contrast, when BAP was totally omitted but 4ppm auxin 2, 4-D was added, shoots initiated root formation. In conclusion, basal MS medium supplemented with 20% sucrose and 5 ppm BAP promoted shooting reduced its concentration induced rooting. Moreover, supplementation of 30 grams sucrose and 4ppm 2, 4-D on MS medium at the rooting stage induced more roots than other treatments.

037

MADANGUIT, Jessele R. 2002. The Volant Mammals of Mt. Kimangkil Range, Mindanao Island, Philippines. (GT: MS Bio), 111pp.

Mist nettings were conducted in Mt. Kimangkil, Northern Mindanao, between May 2000 and February 2001 in five sites at 1100 masl to 1800 masl to identify the species of bats present and assess relative abundance, species richness, similarity index, evenness, diversity and endemism. Individual variation and population organization of *Rhinolophus inops* were also determined. Fourteen species of bats were identified. One species,

Ptenochirus minor is Mindanao faunal region endemic. Four species, *Haplonycteris fischeri, Harpionycyteris whiteheadi, Ptenochirus jagori* and *Rhinolophus inops* are Philippine endemic while nine other species are widespread. In this study, *Kerivoula whiteheadi*, a species known to occur near sea level was captured in the submontane forest at 1250 masl. *Megaerops wetmorei,* whose recorded elevation was up to 1200 masl was also captured at 1250 masl. Fruit bats were found to decline in species richness and relative abundance but increase in endemism with decreasing disturbance. They also decline in species richness and relative abundance but increase in endemism with increasing elevation. Clustering of *Rhinolophus inops* showed that individual 22 were least related to others in the group, hence further systematic analysis is recommended. Males were more abundant than females and adults were more abundant than the juveniles in rock crevices 1 and 2. Slash and burn farming method was done in forested areas, hence immediate protection of the forest is urgently needed to protect the bat species especially the endemic ones.

038

MAGDALE, Christian D. 2006. Mosses in Mt. Hibok-Hibok, Camiguin, Philippines. (GT: MS Bio), 131pp.

An inventory of mosses was conducted in Mt. Hibok-Hibok, Camiguin. The species composition, relative abundance, altitudinal distribution, and pattern of species richness and diversity of these mosses were determined from 10 elevational sampling sites. Twenty-six species belonging to 16 genera were collected during the entire sampling period.

Elevation at 800 masl had the highest number of moss species collected with a total of nine species while elevation at 500 masl had the least number (four) of species obtained. The most abundant species was *Campylopus umbellatus* with a relative abundance of 21.1%. *Dicranoloma reflexifolium, Floribundaria floribunda, Leucobryum javense, Pyrrhobryum* sp.1 *Trismegistia* sp.1, *Trismegistia* sp.2 and *Trichostomum* sp.1 were considered rare species with a relative abundance of 0.6%. With respect to altitudinal distribution, the most prevalent species was *Campylopus umbellatus*, which was almost found at all elevations except at 400 masl.

A heaving (wave-like) pattern of species richness and diversity was observed in Mt. Hibok-Hibok. The highest values of species diversity were recorded at 400 masl (H'=2.0) and 600 masl (H'=1.93). However, the lowest species diversity (H'=1.08) was observed at 500 masl. The high species diversity of mosses in Mt. Hibok-Hibok indicates that the environmental conditions in this mountain are still able to support varied species of mosses. Moreover, this high species diversity implies that the environmental pollution and disturbance in Mt. Hibok-Hibok are at the manageable level and not yet alarming.

039

MANABAT, Esperanza G. 2006. A Geometric Morphometric Analysis: Claw and Carapace Shape Variation Across Swimming Crab *Portunidae* Collected

from Iligan City and Kauswagan, Lanao del Norte, Philippines. (GT: MS Bio), 176pp.

For years, many studies have been done on the taxonomic classification of swimming crabs but not much on geometric morphometrics. Swimming crabs collected belong to Family Portunidae. They are crabs with broad carapace, often with sharp lateral spines. The last pair of legs is flattened at the end, with a paddle like expansion used to swim or to dig in the sand. In this study, portunid crabs collected from Bayug Island, Iligan City and Kawit Occidental, Kauswagan, Lanao del Norte, Philippines were analyzed applying geometric morphometrics (*GM*) techniques. *GM* analysis utilized as a tool to assess intra- and interspecific right claw and carapace shape and size variation of the three species of *Portunidae* crabs. Only the right claw and carapace of these crabs were studied since they are known to present allometric trends. Generalized Procrustes superimposition (*GLS*), thin-plate spline (*TPS*), partial warp analysis (*PW*) and relative warp analysis (*RW*) are the GM applied for landmark analyses; elliptic Fourier analysis (*EFA*) and Eigenshape analysis (*EA*) for outline shape analyses. Procrustes coordinate values, partial warp and relative warp scores and the elliptic Fourier coefficients derived from different procedures were used for morphometric and multivariate analyses such as one-way analysis of variance (*ANOVA*), Multivariate analysis of variance (*MANOVA*), Principal Component Analysis (*PCA*), Discriminant Analysis (*DA*) and Cluster Analysis (*CA*). Geometric morphometrics methods have become an important tool in identifying shapes and patterns of morphological variations in this study. The results showed a relative degree of significant variations in shapes and sizes of the right claws and carapaces of the three sampled *Portunidae* species collected (*Portunus* sp., *Scylla serrata* and *Portunus sanguinolentus*). Furthermore, results showed *Scylla serrata* right claw shape are robust and wider compared to the other two groups with claws that are relatively slender and longer while, *Portunus sanguinolentus* had wider carapace compared to *Scylla serrata* with carapace shape relatively round and *Portunus* sp. somewhat ovate. Size and shape variations are more visible between groups than within groups. The *GM* descriptive results of right claw and carapace shapes as visually represented significantly provide a more easy way of tracing common ancestry in such a way that samples are morphologically differentiated having significant biological implications like variations in size and shape related to regeneration, clade, feeding habits and habitats. Comparisons of shape and size of these three groups using geometric morphometrics provide more scientific exploration to evaluate species phylogeny and ontogeny.

040
MONANA, Carmen P. 2008. Bat Fauna of Mt. Tago Range, Bukidnon, Philippines. (GT: MS Bio), 122pp.

Bat fauna was assessed in the agricultural ecosystem, dipterocarp, montane, and mossy forests of Mt. Tago Range, Bukidnon. Mist nets were set for a total of 492 net nights from May 5- June 15, 2005.

Species composition, endemicity, distribution, relative abundance, species richness, species diversity, species evenness, diet composition, and threats to the bat fauna were determined. Nine species comprised of 277 individuals were captured in the sampling area. Of the nine species, five were found to be Philippine endemic. Mossy forest had the

highest percent endemism (66.67%). Montane forest had the highest species richness (R= 8) and diversity (H'= 1.6250). Agricultural ecosystem (E= 0.7295) had the most even distribution of species. No pattern of species richness, diversity, and abundance along elevational and disturbance gradient was observed.

Physical factors seemed to affect the distribution of bats. Canonical ordination showed that agricultural ecosystem was a different habitat type compared to the three sampling areas. Diet composition of the bats showed that *R. inops* had a diet of fleas while *P. minor* and *H. fischeri* are mainly fruit-eaters. However, empty guts were observed in other species.

The high species endemism (56%) indicates a healthy environment in Mt. Tago. However, habitat loss, hunting, and unsustainable farming practices remain to be the major threats to the biodiversity in the area.

041

OLOWA, Lilybeth F. 2004. Genetic Variability of the Mindanao Endemic Lesser Musky Fruit Bat *Ptenochirus minor*. (GT: MS Bio), 70pp.

Random Amplified Polymorphic DNA (RAPD) profiling and agarose gel electrophoretic analysis were employed to determine the genetic variability within the population of *Ptenochirus minor*. Whole blood samples preserved in absolute ethyl alcohol were obtained from *P. minor* captured in the secondary forest of Rogongon, Iligan City. DNA was obtained by phenol-chloroform extraction.

RAPD analysis results in 10 visible bands (RAPD markers). Polymorphic loci were detected. Three types of banding patterns were identified, a high molecular weight DNA, low molecular weight DNA, and low molecular weight DNA with two fragments. The similarity coefficient (F) estimation indicates that there are more pairs of individuals with F values equal to zero (low genetic similarity). Results of the RAPD analysis and similarity estimation indicate that genetic variability exists within the population of *P. minor* in the area. The movement of individuals between areas in response to the differences in food availability and habitat conditions might have caused the individuals to interbreed resulting in the combination of genes. Genetic flow provides genetic diversity and benefit to the species enabling it to adapt to local conditions. Data generated from this study could serve as indicators for future conservation studies of *P. minor*.

042

OLVIS, Paul R. 2008. Morphometric, Genetic, and Dermatype Variability Among Populations of B'laan and Kalagan Tribe of Davao del Sur, Mindanao Island. (GT: MS Bio), 118pp.

Geometric morphometric methods were used to analyze variations in faces between and among normal female and male populations of the B'laan and Kalagan tribes. Images were digitized with 39 landmarks on the face to obtain 78 "x" and "y" co-ordinates. These coordinates were then subjected to Procrustes superimposition so as to normalize the effects of size, rotation, and position of the images. The Procrustes residuals were then subjected to Principal component analysis (PCA), Thin-plate Spline (TpS), partial warp, relative warp, and discriminant analysis. Variations based on morphometric, genetic, and

dermatoglyphic traits were also done. Results showed that the mean face shape of female B'laans exhibited smaller nasal cavity and elongated chin while male B'laans had even widening of the lower jaw. Female Kalagans on the other hand, displayed smaller nasal cavity than male Kalagans. Inward depression of the chin was more prominent among male Kalagans while elongated chin characterized female Kalagans. In terms of anthropometric traits, major variations within B'laans occurred in the right middle finger with 31.795% variation. Genetic traits with 23.991 % variation occurred on earlobe attachment. On the other hand, dermatoglyphic traits produced 42.803% variation on right middle finger where different types of fingerprints were observed. Within the Kalagan group, 35.85%, 16.344%, and 46.129% variations occurred much in morphometric, genetic, and dermatoglyphic traits, respectively. This study suggests that differentiation between two populations has contributed to the diversity within the region. The application of the principles of geometric morphometrics and multivariate analyses to study shape variation in faces and traits of ethnic groups appears to be a promising new area of research.

043

OMBAT, Leila A. 2000. Degradation of *Bruguiera* sp. and *Xylocarpus granatum* Leaf Litter *in situ* in Mangrove - Dominated Estuary of CoastWay, St. Christine, Lianga, Surigao del Sur. (GT: MS Bio), 58pp.

In-situ of decomposition of *Bruguiera* sp. and *Xylocarpus granatum* leaf were obtained from regular harvest of materials contained in three litter bags of different mesh size opening (1.5-mm, 4.0-mm, and 8.0-mm). From first to third or last sampling, litter from *Bruguiera* sp. degraded more rapidly than *Xylocarpus*. Litter of species in 8.0-mm litterbags had the highest degradation rate followed by those in 4.0-mm and 1.5-mm bags. From the first up to the last sampling, species and litter bags significantly contributed to the variations in decomposing rates. There was no species x litterbag interaction effect. The study also showed that bacterial and fungal populations did not differ in the two litter types.

Fresh litter were analyzed for N, C, P, concentrations and C/N ratio. The results showed that *Xylocarpus* litter had higher concentrations of N and P but lower in C and C/N ratio compared to *Bruguiera*.

The macrofauna that were obtained from 4.0-m and 8.0-mm bags used were oligochaetes, polychaetes (Nereidae), pelecypods, gastropods and crustaceans. The crustaceans obtained belong to order Isopoda, Amphipoda (*G*ammarus) and Decapoda (crab, *Leptograpsus variegates).* The pelecypods and gastropods were hard to identify because they were in their juvenile stage during sampling.

044

ORTEGA, Eduardo P. 2007.   Marine Mammals of Iligan Bay: Aspects of Their Biology. (GT: MS Bio), 108pp.

The marine mammals of Iligan Bay were surveyed from 1989 to 2007 by studying cases of strandings and by-catches of dolphins in the finfish fishery in the bay, and by conducting unstructured interviews of fishermen, barangay residents and officials and sellers of dolphin meat to know the circumstances of the strandings and by-catches and the

marine mammal-human interactions in the bay. Carcass analysis of the stranded or by-caught animals included taking morphometric, meristic and weight data. Five transect surveys on board the ferry services between Iligan City, Larena, Siquijor and Dumaguete City were made between July and October, 1995. Six species of toothed whales (the killer whale, *Orcinus orca,* the short-finned pilot whale, *Globicephala macrorhynchus,* the melon-headed whale, *Peponocephala electra,* Risso's dolphin, *Grampus griseus,* Fraser's dolphin, *Lagenodelphis hosei* and the long-snouted spinner dolphin, *Stenella longirostris*) were recorded in the bay. Diseases and wounds do not appear to be the proximate causes of the strandings. The melon-headed whale and one spinner dolphin had greater anterior body proportions and the Fraser's dolphins are slimmer compared to animals from other regions. Four types of marine mammal-human interactions occur in the bay: non-directed and directed fisheries, entanglement in fishing gear and dolphin attack on man. Sighting rates for dolphins in the bay are: 0.8 sightings/hour; 6.6 sightings/100 km and 81.7 individuals/100 km. A taxonomic key to the species is provided.

045
PABILLARAN, Joy B. 2005. Detection of *Vibrio parahaemolyticus* and Vibrio-Related Bacteria in Seafoods Sold in the Public Markets of Iligan City. (GT: MS Bio), 69pp.

Nine selected seafoods commonly eaten raw, namely: *Eucheuma* sp. (guso), *Caulerpa* sp. (lato), egs of *Dolobella* sp. or sea hare (lokut), *Holothuria* sp. (sea cucumber), *Loligo* sp. (squid), *Kateleysia hiantina* (burnay), *Meritrix meritrix* (punaw), *Modiolus metcalfe* (amahong) and *Anodontia edentulla* (imbaw) were inoculated and purified in Thiosulfate Citrate Bile Salt Sucrose (TCBS) agar plates to isolate possible *Vibrio parahaemolyticus* and vibrio-related bacteria.

A rapid test kit called Analytical Profile Index (API) 20E was used to identify the isolates that were collected.

The test kit revealed 11 numerical profiles that possibly correspond to 11 bacterial species. The API 20E software failed to identify any *V. parahaemolyticus* but able to identify seven (7) bacterial species namely: *Pseudomonas paucimobilis, Pseudomonas* sp*., Flavabacterium meningosepticum, Flavobacterium odoratum, Moraxela* sp., *Aeomonas salmonicida* and *Yersinia pseudotubercolsis.*

The Bray-Curtis (Single-Link) analysis also revealed 11 possible bacterial species out of the 20 isolates that were collected, a result that supports the numerical profile acquired from the API 20 E test.

The percent (%) occurrence was determined based on the results acquired in the API 20E test kit. The data revealed that the highest percent occurrence of bacterial isolates is in the seafood sample *Loligo* sp. or squid and *Kateleysia hiantina* or burnay, while the month of July had the highest percentage of bacterial isolates. The month of July was also positive in all the seven (7) bacterial species that were identified.

The bacterial density was determined by using the 3-tube MPN method. The method revealed that *Loligo* sp. is the organism with the highest bacterial density while the

month of July still revealed the highest bacterial density.

046
PAMAONG, Reizl N. 2003. The Volant Mammals of Mt. Gabunan Range Mindanao Island, Philippines. (GT: MS Bio), 88pp.

The study aimed to provide basic information on the status of bats inhabiting the forest ecosystem of Mt. Gabunan. Four sites were chosen at different elevational ranges. The slope of each site was measured using Brunton compass with clinometer. Mist nets were used to collect specimens. Specimens were identified and species diversity, species richness, and relative abundance were determined. Of the 14 bat species recorded, nine were fruit bats and five were insect bats. Eight species were classified as widespread, five Philippine endemics and one Mindanao endemic. Common to all the sampling sites are the following: *Cynopterus brachyotis*, *Haplonycteris fischeri*, *Macroglossus minimus*, *Megaerops wetmorei*, and *Rhinolophus arcuatus*. *Ptenochirus minor* is the only recorded Mindanao endemic bat species in Mt. Gabunan
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Site 2 (890 – 900 meters above sea level) was observed to have the highest diversity and abundance. No pattern of species richness was observed. *Rousettus amplexicaudatus*; a non – endemic species was observed to be the most abundant bat species in Mt. Gabunan. There was no significant difference, however, in the occurrence of each bat species in the sampling sites.

Mt. Gabunan was found to have high diversity and endemism of bat species despite habitat destruction. Protecting the forest against acts that would endanger them would be the best way to conserve the bat species in the area.

047
PAMATI-AN, Ana D. 2002. Bats of Rogongon, Iligan City. (GT: MS Bio), 80pp.

Relative abundance and species richness of bats were assessed in the three sampling sites in the secondary forest of Rogongon, Iligan City. Mist nets were set for a total of 315 net nights for the whole duration of the study.

A total of 557 individuals were captured and classified into two-sub-orders: Magachiroptera with 542 (97%) individuals and Microchiroptera with only 15 (2.7%) individuals. The lower relative abundance of insect bats could be due to their ability to echolocate and evade the nets.

Fifteen species of bats were identified including one Mindanao endemic, *Ptenochirus minor,* and seven Philippine endemic species. Relative abundance was very high in Site 1 (agricultural area) and declined with increasing disturbances and elevation.

Species richness and diversity were highest in Site 3 (950-980 masl), which could be attributed to the lower degree of disturbance and higher floral heterogeneity at this site.

Illegal logging, construction of the Iligan-Bukidnon road, and the conversion of the secondary forest to agricultural and residential areas are the major threats to the bats species in Rogongon. With these threats identified, it is apparent that there is a need to conserve the forest of Rogongon to ensure survival of the bats and other animals as well.

048

PANTALLANO, Allyn Duvin S. 2008. Of Cells and Shapes: Assessing Infrageneric Relationships of *Micrasterias* and *Pediastrum* Species Using Landmark-Based Geometric Morphometric Methods. (GT: MS Bio), 85pp.

Shapes variation of *Micrasterias* semicells and marginal cells of *Pediastrum* was evaluated using geometric morphometrics through the use of landmarks to assess the relationship among individual taxa of each genus. A superimposition method using Procrustes fitting was employed to decompose the form of the cells from its non-shape variation components. Relative Warp Analysis was used to depict variation in shape and cluster analysis to reveal groupings of individual species within both genera. Morphological trend revealed by RWA and cluster analysis describing variation among *Micrasterias* species include (a.) width of the polar lobes, (b.) depth of incision between individual lateral lobes, and (c.) depth of incision between polar and lateral lobes. For *Pediastrum* these include (a.) presence and absence of V-incision, and (b.) the width of this incision between marginal cell lobes. In this study, the morphological pattern that described variation among individual taxa of *Micrasterias* and *Pediastrum* could be used as bases for classifying group of species under to both genera.

049

QUIAO, Maria Elma D. 2005. Construction of a Partial Genomic DNA Library of *Penicillium chrysogenum* Linn. (GT: MS Bio), 89pp.

Penicillium chrysogenum has gained attraction as a laboratory specimen for biotechnology work because of its long history of application in the production of consumable products. To work with specific genes, there must be well defined, gene-sized pieces of DNA in multiple identical copies. A DNA library is a collection of cloned DNA fragments. Bulk amounts of high-quality genomic DNA were isolated from *Penicillium chrysogenum* following a liquid nitrogen-free DNA extraction. Restriction enzyme-digested genomic DNA fragments were inserted into plasmid cloning vector pBluescript. Amplification of clones was done through bacterial transformation in *Escherichia coli* DH5α. There were 160 transformed white colonies isolated after bacterial transformation. Plasmid DNA were extracted from these colonies and screened by agarose gel electrophoresis. Sixty clones were found to contain plasmids with inserts. Seven clones contain maximum estimated insert size of 10 kb while 53 have 5 kb inserts. Therefore, a total 335 kb of the genome of *Penicillium chrysogenum* is represented in the constructed partial genomic DNA library. The clone collection produced has biotechnological potential for gene screening. Moreover, commercially available genomic libraries are costly, thereby giving this study its economic value.

050

QUIJOY, D'Vincet M. 2003. Genetic Diversity within a Population of Higaunons of Rogongon, Iligan City. (GT: MS Bio), 72pp.

This study was conducted to learn the population structure of the indigenous group of Rogongon, Iligan City – the Higaunons. The group consisted of true – blooded Higaununs and those who are the offspring of a Higaunon – Christian/Muslim marriage, the Kulibugans. Results showed that homozygous recessive genotypes are prevalent in the populations of both pure Higaunons and the Kulibugans based on nine Mendelian traits. Expected heterozygous genotypes were also high in all the populations of both men and women that served as basis for the high degree of recessives in all the populations. Disorders and susceptibility to diseases like tuberculosis were also observed in the tribe. Based on surveys of the reproductive capability of the women, it is feared that the frequency of the disorders will increase due to inbreeding based on the high reproductive potential of the women. It was argued that with a population like this, it is appropriate that something should be done about the plight of this tribe. Implications of the study on the reproductive health policy of the government are discussed.

051

RIVERO, Henry I. 2004. Reproductive Anomalies in Two Teleost Fish from the Vicinity of an Industrial Zone in Iligan City. (GT: MS Bio), 196pp.

This work attempted to make a general assessment of the reproductive conditions of the two common teleost fish namely juvenile *Mugil cephalus* and an adult *Stegastes nigricans* from an industrial area in *Kiwalan,* Iligan City for three months in 2002. Of the 506 juvenile *M. cephalus,* 240 (48%) were sexually undifferentiated (unsexed), 111 (22%) were phenotypically males and 155 (32%) were phenotypically females. In 105 adult *S. nigricans,* 50 (48%) were phenotypically males, 36(34%) were unsexed and 19 (18%) had phenotypically female gonads with no significant differences except in *S. nigricans* where the number per collection date differed. On the other hand, only the female gonadosomatic indices (GSIs) of *M. cephalus* and *S. nigricans* were comparatively different. Notably high female *M. cephalus* GSI reached 10-15.4%, males had 1.8-2.3% while the unsexed *S. nigricans* hepatosomatic index reached a maximum of 4.0% or twice the reported values. Furthermore, the ovaries of juvenile *M. cephalus* and adult *S. nigricans* both showed notable inconsistencies based on their overall appearance and characteristic compared to the males. The protein profiles of liver also indicated the expression of vitellogenin (180kDa) and other interesting polypeptides in male *M. cephalus* but not in *S. nigricans,* which could be useful in a much bigger work in Iligan Bay pertaining to endocrine disrupting compounds from various sources in the locality.

052

ROBLE, Aileen Theresa D. 2001. Genetic Variability Among Biology Students of Mindanao State University-Marawi City. (GT: MS Bio), 68pp.

A survey was conducted on certain selected traits among Biology students in MSU-Marawi City. The population of the students was divided into Muslim and Non-Muslim groups. There were 343 Muslim students and 142 Non-Muslim students. The Muslim group was divided into three tribal groups; the Maranao (127), Maguindanao (120) and Tausug (96). Based on the frequencies of the recessive phenotypes, gene frequencies were calculated assuming genetic variability between the Muslim and the Non-Muslim groups. The Chi-square test showed a non-significant result for trait like earlobe attachment between Muslim and Non-Muslim group. The existence of significant deviations of observed and expected frequencies between Muslim and non-Muslim for some of the traits, reflected the breeding structures of the population such as inbreeding and non random mating behavior.

Disorders like rheumatoid arthritis, gouty arthritis and hypertension were highly correlated with blood type "O" while blood type "A" was correlated with disorders like heart disease, hypertension, anemia and gallstones. Blood type "B" was least susceptible to those conditions, which have been investigated. Blood type "AB" has a few number of cases of disorders like rheumatoid arthritis and ulcers in the small intestines.

053

ROMANO, Jeannie A. 2004. Medicinal Plants of Tacurong, Sultan Kudarat: Uses, Applications, Preparations and Diversity. (GT: MS Bio), 417pp.

A survey of availability of medicinal plants in Tacurong City, Sultan Kudarat was conducted to determine indigenous plants used by local herbalists. Through interviews and assistance in collections by local herbalists, a total of one hundred forty-nine (149) herbal plants species belonging to forty (40) genera were identified as to their uses, applications and preparations. The plants were further described based on twenty-two characters following existing published methods of identification although specific variations in characters were noted to differentiate each species. These variations in characters were further used to construct phenograms and cladograms to be able to understand degree of similarities and differences between species within families. The results of the phenotic and cladistic analysis were compared to the nature of medicinal values of the plants and results showed that some degree of relationship can be established. It is hypothesized that the evolution of herbal plants are in any way related to their medicinal values.

054

SACDALAN, Aniline D. 2004. Biomolecular Chemical Screening for Biologically Active Secondary Metabolites from Soil Fungi Isolated from Barangay Santiago Dump Site, Iligan City. (GT: MS Bio), 82pp.

Nine mold isolates exhibiting antibacterial properties against *Staphylococcus aureus, Bacillus, Proteus vulgaris* and *Pseudomonas aeruginosa* were isolated from Barangay Santiago garbage dump site, Iligan City. Screening for novel biologically active metabolites with DNA-binding properties using biomolecular-chemical screening on a two-dimensional thin-layer chromatography showed that only eight components of the separate extracts have affinity to DNA. Binding behavior of the extracts of isolates to DNA points to the possibility that these compounds have potentials for medical and therapeutic purposes. Identification of the molds using its reproductive structures was up to the genus level and the isolates belong to genus *Penicillium* sp., *Cladosporium* sp., *Fusarium* sp. and *Aspergillus* sp.

055

SAGUINDANG, Franelyn J. 2002. The Avifauna of Mt. Kimangkil Range Mindanao Island, Philippines. (GT: MS Bio), 172pp.

An inventory of the avifauna of Mt. Kimangkil Range, Mindanao Island was conducted on May 19 to June 17, October 24 to 28 and on December 19-22, 2000. Four sampling sites at elevations of 1,000-1,250 masl, 1,300-1,350 masl, 1400-1,500 masl and 1,700-1,800 masl were established. Mist netting and direct observation results showed 42 species of birds including one undescribed species belonging to 11 orders, 22 families, and 36 genera. Out of the 42 species recorded, 28 are Philippine endemic species, 11 of which are endemic to Mindanao. Results showed that endemism increases with elevation so that sampling site 4 (1,700-1,800 masl) has the highest degree of endemism. There were six threatened (one critical, one endangered and four vulnerable) and two near threatened species recorded in the area.

Sampling site 2 (1,300-1,350 masl), with the best habitat quality has the most number of species of birds. Species richness, based on capture results, decreased with increasing elevation. Moreover, sampling site 1 (1,000-1,250 masl) has the highest species diversity while sampling site 4 (1,700-1,800 masl), has the lowest species diversity. The most sampling sites, based on Sorensen's Similarity Index, are sampling sites 2 (1,300-1,350 masl), and 3 (1,400-1,450 masl) with 62% similarity of species.

This study was able to discover that Mt. Kimangkil range is a home to many species of birds that are endemic and globally at risk. Hunting and conversion of the logged over forest into an agricultural area are two of the biggest threats that this area is facing. This conveys that there is a need to protect and conserve the forest of Mt. Kimangkil Range because in doing so, these important species are protected from possible extinction caused by destruction of the habitat.

056

SINCO, Astrid L. 2002. Species Composition and Diet Analysis of Fishes from

Upstream Sites of Cagayan de Oro City River Systems. (GT: MS Bio), 106pp.

A study on species composition and diet analysis of fishes from upstream sites of Cagayan de Oro river systems was conducted from May to September 2001. Six sampling sites were established namely Agusan, Kabula, FS catanico, Indahag, San Simon, and Tablon rivers. The fishes belonged to the following family: Ambassidae, Eleotridae, Channidae, Gobiidae, Clariidae, Scorpinidae, Kuhlidae, Mugilidae, Cyprinidae, Rhyacichthyidae, Scatophagidae, and Terapontidae. Family Eleotridae and Gobiidae had the most number of fish species while the other families consisted only of one or two kinds of fishes. The collected fishes consisted of nineteen species namely: *Ambassis* sp., *Belobranchus belobrancha*, *Channa striata*, *Chonophorus melanocephalus*, *Chonophorus ocellaris*, *Clarias batrachus*, *Eleotris fusca*, *Eleotris melanosoma*, *Glossogobius celebius*, *Gymnapistes niger, Hypseleotris agilis, Kuhlia marginata, Liza* sp., *Puntius* sp., *Rhyacichthyes aspro, Scatophagus argus, Sicyopterus extraneus, Therapon cancellatus, and Therapon jarbua.* In terms of diet composition, the gut content of fishes consisted mainly of phytoplankton, plant debris, insect part or appendages, zooplankton, crustacean part, sediment, mud, algae, bones, decapod, detritus, earthworm, eggs, fish remains, freshwater crab, gastropod, nauplius, nematode, seeds, shell remains, shrimp and small fish.

057

SOLON, Christine Cherry E. 2000. Morphologic and Genotypic Variability in Local Populations of *Aedes aegypti* Linn. (GT: MS Bio), 94pp.

Populations of *Aedes aegypti* Linn. larvae were collected near human dwellings of selected areas in Iligan City from May 1998 to December 1999. Forty-five individuals were used for the assessment of developmental expression of esterase (genotypic) and the remaining individuals were used for morphologic study. Genotypic variation was established based on the results of starch gel electrophoresis and morphologic variation was assessed microscopically by counting the pectin teeth and comb scales in the fifth instar larvae. Esterase results were analyzed through cluster analysis. Results on morphologic study were log-transformed, subjected to analysis of variance and cluster analysis. Except for minor differences in the number of pectin teeth and comb scales, it can be generally said that morphologically there is no significant variation that exists between areas but marked variability was observed within populations. On the genotypic aspect, there is no definite esterase pattern that was observed in the three developmental stages examined, however, all areas and stages have Esterase 3 in common. The results of morphologic and genotypic assessments therefore show that the variability that exists among *A. aegypti* mosquitoes is not influenced by geographic distance. From these results it is evident why any form of mosquito control done is not always effective to all *A. aegypti* mosquitoes. Therefore, the practical way to manage these pests is to destroy breeding areas.

058

TAGANAS, Wilma R. 2000. Isolation and Identification of Hydrocarbon-Degrading Fungi in Selected Sites of Iligan City and Misamis Oriental. (GT: MS Bio), 50pp.

Water and soil samples were collected from four different sampling sites in Iligan City and Misamis Oriental and analyzed for the presence of hydrocarbon-utilizing fungi. A total of 16 fungi with potential to degrade the test hydrocarbons, namely; diesel oil, coal tar and paint thinner were isolated and purified. Of the 16 isolates, six were molds and 10 were yeasts.

The pure fungal isolates were further screened for their hydrocarbon degradative ability by inoculating them in basal salts liquid medium containing the test hydrocarbon as the only carbon source. Hydrocarbon degradation was indicated by the growth of the isolates which was measured as the increase in cell mass and turbidity. Results showed the growth of all the fungal isolates in the medium with the test hydrocarbon (treated) compared with the medium without the test hydrocarbon (control).

The 16 fungal isolates that have the ability to degrade the test hydrocarbons were identified. The mold isolates were identified based on their morphological and cultural characteristics while the yeast isolates were identified using API 20 CAUX. The mold and yeast isolates were probably related to *Aspergillus niger, Penicillium* sp, *Trichosporon cutaneum, Candida humicosa, Rhodotorula glutinis, R. rubra, C. albicans, C. glabrata, C. rugosa, C. maris,* and *Cryptococcus laurentii.*

059

TORRES, Mark Anthony J. 2006. Intra- and Interspecific Variations in the Shapes of the Leaves and Corona of Selected Philippine Hoyas (*Asteridae, Asclepiadaceae). (GT: MS Bio), 213pp.

Quantitative evaluation of the shapes of the leaves and corona of the flowers of selected Philippine Hoyas was done using image analysis and Elliptic Fourier analysis to give light into the nature of these plants and their systematic relationships. To do this, the shapes of both structures were summarized using chain-coding techniques. This procedure eliminated the size component of the two biological forms. Then, the chain codes were converted into Elliptic Fourier (EFA) descriptors using a mathematical algorithm. The information contained in the EFA descriptors were summarized through principal component analysis based on a variance-covariance matrix of the coefficients. The scores of the components were then used in subsequent statistical analyses. Results showed wide variations in the shapes of the leaves and corona among the species especially in the leaf aspect ratio, shapes of the base and apex, location of the leaf centroid, shape and relative sizes of the corona hood and the amount of asymmetry in leaf and corona traits. Hierarchical cluster analysis of the mean coefficients of the EFA descriptors were also used to determine the systematic relationships of the different species and the results are discussed in the light of morphological integration and evolution. Results also showed that Elliptic Fourier analysis is very effective in illustrating graphically and statistically variations in the shapes of biological structures.

060

VALDEZ, Sasha Anne L. 2003. Isolation and Characterization of Oil-Degrading Bacteria from Selected Sites in Iligan City and Misamis Oriental. (GT:

MS Bio), 84pp.

Water sample collected from three sampling sites in Iligan City and Misamis Oriental were used to isolate bacteria with the ability to degrade the added test hydrocarbons (diesel oil and motor oil) and these were inoculated immediately after collection into mineral medium (MM) containing the test oils. To ensure growth of oil-degrading bacteria a series of three transfers into MM was done.

A total of 34 bacterial isolates with the potential to degrade the test hydrocarbons, namely; diesel oil and motor oil were isolated and purified. Of the 34 isolates, 15 were isolated from sampling site 1; 12 from sampling site 2; and, 7 from sampling site 3. Further analysis of all bacterial isolates from all sampling sites based on cultural and morphological characteristics using Biodiversity professional software as a tool such as Bray-Curtis Cluster Analysis (Single Link) showed that there are eight probable bacterial species isolates each cluster having 100% similarity. The bacteria isolated are all gram positive cocci and rods.

The bacterial isolates possibly from the genera *Arthrobacter, Bacillus, Brevibacterium, Peptococcus* and *Sarcina* were characterized based on cultural and morphological characteristics.

The bioremediation potential of the isolates was determined by measuring the bacterial growth using the turbidimetric method. The isolates showed a greater total percent increase in absorbance in mineral medium treated with diesel oil as compared with motor oil.

Upon analysis of all the observed eight classes of bacteria based on cultural and morphological characteristic, Cluster Analysis have shown that they have different or varying efficiencies in degrading the test hydrocarbons based on their absorbance reading which may indicate that they may belong to the same species but are of different strain.

061
VALERA, Angeli A. 2007. Phenotypic Profile of Heterotrophic Bacteria in *Penaeus Monodon* Pond Sediment, Rearing Water and Water Source in One Rearing Cycle. (GT: MS Bio), 121pp.

Phenotypic profile of heterotrophic bacteria in *Penaeus monodon* pond sediment, rearing water and water source of BFAR-NFRDI ponds at Pacita, Lala, Lanao del Norte was determined within one rearing cycle. Sampling was done weekly in the four designated sites: site A (water source), site B and C (ponds with *P. monodon*) and site D (pond without *P. monodon*). Composite samples of water and sediment were collected and cultured in nutrient agar medium by serial dilution and streak plate method. Isolates were then purified and subjected to biochemical tests.

A total of 185 isolates were obtained. Gram-negative bacteria were higher in sediments (58-63%) than in the water samples (54-60%). Vibrionaceae had the most number of isolates in water samples (7 to 13 isolates). Micrococcaceae had the most number of representative isolates in the sediments of site B and C. It also had the highest

density in the sediments of the unreared pond in several weeks. Decrease in both diversity and evenness in the rearing water were observed after introduction of feeds on the 4th week. In this period, Vibrionaceae and Bacillaceae dominated in the ponds (B and C). Diversity and evenness decreased on the fifth week in sediments of sites B, C and D. The abundance of bacterial groups is influenced by presence of other biotic components, prawn rearing practices, and water quality within the ponds.

Ratio of Vibrionaceae against other bacterial groups was generally higher in the rearing water than the pond sediments. In the presence of Pseudomonadaceae, Vibrionaceae percentage abundance in sediments has a maximum of only 30%, suggesting the group's relative importance in the pond system.

062

VILLACORTE, Mylah D. 2002. Bioassay of Extracts from Whole Plant Black Nightshade *Solanum nigrum* Linn. (GT: MS Bio), 166pp.

Solanum nigrum Linn., commonly known as black nightshade, was used to determine the plant's biological activity using methanol, ether and chloroform as solvents to obtain the six fractions. From the crude methanol extract, acidic ether (Fraction 1), basic ether (Fraction 2), neutral ether (Fraction 3), acidic chloroform (Fraction 4), basic chloroform (Fraction 5) and neutral chloroform (Fraction 6) were obtained. The water extract obtained from *Solanum nigrum* Linn was also assayed for comparison and for the benefit of the local community. Fractions were tested against *Culex* sp. larvae, *Oreochromis niloticus* fry, gram negative and gram positive bacteria and adult *Mus musculus*. Statistical computations (Probit analysis) showed toxicity against *Culex* sp using basic chloroform (Fraction 5) with an LC_{50} of 0.889 for 96 hours. Fry of *O. niloticus* was greatly affected by acidic chloroform (Fraction 4) with an LC_{50} of 9.07 for 96 hours. *Bacillus subtilis*, *Bacillus cereus*, *Staphylococcus aureus*, *Escherichia coli*, *Proteus vulgaris* and *Serratia marcescens* were used to test for antibacterial activity of different extracts or fractions showing no zones of inhibition between fractions compared to the control using streptomycin, chloramphenicol and erythromycin. Hematological study such as hematocrit and white blood cell count of adult *Mus musculus* showed significant difference in both tests compared to the control groups using statistical analysis. Abnormalities observed in the white blood cells includes nuclear clumping, contracted cells (pyknocytes), disintegration of the neutrophil membrane and hyper segmentation of the neutrophils. Abnormalities observed in erythrocytes were rouleaux and the presence of echiocytes. Spectrophotometry revealed three spectra in neutral chloroform with λ - max of 247 nm.

063

WARGUEZ, Dennis A. 2001. The Reptiles of Mt. Kimangkil Mindanao Island Philippines. (GT: MS BIO), 118pp.

An inventory of reptiles in Mt. Kimangkil of Mindanao Island in the Philippines was conducted from May 21- June 16 and October 21-30, 2000. The cruising method was used to sample a total of 132 reptiles represented by 17 species, among which are Philippines endemics of eight (8) lizards and five (5) snakes. The pattern of differentiation of the reptiles was examined based on the cluster analysis of their body proportions.

Altitudinal distribution and habitat preferences of the collected species were noted while preliminary data on their breeding season were collected. Overall assessment revealed that the presence of a large number of Philippine endemics in Mt. Kimangkil indicates that the area is of excellent quality providing habitat to a large number of reptiles including *Dasia griffini* and *Hologherrum philippium* which are known to exist only in Palawan and Luzon, respectively.

The data gathered in the present study are the first ever established for Mt. Kimangkil setting a milestone in the discovery of possible new subspecies in the area.

064

WEE, AILEEN B. 2002. Aspects on the Biology and Ecology of Snakeskin Gourami (*Trichogaster pectoralis)* and its Socio-Economic Importance in Midsayap, Cotabato. (GT: MS Bio), 62pp.

Investigation of the five (5) barangays of the southern portion of Midsayap related to the abundance, ecology, reproductive biology and socio-economic impact of snakeskin gourami (*Trichogaster pectoralis)* was done. Field surveys and determination of physico-chemical parameters were done during daytime in three (3) stations of approximately 10 meters apart, at depths ranging from 1.7-2.4 m within the five (5) selected barangays namely Sambulawan, Nabalawag, Tumbras, Lomopog, and Mudseng. Sampling was done once a month from August to October 2000. Snakeskin gourami (*T. pectoralis)* were observed to be reproductively active and grow abundantly within the temperature of 27-30 ^{0}C, pH value between 6.7-7.7, dissolved oxygen (DO) of 3.5-8.5 mg/mL, CO_2 ranging from 40-48 ppm. Two hundred six (206) fish samples were brought to the laboratory for biological investigations. Sex ratio using Z-test revealed that the proportion of male and females has no significant difference at Z<1.96. Both male and female populations established a pattern of reaching sexual maturity between 14-15 cm as revealed in scatter plot of regression analysis. Gonadosomatic Index (GSI) value of female is between .002-.004 and 0.37-.055 for male *T. pectoralis,* which is highly significant at a level of 0.0033*** of P ($\leq$ 0.01). Results of the semi-structured and informal interviews revealed that snakeskin gourami is abundant during the months of July to October, in the Lomopog and Nabalawag areas.

065

YEE, Jonie C. 2005. Esterase Heterogeneity in Selected Populations of Three Clupeid Species. (GT: MS Bio), 73pp.

Three selected clupeid species of locally marketed herring found in three selected sites in Iligan Bay (Oroquieta, Linamon, and Initao) were investigated for their esterase isozyme expression.

Using agarose gel electrophoresis esterase isozyme expression of the muscle, heart, and liver was scored and interpreted to determine the possible control of esterase isozyme genes and genetic differences among, between and within populations of *S.*

longiceps, S. abella, and *D. acuta* was all shown in a dendrogram.

Different tissue esterase isozyme expression resulted to different groupings of the three species in the selected sites for between and among species populations. However, when evaluated for within species, the resulting dendrogram shows that clupeid species from Linamon and Initao are more closely related than those from the Oroquieta area.

The present result are preliminary for the selected clupeid species in Iligan Bay, give initial diversity and genetic relationships and also warrant further study using morphological characters and more sensitive isozyme markers.

Master of Science in Chemistry (MS Chem)

001

ADARNA, Primitiva C. 1998. Analysis of Trace Monochlorophenols by Molecular Spectrophotometry. (GT: MS Chem), 69pp.

A study on preconcentration using XAD-7 resin and analysis of trace monocholorophenols by Molecular Spectrophotometry was conducted.

The detection limit for 2-cholophenol, 3-chlorophenol and 4-chlorophenol by UV-Visible is 147, 176 and 94 ppb respectively, XAD-7 can preconcentrate trace 2-chlorophenol, 3-chlorophenol and 4-chlorophenol 64.9, 64.5 and 40.0 times respectively.

Fluorescence Spectrophtometry can quantify 4-chlorophenolusing its native fluorescence. Detection limit is 15 ppb. This method can quantify the 4-chlorophenol in trace quantities in sediment samples using the same preconcentrate technique.

002

ALMEDA, Ma. Cecilia V. 1998. Organochlorine Pesticide Residues in Three Leafy Vegetables in Iligan City Markets. (GT: MS Chem), 73pp.

Samples of three leafy vegetables, cabbage (*brassica oleracia capitata linn.*) and the two varieties of pechat (*barssica campestris linn.* and *barssica chinensis linn*) were analyzed by capillary gas chromatography with electron capture detector to determine the presence of residues of organochlorine pesticides α-BHC, γ-BHC, β-BHC, δ-BHC, aldrin, heptachlor, epoxide, endosulfan I and II, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, endrin, endrin aldehyde, endrin ketone and metoxychlor.

The organochlorine pesticides (OCP) found in cabbage were γ-BHC, β-BHC,

heptachlor, δ-BHC, aldrin, heptachlor, heptachlor epoxide, endosulfan I, 4,4'-DDE, dieldrin, 4,4'-DDD, endrin aldehyde and endosulfan sulfate. The heptachlor was observed to exceed the tolerance level in some samples and endrin and endrin aldehyde were present although these OCP's are prohibited in any raw agricultural commodity. In Chinese pechay, the OCP detected were α-BHC, γ-BHC, β-BHC, aldrin, heptachlor epoxide, endosulfan I, dieldrin, endrin, 4,4'-DDD, endosufan II, 4,4'-DDT, endrin aldehyde, and endosulfan sulfate. Heptachlor and β-BHC were found to exceed the tolerance level and endrin and endrin aldehyde were also present in some of the sample although these are prohibited in any raw agricultural product. In native pechay, only heptachlor was found. However, in some samples this OCP was found to be above the tolerance level.

003
APILAN, Rocheli T. 1999. Investigation of Eutectic Mixtures for Solar Latent Heat Storage. (GT: MS Chem), 85pp.

The binary eutectics involving salt hydrates, such as, $NaC_2H_3O_2 \bullet 3H_2O$, $Mg(NO_3)_2 \bullet 6H_2O$, $Al(NO_3)_3 \bullet 12H_2O$ and anhydrous nitrates, such as, NH_4NO_3 and $NaNO_3$ were investigated for low temperature (25 to 50°C) latent heat storage. Their potential as energy storage materials were evaluated based on their thermodynamic, kinetic and chemical properties. The eutectic composition and melting points were determined using the conventional freezing point depression method. The enthalpies of fusion (ΔH_{fus}) and heat capacities (C_p) were measured using a differential scanning calorimeter (DSC).

Out of the 18 binary mixtures tested, three of them gave eutectic mixture in the desired temperature range. These are Al $(NO_3)_3 \bullet 9H_2O$ – $Kal(So_4)_2 \bullet 12H_2O$ – $Mg(NO_3)_2 \bullet 6H_2O$. the third system exhibited promising features among the three binaries. It has favorable range of the fusion temperature and showed no deterioration of its C_p and ΔH_{fus} after 16 melt-freeze cycles.

It was also confirmed that the two systems, $NaC_2H_3O_2 \bullet 3H_2O$ – urea and $NaC_2H_3O_2 \bullet 3H_2O$ – tartaric acid, believed to be suitable heat storage melted incongruently with phase separation.

004
AUTOR, Janet R. 2000. Isolation and Characterization of Selected Metabolites from Marine Red Algae. (GT: MS Chem), 89pp.

A mixture of two phthalate esters, didecyl phthalate and dioctyl phthalate, cholesterol, and several compounds of fatty acids were obtained from the extract of marine red algae *Gracilaria arcuata* collected in abundance from the shores of Magoong, Linamon, Lanao del Norte, located in the island of Mindanao, Philippines. The Isolation of these compounds was done by extraction with methanol, partition with dichloromethane, fractionation and purification using a series of gravity column chromatography and high-performance liquid chromatography with ethylacetate in hexane and diethyl ether in hexane as solvents. Characterization of these compounds was achieved using the spectral data obtained by UV, IR, 1D- and 2D-NMR, and mass spectroscopy.

The Brine Shrimp bioassay showed that the two phthalate esters have 100% bioactivity while cholesterol and saturated fatty acids displayed no activity.

005

AUTOR, Nelia G. 2005. Recovery and Characterization of Oil from Used Engine Lubricants. (GT: MS Chem), 97pp.

Used oil is a high-volume recyclable commodity that can be turned from being a waste into useful products. An industrialized city like Iligan generates about 20,000 liters of waste lubricants in three months and this may find its way into waterways in a manner harmful to the environment. In this study, used oil from two brands of lubricant was extracted with supercritical CO_2 at 300atm and 60^oC and was found to generate maximum oil yield of 76.67% from used oil of brand "A" and 77.32% yield from brand "B".

Analysis of the extracts showed comparable density, refractive index and heating value for both the extracts from used and unused oil of each brand. The properties of the lubricant that were significantly changed during engine use were viscosity, %Sulfur, and concentration of metals like Ca, Zn and Ba. There was also a significant decrease in the amount of paraffinic hydrocarbons from 73.26% to 63.46% for brand 'A" and a decrease from 65.40 to 61.81% for Brand "B".

The extent of degradation in the used oil was verified using Fourier-Transform Infrared (FT/IR) method of analysis. The FT/IR spectra of the recovered oil showed the presence of –C=O and -N=O functional groups that were not seen in the spectra of the unused oil. The extract from used oil of brand "B" showed acceptable indices of oxidation, nitration and sulfate formation whereas only the nitrate index of 43 absorbance per cm (A/cm) for the extract from used oil of brand "A" was above the set limit of acceptability at 25 A/cm.

006

BAJO, Lydia M. 1994. The Effect of Metabolism on Antigenotoxic Activity of L-Phenylalanine. (GT: MS Chem), 70pp.

Studies to investigate the effect of metabolism particularly hydroxylation and decarboxylation on the antigenotoxic activity of L-phenylalanine were conducted at the University of the Philippines Bio-Organic Laboratory, Diliman, Quezon City using the recassay (Kada, 1980) and micronucleus test (Schmid, 1976).

L-phenylalanine and its metabolic by-products L-tyrosine and dopamine, did not posses direct DNA damaging capacity on *Bacillus subtilis* tester strains. However, they were able to reduce significantly the genotoxicity of quinoline, a potent direct mutagen.

The three test compounds did not exhibit chromosome breaking effects. When simultaneously administered with genotoxins such as benzo(a) pyrene (BP),

methylmethane sulfonate (MMS), and dimethylnitrosamine (DMN), these were capable of reducing the number of micronucleated polychromatic erythrocytes (MPCE's) induced by each of the three mutagens. This indicates their inhibitory activity on the chromosome breaking effects of the benzo(a)pyrene, methylmethane sulfonate, and dimethylnitrosamine.

Hydroxylation did not increase significantly the antigenotoxic activity of L-phenylalanine. However, decarboxylation reduced the antigenotoxic activity indicating that the carboxylate group may be responsible for their significant antigenotoxic activities.

007

BALANAY, Gay A. 2006. "Spectrophotometric Method for the Measurement of Phenols Based on a Sweet Potato Tissue Bioreactor ". (GT: MS Chem), 88pp.

A Spectrophotometric method is proposed for the determination of phenols on a sweet potato root (*Ipomoea batatas* (L.) Lam.) bioreactor. The sweet potato root was used as an enzymatic source of polyphenol oxidase (PPO; EC 1.14.18.1) that catalyzes the oxidation of phenols to oquinones which can couple to each other producing melanin-like pigments with a strong absorption at 470 nm. An increasing enzymatic activity was observed with increasing mass of the tissue packed in the bioreactor which showed stability for 1 hour. At the optimum conditions (050 g sweet potato tissue, 0.10 M phosphate buffer (pH 70) at 25°C, and a flow rate of 22 mL min^{-1}), pure phenol samples of dopamine, poyphenon-60, phenol, hydroquinone, and pyrocathechol were used to test the applicability of the developed method. The calibration graph is linear in the range of 0.10 mM (regression coefficient, r^2= 0.9976). Result showed that there no significant difference on the prepared concentration and on the measured concentration, except for polyphenon-60. The phenol compound present in polyphenon-60 probably enhanced the formation of the products thus yielding higher results. The proposed method was further validated by applying it in the determination of phenols in real samples (phenol, maxi-peel, green iced tea and dopamine injection) and comparing it with the standard method (APHA Method 9066 [60]). The results obtain from the developed method are in close agreement with the standard method (t=1.21, p=0.3143). The procedure has a detection limit (three times the signal blank divided by the slope) of 0.08 mM.

008

BALANAY, Mannix P. 2003. Protein Profile of the Heavy – Metal (Pb, Cd) Binding Motif and the Heavy – Toxic Metal Response of Marine Sediment Bacteria from Iligan Bay. (GT: MS Chem), 245pp.

Three marine sediment bacteria coded in this study as BBPb-1, BBPb-2 and BCCd-1 correspondent to the *Bacillus* sp 2 and *Chryseomonas* sp in the previous study of A. C. Balala [1], exhibited positive growth response at the optimum metal concentration of 10 ppm Pb, 20 ppm Pb and 10 ppm Cd respectively and showed certain degrees of toxicity beyond the optimum. Biosorption study resulted to 94.46 ± 1.69%, 63.62 ± 0.09% and 77.01 ± 2.40% biosorption efficiency for BBPb-1, BBPb-2 and BCCd-1 respectively using the metal – specific and more sensitive Anodic Stripping Voltammetry for the

determination of metal. The extent of biosorption efficiency by the three bacterial strains were found to corroborate linearly with the concentration of metal uptake in the cell and the concentration of metallothionein (MT) being expressed in the bacterial cells. Quantification of the metallothionein using Pulse Differential Polarography technique found 26.6% MT higher for the Pb-dosed BBPb-1 bacteria which has the highest biosorption efficiency. BCCd-1 bacteria had 10.6% MT content while BBPb-2 bacteria was found to expressed the least MT at 7.2% MT content as it has least biosorption efficiency.

The SDS – PAGE protein profile for all the three bacteria showed an increase in the protein bands from ~ 39 kDa to ~ 42 kDa. The results support the uptake of the metal in the cell which interacted with the proteins to form the metal – protein complex. Database searches for the protein using ExPASy Molecular Biology Server (Swiss – Prot and TrEMBL Database) [2] closely match the parameters for the Chaperon Protein DNAJ. A simulated molecular modeling was performed for the putative fragment (amino acid residues 135 – 209th of the Chaperon Protein DNA: containing the metal – binding motif using the available online software's Geno3dD2 [3] and Swiss – PdbViewer V 3.7 [4]. The optimized structures of the modeled putative protein fragment were found to have a stable conformation based on the energy output (– 3190.58 kcal/mol) and the optimized geometric parameters. The stabilization energy did not differ significantly (energy range: – 2087.2 to – 2239.4 kcal/mol) when the putative protein fragment was modeled to interact with different metals (Zn, Cd, Sn and Hg) using PC Spartan Pro V1.0.7 [5]. This suggest the conformational flexibility of the protein when interacting with different metals. The simulated modeling of the amino acid fragment facilitate in the understanding of the probable interaction of the metal with the protein to form the metal – protein complex.

The data obtained in this research can be used in the formulation of good and efficient strategy and effective engineering design of bioremediation tool to decontaminate the heavy – metal pollutants present in the ecosystem. The amino acid fragment simulated in the molecular dynamics correlations analysis can pave the way to the formulation of synthetic peptides or natural extracts for remediation purposes.

009
BATOY, Gina V. 2005. Purification and Characterization of Lipase from Haustorim of Germinating Coconut (*Cocos Nucifera*). (GT: MS Chem), 123pp.

Crude lipase was extracted from haustorium of germinating coconut using phosphate buffer as extracting medium and was purified to apparent homogeneity by 90% (NH)$_4$SO$_4$ precipitation and affinity chromatography. The purified lipase (PL) bound to the heparin ligand of the column was eluted by increasing the ionic strength of the binding buffer from 0.01 M NaCl in phosphate buffer (pH7) to 0.5 M NaCl in phosphate buffer (pH7). This indicates that PL contains heparin-binding site and the lipase-heparin ligand interaction is electrostatic in nature.

The obtained PL has specific activity 5667 U/mg with 411-fold purification and a yield of 11.67 %. SDS-PAGE analysis of PL showed single protein band with estimated molecular weight of 56.6143 kDa.

The crude lipase extract (CLE) and PL have maximal activities at pH 7 and 30 minutes incubation time. Purification shifted the maximal activity of CLE at 40°C to 60°C.

At 0.005 mmol, their activities are enhances greatly by Zn^{++} and to a lesser extent by Ca^{++} and Mn^{++}. Hg^{++}, Fe^{++}, and Mg^{++} inhibited lipase activity. After 27 days, CLE and PL retained 55.16% and 49.91% respectively of its initial activities K_M and V_M values of PL are 0.6667 M and 3333.5 U/mg, respectively. Gas chromatographic analysis on the hydrolysis products of coconut oil by PL shows 10 fatty acids with lauric acid (49.27% as the most abundant.

010
BUNCALES, Emma O. 2001. Organochlorine Pollution of Pulangi River in Maramag, Bukidnon. (GT: MS Chem), 94pp.

Samples of fish (*Tilapia nilotica*), clam (*anodonta* s.p.) and sediment were analyzed by capillary gas chromatography with electron capture detector to determine the organochlorine pesticides residues α-BHC, β-BHC, γ-BHC, and ς-BHC, aldrin, dieldrin, heptachlor epoxide, endosulfan I, endosulfan II, endosulafn sulfate, 4,4'-DDT, 4,4'-DDD, 4,4-DDE, endrin, endrin aldehyde, endrine ketone and metoxychylor.

The organochlorine pesticide (OCP) found in fish samples were γ-BHC, β-BHC, heptachlor, ς-BHC, heptachlor epoxide, endosulfan I, 4,4-DDE and endosulfan II were observed to exceed the tolerance level in Pandapatan during the first sampling period. In clam samples, the OCP detected were α-BHC, β-BHC, γ-BHC, and ς-BHC, heptachlor, endosulfan I, and endosulfan II found in Tubigon exceeded the tolerance level during the second sampling period. In sediment samples, β-BHC, heptachlor, endosulfan I, and endosulfan II were found to be present. Only endosulfan II was detected above the tolerance level in all sites during the first and the second sampling periods.

011
CABALUNA, Ancella S. 2000. Preconcentration and Analysis of Trace Chromate/ Dichromate. (GT: MS Chem), 66pp.

The study deals with the method developed to preconcentrate trace amounts of chromium in the form of chromate or dichromate ions. Thirty milligrams of activated carbon (AC) was used to selectively separate and concentrate the ions from a sample solution pf pH 3.00 by adsorption. The adsorbed ions on AC was leached with 3.00 MNaOH solution and analyzed using UV – VIS spectrophotometric method.

The UV – VIS spectrophotomeric method employed for the analysis of chromate/ dichromate ions as dichromate – diphenylcarbazide complex, $[Cr(HL)_2]^{+4}$ has detection limit of 0.026 ppm. This necessitates the preconcentration of trace levels of the chromate/ dichromate ions to raise the concentration level to a level equal or more than the detection limit.

With standard dichromate sample, the preconcentration method resulted to an average of 99.34% recovery of the ions at the optimum conditions applied. The method was also applied to real sediment samples obtained from three different sites along Iligan

Bay and found to give reliable results verified by standard addition method.

012

CAMINOS, Dorothy P. 2005. Assessment of Concentration Levels of Heavy Metals in Selected Fish Species from the Macajalar Bay Area in Misamis Oriental. (GT: MS Chem), 137pp.

Concentration levels of zinc, lead, copper, chromium and cadmium in the edible and inedible parts of different fish species from three sampling sites in Macajalar Bay Area and one in Camiguin Island were determined using anodic stripping voltammetry to assess the extent of metal contamination on fish in the area. The concentration levels of metal analytes in edible parts were compared to the maximum permissible levels set by authorities.

Concentration levels in microgram per gram (μg/g) or parts per million (ppm) were generally higher in the inedible compared to the edible parts of fish. Average concentration ranges for zinc metal were from below detection limit to 21.08 and 31.34 μg/g wet basis (26.89 and 47.84 μg/g dry basis) in edible and inedible parts, respectively. Lead was not detected in the edible part while the average concentration range in the inedible part is from below detection limit to 0.770 μg/g wet basis (26.89 and 47.84 μg/g dry basis). Average copper ranges from below detection limit to 26.826 and 33.901 μg/g wet basis (34.22 and 51.76μg/g dry basis) in the edible and inedible parts, respectively. Cadium and chromium concentrations were below detection limit in both parts during the two sampling periods. Concentrations of metal analytes in fish wet basis were used in the subsequent calculation of bioaccumulation factors (BAF).

Copper metal in the edible parts of fish exceeded the maximum permitted concentration set by Australia / New Zealand Food Authority (ANZFA) and the maximum permissible levels in water supporting aquatic life set by the U.S. Environment Protection Agency (U.S. EPA). Zinc in edible parts of fish exceeded the maximum permissible levels of trace metals for water suitable for fish/shellfish growth set by the Development of Environment and Natural Resources (1990).

Metal levels in water were also determined to assess the bioaccumulation factor (BAF) of analyte metals in fish. Mean concentrations were 0.075 μg/mL and for zinc, lead and copper respectively. The mean zinc and lead concentrations in water were below the maximum permissible levels set by the U.S. EPA and by the DENR while the mean copper concentration exceeded the permissible level in water supporting aquatic life set by the U.S. EPA. Other metals such as cadium and chromium were below the maximum permissible limit set by the agencies.

Bream ("Bodbod"), long-nosed trevally ("Trakito") and parrot fist ("Molmol") were found to exhibit possible bioaccumulation for metal analytes. Bream has the potential to bioaccumulate zinc (BAF=120.09) and copper (BAF=130.67); parrotfish for copper (BAF=159.0).

013

CHUNG, Wilfredo C. 1999. A B Initio and Density Functional Studies on Flouroformic Acid and Its Ionized and Protonated Forms in the Gas Phase. (GT: MS Chem), 92pp.

Two distinct intramolecular gas-phase dissociation pathways of ethyl fluoroformyl radical cation ($FCOOCH_2CH_3^{\bullet+}$) are studied using conventional *ab initio* and density functional techniques.

In one path, α-distonic radical cation undergoes barrierless isomerization to a more stable γ-distonic enol form $FC^+(OH)OCH_2CH_2^{\bullet}$. This is followed by a rate-determining self-induced cleavage of the ester linkage yielding $FCOOH + C_2H_4^{\bullet+}$ in the second step of an Ei scheme which is at the same time the first of an E1 β-elimination mechanism. In another channel, the ester linkage is immediately broken in a rate-determining E1 step producing $FCOO^{\bullet}$ and $C_2H_5^+$ which reacts further in a bimolecular mechanism to yield the same intermediates ($FCOOH + C_2H_4^{\bullet+}$) as the enol path. Both pathways are terminated by slow elimination of a proton from $C_2H_4^{\bullet+}$ by FCOOH, which acts as a base.

The above conclusions were drawn from the results of density functionals (UB3LYP/ 6-31G**) calculations as the conventional *ab initio* treatment [UHF/ 6-31G*] and UMP2(Full)/ 6-31G**] gave erroneous energetics due to heavy spin contamination in the wave function.

Substantial details on molecular structure, reaction mechanism and energetics are also presented.

014

DE LA SEÑA, Pilar C. 2002. Bioactivity-Guided Isolation and Partial Characterization of Metabolites from the Marine Sponge. (GT: MS Chem), 122pp.

Marine organisms have proven to be potential sources of natural products with novel chemical structures and diverse biological activities. A number of metabolites from the said sources have been shown to have insecticidal, antitumor, antineoplastic, cytotoxic, antileukemic, antifungal, and antibacterial properties. This study revealed the presence of antimicrobial substances in extracts from the marine sponge *Thorecta* sp. collected in the surrounding subtidal waters of Mantigue islet, Camiguin, Philippines. The 3:1 v/v methanoltoluene extracts inhibited the growth of six test organisms: two Gram-positive bacteria, *Staphyloccus aureus* and *Bacillus subtilis,* two Gram-negative bacteria, *Escherichia coli* and *Pseudomonas aeuruginosa*, and two fungal species, *Aspregillus niger* (mold) and *Saccharomyces cerevisae* (yeast), in the paper disc diffusion assay.

Bioassay-guided fractionation by gel filtration chromatography using Sephadex LH-20 yielded two bioactive products that precipitated out of concentrated methanolic solution. The said compounds were purified by repeatedly washing with 1:1 v/v toluene-methanol. The two compounds, labeled Compound A and Compound B, have similar IR and UV-Vis spectra. Their high performance liquid chromatograms taken at UV λ_{max}

346nm, showed only one major peak, indicating their purity. The two compounds likewise have the same molecular weight, 245, as deduced from their EST[+] and FAB mass spectra. The H-H COSY, HMBC and HMQC NMR spectra of the two compounds showed remarkable similarities. Based on the initial spectrometric data, partial structures of the two compounds have been postulated. Both have the same core structure and fall under the peptide group of compounds that are known to occur in some sponges. However, the two compounds showed noticeable differences in their ^{1}H and ^{13}C NMR spectra. Further, the two isolates exhibited a marked difference in their bioactivities. Compound B inhibited the growth of *Staphyyloccus aureus* and *Escherichia coli* whereas Compound A inhibited the growth of *Staphylococcus aureus* only.

015
DELA VICTORIA, Ellen H. 2001. Kinetic Investigation of the Reduction of Hexavalent Chromium. (GT: MS Chem), 82pp.

The kinetics of the reduction of Cr(VI) was studied as a function of pH, Cr(VI) and reductant concentrations at 25^0C using 3 reductants: Phenol, SHA(soil humic acid), and Fe(II). The source of Cr(VI) was taken from spent bricks used by one of the cement industries in Iligan City. Chromium (VI) was extracted by basic digestion method (0.28 Na_2CO_3 in 0.5 M NaOH) and determined using the DPC method. High content of Cr(VI) was found in the sample with concentration ranging from 909.29 to 1427.7 mg/kg. In the kinetic analysis, the pH used varied in such a way as to maximize the amount of Cr(VI) reduced and were monitored under UV-VIS. Results showed that decreasing the pH to acidic conditions, i.e pH 2.0, increased the rate of reduction of Cr(VI). Increasing the Reductant and Cr(VI) concentrations. From the empirical rate law, $-d[Cr(VI)]/dt = k[HcrO4^-]$ [Red], the reaction showed a 1st order dependence on the reductants and to $HcrO_4^-$ except for phenol which has an order of 0.5 for Cr(VI). The overall order of the reaction is 2nd order for Fe(II) and SHA and 1.5 for Phenol. The value of the rate constant, k for phenol, SHA and Fe(II) were 3.4182 x 10^{-7}, 7.5575 x 10^{-8}, and 4.4568 x 10^{-3} L/mg.sec respectively. Among the 3 reductants used, Fe(II) had the fastest rate of reaction for the reduction for the reduction of hexavalent chromium.

016
ECHIVERRI, Janet I. 2000. Trees as Bioindicators of Urban and Industrial Pollution in Iligan City. (GT: MS Chem), 115pp.

Suitability of tropical trees for biomonitoring and bioindication of industrial and urban air pollution was investigated. Four tree species [A. *hetrophyllus* (Nangka), *Z. jujuba* (Manzanita), *P. guajava* (Guava), and *S. Macrophylla* (Mahogany)] were sampled from five designated locations in Iligan City. The locations were chosen to represent a gradient of distance from pollution source. Leaf tissues from the four tree species were analyzed for lead (Pb), zinc (Zn), sulfur (S), ascorbic acid, total chlorophyll, leaf pH, and relative water content. Nested anova sampling design was employed to account for variance at the leaf, tree, and location levels. The concentration of lead and zinc in leaf tissue were found to be higher in trees at location near main roads that those trees at areas far from urbanized areas. All species were considered suitable for heavy metal indication. Among the fresh parameters only ascorbic acid, relative water content and the air pollution tolerance index

(APTI) gave consistent trends among locations. *A. hetrophyllus* and *P. guajava* may be considered as sensitive biomonitors of phytotoxic air pollution. *S. Macrophylla* may be considered as partially sensitive monitor since it showed significantly different means among locations only for total chlorophyll content and leaf extract pH. Fresh parameter results also showed that plants samples from locations 2-3 kilometers from pollution sources exhibited higher stress responses that those plants sampled in the immediate vicinity of pollution sources.

017

FERNANDEZ, Marvin Jose F. 2001. A DFT Self-Consistent Reaction Field Study on the Cycloaddition Reactions of Tetracyanoethylene. (GT: MS Chem), 105pp.

The energetic and mechanism of the cycloaddition reactions of tetracyanoethylene (TCNE) with methyl vinyl ether (MVE) in tetrahydofuran solvent and with cyclopropylethylene (CPE) in nitromethane solvent are investigated computationally by Density Functional Theory (DFT). Geometry optimizations and frequency calculations are done using Becke's Three parameter Hybrid method and correlation functional of Lee, yang, and Parr with 6-31G* as basis set (B3LYP/6-31G*). Solvent effect is accounted for by using the Self-Consistent reaction Field (SCRF) model. The Solvents used are tetrahydrofuran and nitromethane using the dialectric constants of 7.58 and 36.56, respectively. The structures of transition states, intermediates, and complexes are elucidated. The calculated HOMO-LUMO energy gaps of the theoretical complexes in the TCNE-MVE reaction correspond to wavelengths that are in agreement with the reported deep-orange color of the experimental complex. The thermodynamic properties of reactants, complexes, transition states, intermediates, and products were calculated. The most probable reaction paths were identified. The predictions derived from his work can be correlated to the experimental reactions in solution.

018

GO, Jean Theresa O. 2005. Bioassay-Guided Isolation and Characterization of the Bioactive Secondary Metabolites from the Marine Sponge *Halisarca sp.* (GT: MS Chem), 119pp.

A red and yellow extracts were obtained from the marine sponge *Halisarca sp.* collected from Bais bay, Bais City, Negros Oriental, Philippines. A benzodioxatetraaza cyclic alcohol named (3Z,5Z)7-methyl-2-propyl-7,8-dihydro 2H benzo[1,9,3,4,5,6] dioxatetraazacycloundecin-8-ol was isolated from the yellow extract. The structure of yellow extract was elucidated on the basis of FTIR, EIMS, various one-dimensional, i.e. ^{13}C, ^{1}H, and two-dimensional NMR experiments, i.e. COSY, HMQC and HMBC. The compound exhibited high cytotoxicity towards the nauplii of brine shrimp *Artemia salina* with an estimated chronic LD_{50} of 323.59 ± 1.23 ppm. It revealed marginal antibacterial activity against gram-positive bacteria *Str. pyogenes* and *S. aureus*. It had high clastogenic potential as determined using the micronucleus test. The red fraction of the butanol-soluble portion exhibited a lower cytotoxicity towards brine shrimp with an acute LD_{50} = 582.10 ± 1.49 ppm as well as lesser ability to induce numerical chromosomal damage as compared to the yellow but displayed a significant antibacterial activity against gram-positive cocci

Str. pyogenes and *S. aureus*.

019

GOMEZ, Enjelyn C. 1999. Preconcentration of Trace Mercury Using Activated Carbon and Analysis by UV-VIS Spectroscopy. (GT: MS Chem), 56pp.

Activated carbon was examined for its adsorbent capacity for trace Hg in large volume of sample. The batch type equilibration technique was employed for the study. Results showed that the optimum condition for the process was achieved at pH 4.0. Recovery of Hg using acid as leaching solution showed that 8M HNO_3 eluted the largest percentage of Hg. For the formation and analysis of Hg- 1, 5-diphenylcarbazide complex, the optimum condition was at pH 5.7, 30 minutes after the start of complexation reaction. At this condition, the formation of Hg-1,5-diphenylcarbazide complex was completed and stable absorbance reading at 511 nm by UV-VIS Spectrophotometry was attained.

020

GONZALES, Alma O. 2002. Determination of Polynuclear Aromatic Hydrocarbons Contamination in Recent Sediments from Iligan Bay: A Method Development, Validation, and Application Study Utilizing Supercritical Fluid Extraction. (GT: MS Chem), 237pp.

An analytical Supercritical Fluid Extraction (SFE) method for the determination of selected polynuclear aromatic hydrocarbons (PAHs) namely naphthalene, phenanthrene, flouranthene, and pyrene, from <75- μm sediment samples, ahs been developed and validated.

In the method development phase, the SFE method achieved an overall accuracy of 94.59%, with an overall precision of 1.03% RSD, while Soxhlet extraction had an overall accuracy of 66.74%, and an overall precision of 12.29% RSD. These preliminary results showed that SFE has much better performance than Soxhlet extraction.

In the method validation phase, the developed SFE method achieved an overall accuracy of 93.94%, with an overall precision of 3.47% RSD, while Soxhlet extraction had an overall accuracy of 68.09%, and overall precision of 23.34% RSD. These results indicate that SFE method was more accurate and more precise than Soxhlet extraction, thus, proving it was highly acceptable for application purposes. Therefore, the developed SFE method has been validated.

The validated method led to the detection of PAHs in most of the six sampling sites in Iligan Bay. Flouranthene concentrations were found to be significantly high in relation to US EPA permissible concentration for PAHs as contaminants in water

supporting life. On the hand, the concentrations for all of the PAHs exceeded the maximum permissible levels of PAHs for the protection of human helath based from US EPA guidelines.

021

GULTIANO, Analyn G. 2007. Analytical Method Development, Validation, and Application for Supercritical Fluid Extraction of Selected Polynuclear Aromatic Hydrocarbons from the Fish *Oreochromis niloticus* ("Tilapia"). (MS Chem), 229pp.

Polynuclear aromatic hydrocarbons (PAHs) are ubiquitous environmental pollutants which accumulate in the fatty tissues of aquatic organisms. A Supercritical Fluid Extraction (SFE) method to extract selected PAHs (phenanthrene, fluoranthene, and pyrene) loaded onto *Oreochromis niloticus* ('tilapia') fish samples by simulated sorption process was developed and validated. High Performance Liquid Chromatography (HPLC) with UV detector was used for the detection and quantitation of the analytes.

Method development results showed that extracts were efficiently cleaned using H_2SO_4 prior to florisil cleanup. The amount of PAH sorbed onto the fish in the sorption experiments increased with contact time, i.e., 29.51%, 35.43%, and 41.24% for 30 min, 1 hr, and 2 hrs, respectively. The corresponding % recoveries using SFE method increased from 72.43% for 30 min contact time to 81.31% for 1 hr contact time, but decreased to 71.61% for 2 hrs contact time. The decrease in overall SFE % recovery in the 2-hr contact time could be attributed to the degradation of the analytes into their metabolites.

Method validation results showed an overall % recovery of 85.06% (10.50% RSD) for SFE and 74.37% (13.79% RSD) for Soxhlet extraction, indicating that the developed SFE method is more accurate and more precise than Soxhlet method.

The validated method detected all the selected PAHs in the edible and inedible parts of "tilapia" from Pulangi IV Reservoir in Maramag, Bukidnon, with concentrations ranging from 0.0058 to 0.0643 µ/g dry basis. The PAH levels in the inedible part were relatively higher than those in the edible part. Of the PAHs tested, only fluoranthene in the edible part of the fish was below the maximum permissible level set by the US EPA for the protection of human health.

022

GUMALAL, Rebecca G. 1998. The Determination of Pb, Cd, and Hg in Water, Sediment and Mussels from Daromawang and Lala, Lanao del Norte and Benuni Lagoon, Camiguin Province. (GT: MS Chem), 56pp.

Lead, cadmium and mercury were analyzed in the water, sediment, and mussel samples from Camiguin, Daromawang, and Lala Bukana using Atomic Absorption Spectroscopy.

The average concentration of lead from the samples in Camiguin, Daromawang and Lala Bukana were 0.1742, 0.1559 and 0.1214 mg/kg in water, 5.4139, 1.0870, 1.4073

mg/kg in dry sediment and 2.7406, 1.2493, 1.525 mg/kg in dry mussel samples respectively. The amount of lead in the mussels was all below the commonly observed level of lead in mussels.

For cadmium, the concentration observed in Camiguin, Daromawang and Lala Bukana were 0.0581, 0.0777, 0.1055 mg/L, in water; 1.1134, 0.9818, 0.6062 mg/kg on dry sediments, and 1.1830, 2.0994, and 1.0025 mg/kg in dry mussels respectively. The maximum tolerable amount of Cd in marine water is 0.01 mg/L.

The amount of mercury in the samples obtained from Camiguin, Daromawang, and Lala were generally very low. Mercury in water is below the detectable limit, 4.1657, 4.0168, and 4.0079 ug/kg in the sediments, and 6.9874, 4.4095, 3.7980 ug/kg wet weight in the mussels respectively. These results were very much below the maximum tolerable amount of mercury in mussels which is set at 1 mg/kg or 1000 ug/kg.

023

LEOPOLDO, Girlie D. 2005. Supercritical Fluid Extraction and Chomatrographic Analysis of Polynuclear Aromatic Hydrocarbons in Iligan City and Cagayan de Oro City Street Dusts: A Method Development and Application Study. (GT: MS Chem), 105pp.

The development and application of optimized analytical procedures for the determination of polynuclear aromatic hydrocarbons (PAHs) in street dusts is described. Samples were extracted by supercritical fluid extraction (SFE), followed by concentration of extract using Kuderna-Danish concentrator. Cleanup was done by passing the extract through silica gel column and eluting with the 1:1 (v / v) hexane /dichloromethane ratio. Analysis was performed by HPLC with fluorescence detection. The analytes determined were naphthalene, phenanthrene, fluoranthene, pyrene, and c. The developed SFE method achieved an overall accuracy of 99.86% with an overall precision of 9.48%, while Soxhlet extraction had an overall accuracy of 107.81% and an overall precision of 16.52%. These results proved that SFE is comparable in performance to that of Soxhlet extraction and is proven to be acceptable for application purposes.

The developed SFE method was used to determine the selected PAHs in street dusts from concrete/heavy-trafficked, asphalt-paved/heavy-trafficked and asphalt-paved/light-trafficked streets of Iligan City and Cagayan de Oro City. Naphthalene, phenanthrene, flouranthene, pyrene and benzo[a]pyrene were found at concentrations that ranged from 0.090 to 0.239 µg/g, 0.022 to 0.477 µg/, 0.430 to 12.01 µg/g, 0.005 to 0.174 µg/g and 0.021 to 0.377 µg/g dry weight, respectively. The phenanthrene and fluoranthene levels were much higher that the maximum permissible levels of PAHs for the protection of human health, based of U.S. EPA guidelines. High concentration of phenanthrene, fluoranthene, and pyrene in asphalt/heavy-trafficked as compared to asphalt/light-trafficked streets would indicate that traffic has greater contributes only a minor amount. Statistical analysis, however, ruled out any significant differences in the amount of all target PAHs

from concrete/heavy-trafficked, asphalt/heavy-trafficked, and asphalt/lightly-trafficked streets.

024

MALMIS, Conmar C. 2008. Tracking the Lipolytic Activity of the Enzyme Extracted from the Haustorium of Germinating Coconut (*Cocos nucifera nana*) Dwarf Variety During Purification and the Film Container Dialysis. (GT: MS Chem), 114pp.

Investigations to track down the lipolytic activity of the enzyme extracted from the haustorium of dwarf germinating coconut during purification were conducted at MSU-Iligan Institute of Technology, Biochemistry Lab, Chemistry Department, Iligan City using volumetric activity and Bradford assay, and the molecular weight determination was done at Baylor College of Medicine, Houston, Texas using SDS-PAGE.

The protein from haustorium of six month old dwarf green germinating coconuts were extracted using phosphate buffer at pH 7. The several runs of extraction, precipitation and dialysis give an average lipolytic activity of 2.890 U/mg for the crude enzyme (CE), 77.02 U/mg for ammonium sulfate precipitated enzyme (APE) at 90% saturation and zero activity after dialysis or dialyzed enzyme (DE).

The loss of activity during the course of purification leads to modification of the dialysis. The film container dialysis solved the lost of lipolytic activity and changed the route of isolation from 90% to 40%, 60%, and 80% saturation precipitation using ammonium sulfate.

Different elution conditions gave fractions with significantly varied specific activities using 5-mL pre-packed HiTrap^{TM} Heparin HP affinity column. Elution condition C consisting of 0.01 M citric acid, 0.1 M Tris, 0.225 M NaCl, at pH 7.0 used as binding buffer and mixture of 0.01 M citric acid, 0.01 M Tris, 1.0 M NaCl, at pH 7.0 as elution buffer at 1.00 ml/min column flow rate and 7.00 mg protein loading generate a peak at Fraction 16 of 60% DE. This fraction contains 0.027 mg/ml protein and has a specific activity of 379.86 U/mg. This fraction produced a single band in SDS-PAGE with a molecular weight approximately 68.0 kDa.

025

MARTINEZ, Damiana M. 2002. Ecotoxicological Water Quality Assessment of Organochlorine Pesticides in Drinking Water Resources of Zamboanga City. (GT: MS Chem), 96pp.

Water samples collected from different sources of drinking water supply in Zamboanga City were analyzed for 18 organochlorine pesticides (OCPs): alpha-hexachlorocyclohexane ($\alpha-HCH$); gamma-hexachlorocyclohexane ($\gamma-HCH$); aldrin; dieldrin; heptachlor; heptachlor epoxide; endosulfan I; endosulfan II; 4,4'-dichlorodiphenylethane(4,4'-DDE); 4,4'-dichlorodiphenyldiethane (4,4'-DDD); 4,4'-dichlorodiphenylthane (4,4'-DDT) and methxychlor. The analyses were done using the

capillary gas chromatography with electron capture detector (GC-ECD) to assess the present status of contamination by OCPs in drinking water in the city. Heptachlor and $\gamma - HCH$ were the most commonly detected compounds with concentration ranging from 0.58-.017 $\mu g / l$ and 0.59- 0.099 $\mu g / l$, respectively. Aldrin (0.066-0.078 $\mu g / l$), endosulfan I (0.13-0.18 $\mu g / l$) and endosulfan II (0.026-0.23 $\mu g / l$) were occasionally found while other OCPs were not detected. These values are still below the threshold level of OCPs in drinking water recommended by EPA, however, the detection of its presence in the drinking water resources of Zamboanga City poses a health risk to the human populace as these OCPs are bioaccumulative and carcinogenic. The result s clearly suggest that the presence of the OCPs in the water resources is indicative of the OCPs constant demand and use despite the government's campaign to band these compounds.

026

MATADOS, Vina L. 2001. Mercury, Lead, and Cadmium Metals in Siocon River and Tributaries from the Gold Mining Areas of Siocon, Zamboanga del Norte. (GT: MS Chem), 164pp.

Concentrations of total mercury, lead and cadmium in water, sediments and plant samples were determined to evaluate the extent of pollution in Siocon River, Zamboanga del Norte. These three metals was found at concentration ranges of <0.01 to 1,231.04 ug/L in water, 0.02 to 7.43 ug/g dry weight in sediments, and 0.07-79.22 ug/g dry weight in *Leersia hexandra.* Lead was found at concentration ranges of <10.96 to 292.21 ug/L in water, 2.39 -173.14 ug/g dry weight in sediments, and 2.94 – 194.32 ug/g dry weight in *Leershia hexandra.* Cadmium concentrations ranged from 0.11 – 1.01 ug/L I water, 0.07 - 0.32 ug/g dry weight in sediments, and 0.09 – 0.69 ug/g weight in *Leershia hexandra.* Mercury and lead were significantly high in comparison with the DENR DAO 34 maximum limit of 2 ug/L and 50 ug/L for surface waters, respectively. Cadmium in water was not significantly different from the World Health Organization (WHO) guideline value of 5 ug/L. The results are generally high in total mercury, lead, and cadmium content in water, sediments and plant samples taken from sampling stations near the mining sites, and low metal content in water, sediments and plant samples taken from sampling stations distant from mining sites. differences in mean concentrations of mercury, lead and cadmium between sampling were generally significant in every sampling sites.

027

MONDARTE, Mylene S. 1998. Isolation and Characterization of the Metabolites from an *Arminacean* Nudibranch Species. (GT: MS Chem), 106pp.

Two long-chain saturated fatty acids, palmitic acid and stearic acid, two steroids, cholesterol and 5α, 8α-epidioxycholest-6-en-3α-ol and one partially characterized polyene were obtained from the skin extract of the nudibranch *Aminacean sp.* collected from the shores of Jampason, Initao, Misamis Oriental. The compounds were isolated through

extraction with methanol, partitioning with dichloromethane and purification with a series of gravity column chromatography using varying ratios of ethylacetate in hexane as solvent. The structures were established by extensive spectral analyses which included UV, IR, High Resolution Electron Impact Mass Spectoscopy (HREIMS) and various 1D and 2D NMR experiments: ^{1}H-NMR, ^{13}C-NMR, ^{1}H Homonuclear Correlated Spectroscopy (COSY), Distortionless Enhancement by Polarization (DEPT), ^{13}C-^{1}H Heteronuclear Shift Correlation (CHSHF), ^{1}H-^{13}C Heteronuclear Multiquantum Correlation (HMQC), ^{1}H-^{13}C Heteronuclear Multiband Correlation (HMBC), heteronuclear Shift Correlation via Long-range Couplings (COLOC) and Nuclear Overhauser Effect Correlation Spectroscopy (NOESY).

Cholesterol and the mixture of palmitic acid, stearic acid and the polyene exhibited no activity against the test organisms *Escherichia coli, Pseudomonas aerogenosa, Staphylococcus aureus, Bacillus subtilis, saccharomyces cerevisciae* and *Aspegillus niger*. 5α, 8α-epidioxycholest-6-en-3α-ol had been reported to inhibit the activity of phospholipase A$_2$ (Seo, 1996).

028

MONSUBRE, Maria Geneva V. 2005. Determination of Bitertanol Residues in Banana. (GT: MS Chem), pp.

Samples of Cavendish banana (*Musa sapientum* L. were analyzed by high performance liquid chromatography with fluorescence detector after supercritical fluid extraction to determine the bitertanol residue levels separately in the pulp, the peel and the whole fruit. Results showed that only the pulp contained **FAO/WHO** (1999). Thus, consumption of the fruit as dessert is safe and also qualified for export.

Two sampling periods, namely harvest after five days treatment and harvest after ten days treatment, were evaluated to compare the detectable amount of bitertanol with time. It was found that there as no significant difference between the two sampling periods which imply that harvesting the fruit at anytime between five to ten days would not essentially affect the extent of residue levels of bitertanol in Cavendish banana.

Four treatments of banana samples were also employed, specifically, untreated control; application with bitertanol only; application with bitertanol and urea; and application with bitertanol and urea plus algafer, to evaluate the permeability of bitertanol in the presence of urea and algafer fertilizers. It was observed that application with fertilizers did not offer significant differences in the extent of bitertanol residues found in different fruit parts. Therefore, the permeability of the fungicide bitertanol was not affected by the addition of fertilizers.

029

MONTEBON, Susan E. 2006. Supercritical Fluid Extraction and Chromatographic Determination of Polynuclear Aromatic Hydrocarbons in Marine Sediments from Zamboanga City. (GT: MS Chem), 278pp.

Supercritical Fluid Extraction (SFE) as the sample preparation method has been validated for evaluating the presence of selected polynuclear aromatic hydrocarbons (PAHs) namely naphthalene, phenanthrene, fluoranthene, and pyrene from <75-µm

sediments, using high performance liquid chromatography (HPLC) with UV detector as the quantitation method.

The validated SFE method obtained percent recoveries of 75.05, 92.27, and 98.29 with precision of 5.15, 3.37, and 4.02 % RSD for phenanthrene, fluoranthene, and pyrene, respectively. On the other hand, Soxhlet extraction achieved percent recoveries of 79.71, 87.61, and 92.65 with precision of 10.81, 12.69, and 10.75 %RSD for the same PAHs, respectively. This implies that SFE and Soxhlet extraction methods are comparable in terms of accuracy. In terms of precision, SFE is a better method compared to Soxhlet extraction. However both methods gave poor and unacceptable recoveries and precision for naphthalene due to its high volatility.

The validated method detected all the selected PAHs at concentration range of 0.0165 to 0.3840 µg/g in the three sampling sites in Zamboanga City for two sampling seasons and detected varying number of PAHs at concentration range of 0.0519 to 0.4046 µg/g in sediments of different size ranges (< 75 µm, 75-420 µm, and 421-600 µm). The concentrations of fluoranthene [0.1627 µg/g (lowest value by particle size)] were found to be significantly high relative to US EPA permissible concentrations for PAHs (0.04 µg/g based on acute toxicity) as contaminants in salt water supporting life. Also, the concentrations of all the PAHs (except naphthalene) in the three sampling sites and in the different particle size categories exceeded the US EPA maximum permissible levels of PAH (0 to 0.191 µg/g) for the protection of human health.

030
MOSQUEDA, Alexander O. 2005. Isolation, Structure Determination and Biomolecular-Chemical Screening of a Bioactive Metabolite from the Marine Sponge, *Dysidea* Sp., Collected in Mantigue Islet, Camiguin. (GT: MS Chem), 86pp.

A sesquiterpene compound known as arenarol (2-{[(1R,2S,4AR)-1,2,4a-trimethyl-5-methylenedecahydronaphthalen-1-yl]methyl}benzene − 1,4- diol) was isolated from the marine sponge, *Dysidea* sp. Collected from the waters of Mantigue Islet of Camiguin province. Extraction was done by Supercritical Fluid Extraction (SFE) with conditions set at 300 atm 40^{0}C, using CO_2 as the extracting solvent. The metabolite was purified through reversed-phase High performance Liquid Chromatography (HPLC) using UV detector set at λ_{max}, 229 nm to give a single sharp peak with a retention time of 8.948 min. the molecular structure was elucidated on the basis of spectral evidences such as Ultraviolet-Visible (UV), Infrared (IR), Electron Impact Mass Spectroscopy (EIMS), and extensive 1D and 2D Nuclear Magnetic Resonance (NMR) experiments: ^{1}H-NMR, ^{13}C-NMR, DEPT (Distortionless Enhancement by Polarization Transfer), Proton Homonuclear Correlated Spectroscopy (COSY), Heteronuclear Multi-Quantum Correlation (HMQC) and Heteronuclear Multi-band Correlation (HMBC).

The isolated secondary metabolite has toxic effect towards brine shrimp *Artemia salina* Leach and a very weak antimicrobial activity against *Staphylococcus aureus, Bacillus subtilis, Escherichia coli* and *Pseudomonas aeruginosa*. The results also showed the DNA-binding characteristic of the compound.

031

PASCUAL, Lydia C. 1999. Isolation and Characterization of Bioactive Metabolites from *Mastophora Rosea*. (GT: MS Chem), 112pp.

The methanolic extract of marine red algae, *Mastophora rosea* demonstrated toxicity against brine shrimp (*Artemia salina*). Repeated sequential chromatography (TLC, Liquid Column Chromatography, and High Performance Liquid Chromatography), and recrystallization of the crude extracts and subtractions led to the isolation of four compounds labeled as MR1B3.1, MR3C4, MR4b, and MR6CP. These isolates showed 80%, 70%, 60%, and 55% bioactivity. The characterization of these isolates by extensive spectroscopic techniques such as ^{1}H-NMR, ^{13}C-NMR, DEPT, COSY, HMQC, HMBC, UV, IR, and MS established that they are methyl oleate, cholesterol, palmitic acid, and myristic acid, respectively.

032

PASCUAL, Ronald Z. 1997. Structures and Energetics of Ring Opening and Fragmentation of Oxirane and Disilaoxirane: An *Ab Initio* Study. (GT: MS Chem), 174pp.

The ring opening and fragmentation reactions and disilaoxirane have been theoretically investigated using highly correlated ab initio molecular orbital calculations. Results obtained at MP4(SDTQ)/6-31G**//MP2(fu)/6-31G** level indicate the presence of unique transition structures fro both C-C/Si-Si and C-O/Si-O bond rupture modes. The carbonyl ylide and disilacarbonyl ylid produces are characterized minima in the potential energy surface, whereas, the open intermediates resulting from C-O and Si-O bond cleavages are found to be true transition structures for the isometric conversion of oxirane/disilaoxirane to ethanal/disilaethanal.

The subsequent fragmentation pathways and corresponding open intermediates of both rings in the single state do not exhibit genuine transition structures. In the triplet state, distinct transition structures for the fragmentation pathways of the oxirane ring were found but none for the silicon counterpart.

033

PEDROSA, Maridit C. 2001. *Halodule pinifolia:* A Potential Biomonitor for Heavy Metal. (GT: MS Chem), 153pp.

Concentrations of heavy metals lead, cadmium, mercury, zinc, and iron were determined in *Halodule pinifolia*, sediment and seawater from Mapalad, Tag-ibo, Tominobo and Timoga coastal areas. Lead concentrations from four sampling sites ranged from 0.14- 0.82 ug/g in *H. pinifolia,* 0.65-5.66 ug/g in sediment and 0.45-3.02 ug/L in seawater. Cadmium concentrations ranged from 5.25-03 – 0.17 ug/g in *H. pinifolia,* below detection – 20.06E-02 ug/g in sediment and 0.01 –0.51 ug/L in seawater. Zinc concentrations ranged from 29.88 – 57.58 ug/g in *H. pinifolia,* 7.98 – 7.73 ug/g in sediment and 0.12 – 3.75 ug/L in seawater. Mercury concentrations in *H. pinifolia* ranged from 0.0340 – 0.45 ug/g, 0.0145 – 3.09 ug/g in sediment and below detection level in seawater.

Iron concentrations in *H. pinifolia* ranged from 924.69 –8358.09 ug/g, 6286.15 –20,911.00 ug/g in sediment, and 0.09 –0.89 ug/ml in seawater. The analysis of chromium showed concentration below detection level. The suitability of *H. pinifolia* as accumulator of these heavy metals was assessed based on its bioaccumulation factor. Bioaccumulation factor showed that heavy metals uptake by *H. pinifolia* was highest in seawater than in sediment samples.

034

PETEROS, Nonita P. 1996. Isolation and Partial Characterization of the Components from a Bioactive Fraction of <u>Annona</u> <u>Muricata</u> Linn. Leaves. (GT: MS Chem), 44pp.

From a bioactive extract (methanol fraction) of the leaves of *Annona muricata* Linn. (Annonaceae), three components E-1-1, E-2-1-B and E-3-3 were isolated.

The isolation involved solvent partitioning, and chromatography (vacuum liquid column chromatography, gravity, TLC). The isolated components were characterized by their TLC profiles and spectral data (UV and IR).

Isolate E-1-1 is colorless liquid. The IR spectrum suggested the presence of saturated C-H groups. This was confirmed by the absence of UV absorption.

Isolates E-2-1-B and E-3-3 are both yellow liquids. Their IR spectra indicate an alcoholic OH and a lactone group. Comparison with literature shows similarities to *Annonaceous* acetogenins.

035

PINZON, Lunesa C. 1995. Isolation and Partial Characterization of Components from a Bioactive Fraction of *Terminalia Catappa* Linn. (GT: MS Chem), 56pp.

Two compounds, a yellow powder and a yellow liquid, were isolated from the leaves of *Terminalia catappa Linn.*, locally known as "talisay", by liquid column chromatography. With the use of empirical and spectral methods, these compounds were partially characterized. The R_f values of the compounds in 40% dichloromethane in hexane are 0.76, for the yellow powder and 0.50, for the yellow liquid. Their 1_H- and ^{13}C-NMR and mass spectra showed similarity to those of known terpenes.

036

QUINTANA, Juliet B. 2000. Determination of Net Charge of SiO_2 by Titration and Ion Adsorption Methods: An Investigation. (GT: MS Chem), 57pp.

The pH-dependent charge properties of SiO_2 were studied by pH titration and cation and anion exchange capacity from NH_4^+ AND PO_4^{-3} adsorption, respectively. The

isoelectric point (IEP) of the colloid studied is ~3 as determined by pH titration.

Anion exchange capacity (AEC) of SiO_2 showed that the SiO_2 surface is highly negative and varies with equilibration time, initial phosphate concentration, electrolyte concentration and the type of electrolyte. AEC does not vary much with pH because of the choice of electrolyte, $CaCl_2$.

Cation exchange capacity showed variation with pH. It increased as pH was increased. This observation affirmed that the SiO_2 surface becomes more negative with increasing pH.

Thus, diatomaceous earth (SiO_2) bore a negative charge on its surface at pH above ~3.

037
RAGASAJO, Marvin Lemuel A. 2001. A Computational Study on the Triplet Methylene and Molecular Oxygen ($^3CH_2 + O_2$) Combustion Reaction. (GT: MS Chem), 92pp.

The reaction $^3CH_2 + O_2$ believed to be an important elementary reaction in the combustion of low-molecular weight hydrocarbons, have been investigated by ab initio molecular orbital methods and density functional techniques. Reactants, intermediates, products and transition states were fully optimized with unrestricted Hartree-Fock, second-order MØller- Plesset and DFT's B3LYP using 6-31G** as basis set.

The reaction pathways of $^3CH_2 + O_2$ found to proceed via series of intermediates and finally leading to product. The predicted primary product channels are the CO2 + H_2 and CO + H_2O. Results suggest that these product channels are competitive. Carbon dioxide and molecular hydrogen are produces through dissociation of dioxymethane and decarboxylation of formic acid. The carbon monoxide and water are formed via formic acid dissociation only. The pathway where free radicals are produced such as HCO and OH, are predicted to play minor role in the reaction. The predicted molecular structures and energetic are discussed with reference to the existing theoretical and experimental results.

038
RATILLA, Romela N. 1999. A Study on the Levels of Mercury and Lead in Biga-an River, Bukidnon. (GT: MS Chem), 142pp.

Concentrations of total mercury and lead in water, sediments, two plant species and a bottom dwelling organism were determined to evaluate the extent of pollution in Biga-an River, Bukidnon. Both metals were detected in all sampling stations. Mercury was found at concentrations ranges of 0.69 to 2.54 ug/L in water, 0.0585 to 4.38 ug/g dry weight in sediments, 0.0262 to 1.90 ug/g dry weight in *Chromolaena odorata (L.),* 0.0996 to 0.0670 u/g dry weight *Elodea densa* and 0.0761 to 0.616 ug/g dry weight in river snail, *Pleurocera.* Lead was found at concentration ranges of 0.0284 to 2.55 mg/L in water, 67.8 to 631 ug/g dry weight in sediments, 195 to 304 ug/g dry weight in *Chromolaena odorata*

(L.), 177 to 614 ug/g dry weight in *Elodea densa,* and 38.9 to 311 ug/g dry weight in river snail, *Pleurocera.* Mercury in water was not significantly different from DENR DAO 34 maximum limit of 2 ug/L for surface waters. Lead in water was not significantly different from 0.5 mg/L maximum limit for class D waters. Mercury in snail was not significantly different from U.S. EPA recommended maximum concentrations of 0.5 ug/g. Lead in snail was significantly higher than the 2 ug/g maximum concentration set by U.S. EPA. Mercury concentrations in sediment and biota samples and lead concentration in sediment samples were significantly higher in the upstream stations suggesting a point-source contamination. Differences in mean concentrations of mercury and lead between periods in the samples studied was generally significant in every sampling station. Between period differences in bioaccumulation factors were not significant except for lead from water by *C. odorata (L.).*

039

ROA, Elnor C. 1998. Nutrients and Heavy Metals of Plankton in Mussel Growing Areas: Panguil Bay, Lanao del Norte and Binoni Lagoon, Camiguin Province. (GT: MS Chem), 118pp.

The amount of cadmium, cobalt and mercury in the plankton samples were analyzed using atomic absorption spectrophotometric method. Cadmium level from the three sampling sites ranged from 1.45 to 3.90 mg/Kg. Mercury was not detected from the Camiguin samples while the Baroy and Darumabang samples showed a very low level presence. The highest and lowest amount of cobalt detected were from the Camiguin sample ranging from 4.35 mg /Kg to 18.13 mg/Kg.

The chromium content was determined using uv-visible spectrophotometric analysis with diphenylcarbazde. All samples from the three sites during the three sampling periods were below the detection limit.

The analysis of copper and zinc was done by voltammetric stripping with a hanging mercury electrode using standard addition technique. The average copper content observed ranged from 7.75- 45.88 mg/Kg and 34.63-133.69 mg/Kg for zinc.

The calcium level in the plankton samples from Camiguin as higher than the Baroy and Darumawang samples during the three sampling periods. Calcium content was determined by EDTA titration using hydoxynapthol indicator.

The magnesium concentration in plankton was determined by spectrofluorometric chelation method with 8-hdroxyquinoline. The average magnesium content observed from the three sites ranged from 8, 269.61 to 183, 158.67 mg/Kg.

040

RODILAS, Ester D. 2003. Supercritical Fluid Extraction and Analysis of Selected Polynuclear Aromatic Hydrocarbons in Tissues of Marine Mussel Modiolus Metcalfe: A Method Development, Validation, and Application Study. (GT: MS Chem), 160pp.

Polynuclear aromatic hydrocarbons (PAHs), like many other hydrophobic organic

contaminants, are rapidly accumulated by marine mussel samples. Selected PAHs namely phenanthrene, fluoranthene, and pyrene contained in the tissues of mussel Modiolus Metcalfe were determined utilizing a developed and validated analytical Supercritical Fluid Extraction (SFE) method.

In the method development phase, the SFE method achieved an overall accuracy of 84.31% with a precision of 5.19% RSD. The initial result shows that SFE is accurate and precise extraction technique.

In the method validation phase, the developed SFE method achieved an overall accuracy of 89.84% with an overall precision of 1.45% RSD, while Soxhlet extraction had an overall accuracy of 79.71% and an overall precision of 2.33% RSD. These results prove that SFE is much better than Soxhlet extraction in terms of performance. Therefore, a more accurate and more precise SFE method was developed and proven to be highly acceptable for application purposes.

The validated method allowed the determination of PAHs in two sampling sites in Panguil Bay. The PAH compounds were found at concentration ranges of 0.018 to 0.020 µ g/g dry weight for phenanthrene and 0.011µ · g/g dry weight for pyrene. These concentration ranges of phenanthrene and pyrene are lower than the existing US EPA permissible concentration for PAHs as contaminants in water supporting life. However, based from the US EPA guidelines, the concentration of phenanthrene is higher than the maximum permissible levels of PAHs for the protection of human health.

041
SALVAŇA, Conception M. 1995. Isolation and Partial Characterization of an Antimicrobial Principles in Nephrolepis Cordifolia. (GT: MS Chem), 32pp.

Isolation and partial characterization of an antimicrobial principle in *Nephrolepis cordifolia* (bayabang) was undertaken. The isolation process employed serial extractions, quick column chromatography runs, gravity column chromatography, and recrystallization to finally arrive at a pure isolate. The entire isolation process was bioassay-guided using the brine shrimp assay.

The antimicrobial property of the purified substance was investigated using selected test organisms. Phytochemical screening of the compound using TLC was also performed to preliminary determines the class of secondary metabolite to which it belonged. The IR and UV spectra of the substance were obtained for more structural information. Rf values of the isolate in different solvent systems were also taken as well as its melting point.

The bioassay results showed that the bioactivity increased with increase in purity. The antimicrobial tests indicated that the purified isolate possessed inhibitory effect against all the test organisms except S. aureus. Results of the phytochemical screening and spectrophotometric analysis revealed the isolate to be an alkaloid. Rf values were: 0.28 in chloroform: methanol (24:1), 0.86 in hexane: ethylacetate (1:9), 0.72 in methanol: conc. Ammonia (200:3).

042

TENIDO, Felipa Gisela L. 2001. Chemical Analyses of Waste Effluents from Yeast Production. (GT: MS Chem), 169pp.

Due to environment concerns over the disposal of highly colored waste effluents into the sea from yeast fermentation industry, quantitative chemical analyses of the waste effluents from a yeast fermentation plant were conducted.

Protein content determined using the Kjeldahl method were 5.95% in the clarification effluent, 15.95% in the separation effluent, and 14.30% in the first was effluent. Total reducing sugars (TRS) of the clarification effluent determined by the Lane-Eynon method was 65.23%. Fat determined by Soxhlet extraction were 0.41% in the clarification effluent and 3.61% in the separation effluent. The concentrations of Ca, Cu, Fe, Mg, Mn, and Zn were determined using atomic absorption spectroscopy. Phosphorus and potassium concentrations were determined using UV-VIS spectroscopy and flame photometry, respectively. The clarification, separation, and first wash effluent, respectively, contain on the average, ppm Ca: 8014, 31 958, and 25 695; ppm Mg: 2046, 10802, and 21 567; ppm P: 17, 95, and 129; ppm K: 25464, 92 925, and 50 129; ppm Cu: 7, 24, and 34; ppm Fe: 283, 1443, and 1877; ppm Mn: 59, 202, and 100; and ppm Zn: 16, 71, and 87.

The clarification, separation, and first wash effluents contain nutrients in concentrations high enough for use as feeds for cattle, poultry, and swine.

043

TIU, Gay Marie M. 2001. Isolation and Partial Characterization of Metabolites from the Marine Brown Alga *Padina sp.* (GT: MS Chem), 64pp.

An unsaturated ketone, palmitic acid, and a conjugated compound with carbonyl and hydroxyl group were obtained from the dichlomethane extract of the marine brown alga *Padina sp*. Collected from the shores of Mapalad, Dalipuga, Iligan City. The compounds were isolated through extraction with methanol, partitioning with dichloromethane, fractionation and purification with a series of gravity column chromatography and high performance liquid chromatography using ethyl acetate, diethyl ether or acetone in hexane as solvent. The partial characterization of these compounds were established using spectral data obtained from IR, mass spectroscopy, and 1D- and 2D – NMR experiments.

The unsaturated ketone and conjugated compound exhibited slight to moderate activity in the Brine Shrimp bioassay at 20% in the 1000 ppm and 50% in 100 ppm, respectively. Palmitic acid showed no activity.

044

YAHCOB, Sheeva M. 2001. Optimization of Supercritical Carbon Dioxide Extraction of the Essential Oil of Philippine *Cananga odorata* Hook Fil et. Thomson Flowers by Response Surface Methodology. (GT: MS Chem), 113pp.

Essential oil was extracted from the flowers of Philippine *Cananga odorata var. genuina* grown in Pala-o, Iligan City by supercritical carbon dioxide ($SC-CO_2$).

A statistical experimental design, first-order 2^3 factorial, was used to investigate the effects of three independent variables (pressure, temperature, and flow rate of CO_2) on % oil yield (w/w), % linalool (v/v) and % benzyl benzoate (v/v) on the extracted for values of pressure (80-100 bar), temperature (35-50 ^{o}C) and flow rate of CO_2 (1-4 mL/min). An optimum oil yield (8.479%) was obtained under the following $SC-CO_2$ extraction operating conditions (98.61 bar, 39.58 ^{o}C, 2.99 mL/min). This oil yield is much higher compared to the oil yield passed the 2nd grade quality except for its value (26.7294), which is too high for the given standard specification of less than 3.

Gas chromatography was performed on the ilang-ilang oil extracted by $SC-CO_2$ extraction, laboratory, and commercial scale hydrosteam distillation. Degradation products were observed in the hydrosteam distillation. The linalool to benzyl benzoate ratio showed that the oil quality in Anao, Tarlac (0.658) is more superior than that in Pala-o, Iligan City (0.583) due to the agroclimatic origin of the plant trees.

Master in Chemistry (MIC)

001

CARREON, Analyn C. 2007. Kinetics of Lipase-Catalyzed Reaction from Hautorium of Germinating Coconut (*Cocos nucifera* L.). (SP: MIC), 103pp.

The lipase from haustorium of germinating coconut is isolated using ammonium sulfate precipitation with 50%, 70%, and 90% saturation. It is found out that higher specific activities are obtained from 90% saturation of AP. The lipase extracts are purified using immobilized Zn metal affinity column chromatography. Competitive evolution with 3mL/min using 1M NaCl in 20mM phosphate buffer at pH 7.2 (eluting buffer) is used in the purification process. Protein content and lipolytic activity are determined from crude, ammonium sulfate precipitate and purified lipase extracts. Among the twelve fractions with 90% saturation of AP, fraction 10 has the highest specific activity and is used to determine kinetic parameters. The density and boiling point of F10 of 90% PLE are 1.02 gcm^{-3} and 105.0°C to 108.0°C, respectively.

The kinetic data is obtained using 100μL, 200μL, 500μL and 800L trilaurin with 25μL PLE. As the amount of substrate increases, the absorbance reading also increases which means that the concentration of the product also increases. The concentration of the product is calculated using Beer-Lambert equation, $A = \varepsilon bc$. Molar absorptivities of trilaurin and glycerol are 62.1641 Lmol^{-1}cm^{-1}, respectively. The kinetic data having constant amount on trilaurin and varying amount of PLE is also obtained.

However, no significant difference is observed. Using the Michaelis-Menten plot of $[V_o]$ against $[S]$, V_{max} is equal to 0.5233μmol/min and K_M is equal to 0.2200 mM. These values are determined graphically. Another method of determining V_{max} and K_M values is by using the Lineweaver-Burk plot or double reciprocal plot. V_{max} and K_M values are 0.6699μmol/min and 0.2304 mM, respectively. Both values obtained are in good agreement. Catalytic constant, k_{cat} which is the turnover number of an enzyme is also calculated. The k_{cat} derived from Michaelis-Menten plot is 1.3×10^3 μL/min and from Lineweaver-Burk plot is 1.7×10^3 μL/min.

The order of reaction is determined using integrated rate law, also known as isolation method. In this method the concentration of the enzyme is made constant. This method is done by assuming a certain order of reaction or plotting the best fit line. Only three of the most common orders of reaction are considered in this study namely: zero, first and second order. The most linear graph is obtained following the second order having the equation of the line: $y = 0.097x + 4.6591$ with $R^2 = 0.985$. The reaction is pseudo-second-order. From the rate expression: rate = k $[S]^2$, the pseudo-second-order rate is constant is calculated and is equal to 6.43×10^{-3} μmolmL^{-1}s^{-1} .

Master of Science in Environmental Science (MS ES)

001
ARAÑA, Ray Vincent E. 2007. Abundance and Distribution of Phytoplankton Communities in the Coastal Waters of Mt. Malindang, Misamis Occidental. (GT: MS ES), 87pp.

Abundance and distribution of phytoplankton communities in the coastal waters of Mt. Malindang, Misamis Occidental were being determined. A total of 27 sampling stations in the coastal areas of Oroquieta, Plaridel and Lopez Jaena were established using a Global Positioning System (GPS). Collection was conducted once a month for a period of 6 months covering the dry (April-May) and wet (June-September) seasons.

A total of 86 genera of phytoplankton were identified during the sampling periods. More species were recorded during wet season in all sampling areas. A high occurrence of red-tide causing organisms (*Ceratium* spp.) was observed in Lopez Jaena during the wet season. These organisms, however, were considered non-toxic.

Water quality measurements indicated values that are within the normal seawater range for temperature, pH, salinity, transparency and dissolved oxygen; the total suspended solids showed higher values near the river mouth of Oroquieta and Plaridel.

Analysis of the community structure in the three sampling areas based on the abundance of the different taxa revealed distinct differences in species assemblage between the wet and dry seasons.

002
ASUFRE, Gemma A. 2007. Spatial and Temporal Distribution of Phytoplankton Communities in the Reef Areas of Maigo and Kauswagan, Lanao del

This study was conducted to determine the distribution and abundance of phytoplankton communities in selected reef areas of Maigo and Kauswagan, Lanao del Norte. The sampling period was during the months of June to December 2004. Four sampling stations per locality were located at one (1) km away from the coastline of Maigo and Kauswagan.

A total of forty-seven (47) genera were noted in all sampling stations where Chaetoceros had the highest number of species observed.

In the investigated areas potentially toxic species were observed where the dinoflagellate *Dinophysis homunculus* was the most important in terms of abundance. Except for the month of June, seven (7) indicator species of poor water quality was observed. *Ceratium macroceros* was found to be cosmopolitan being observed to be distributed in all sampling stations from July to December. Based on the distribution and abundance of all the species of phytoplankton, variability was clearly observed although no clear-cut pattern was observed based on geographical and monthly distribution and abundance. It is hypothesized that a complex of factors govern the structure of plankton communities and could not be directly attributed to geographical location and sampling time.

003

CALUMBA, Honey Jane A. 2005. Distribution of Land Snails on Mt. Malindang, Misamis Occidental, Philippines. (GT: MS ES), 142pp.

Fieldwork was conducted on Mt. Malindang range, Misamis Occidental, Philippines from January to July 2004 in five different vegetation types (mossy, montane, almaciga, dipterocarp and agroecosystem) at elevation between 980 to 2169 meters above sea level. To investigate the distribution of land snails and assess malacofaunal diversity, the study area was sampled using a combination of timed search and visual search methods.

Twenty land snails were recorded to be present on Mt. Malindang. Seven of the species collected are endemic to the Philippines, four are indigenous and two are alien species. Canonical correspondence analysis (CCA) of their local distribution in relation to environmental variables showed 79.1% variance of species abundance and distribution. Furthermore, CCA reveals that their distribution is most strongly related to vegetation type and altitude. The unexplained variance is probably related to a range of other abiotic, biotic, stochastic and scale factors. The 20 species of land snails are not uniformly distributed in the study area, indicating occurrence of ecological specialists. Majority of the snails were found to be localized with low level of abundance. Fourteen species were confined to one vegetation type while six species were found widely dispersed in different vegetation types. Species diversity, richness and endemism were found to be high in the montane forest. Results imply that special conservation of this habitat is necessary for retention of the broadest molluscan diversity. The absence of live individuals of one rare Mt. Malindang endemic species *Amphidromus malindangensis* and the presence of a large number of empty shells of the Philippine endemic *Helicostyla crpytica* further suggests that

conservation of the entire Mt. Malindang forest is very important for molluscan conservation.

004
CARO, Rowena B. 2008. Diversity and Distribution of Avifauna in Mt. Sambilikan, Diwata Range with Notes on their Diet and Endoparasites. (GT: MS ES), 152pp.

Mt. Sambilikan in Mt. Diwata Range of Agusan del Sur, is one of the important bird areas in the Philippines. Many threatened and endemic bird species of Mindanao and Eastern Visayas Region have been reported in this area. This study investigated the diversity, distribution, diet and endoparasites of avifauna in Mt. Sambilikan. Assessment of the mixed lowland dipterocarp, mixed primary-secondary montane, and upper montane-mossy forests, using a combination of mist-netting and transects walk methods, showed 97 species belonging to 13 orders and 37 families. Of these, 56 (58%) are endemic (39 Philippine Endemic, 10 Mindanao Faunal Region Endemic and seven Mindanao Island Endemic). Eight threatened species (8.5%) were recorded (one critically endangered and seven vulnerable).

Highest species richness (R = 82) was recorded in the mixed primary-secondary forest (820 – 870 masl) while the lowest species richness (R=46) was recorded in the upper montane-mossy forest (1,000 – 1,050 masl). Species diversity index was also highest (H'=2.83) in the mixed primary-secondary forest while upper montane-mossy forest had the lowest (H'=2.48). The mixed primary-secondary forest had the highest recorded number of endemic (R = 47) as well as threatened species (R=6).

Fourteen samples of *Hypsipetes philippinus* and eight samples of *Macronous striaticeps* were dissected to examine diet composition as well as endoparasites. The gut contents of *Hypsipetes philippinus* showed digested fruit pulp, fibers, seeds, and spider. The gut of *Macronous striaticeps* yielded seed and fruit pulp of *Ficus minahassae*. Segmented endoparasites were found in the intestine of both species. Percent occurrence of endoparasites was found to be higher in *Macronous striaticeps* than in *Hypsipetes philippinus*.

Results imply that Mt. Sambilikan is home to many endemic and threatened bird species. The prevailing threats such as conversion of forest areas for agricultural purposes and hunting of birds for food indicate that policies and conservation measures are necessary to protect the bird species and other forms of biodiversity in the area.

005
CATOLICO, Merlito C. 2007. Waste Characterization Analysis of Domestic Solid Waste in Two Barangays of Iligan City: Its Implication to the Solid Waste Management Plan. (GT: MS ES), 293pp.

The evaluation of solid waste management of two barangays in Iligan City was carried out in three areas, namely: characterization of solid waste with emphasis on its

relationship to the socio-economic factors, policy review with regards to RA 9003, and application of the principles of environmental good governance in solid waste management. The number of samples for each barangay was determined from the pre-sampling activity. Sample households were identified through stratified random sampling, based on income level. The solid waste was then collected and characterized for seven days. Socio-economic data were also obtained from the respondents. The study revealed the solid waste generation profile of each barangay, and its relationship to certain socio-economic factors. This study recommends that each barangay should put up a Material Recovery Facility. Its application was evaluated using financial and economic viability indicators. The barangay should also seriously consider socio-economic factors within the barangay in the preparation of their Solid Waste Management Plan. The study further recommends that solid waste characterization of the other barangays of the city be done, and its analysis will serve as an input to local government officials and other stakeholders in the preparation and implementation of the solid waste management plans.

006

REQUIERON, Elani A. 2007. Abundance and Distribution of Zooplankton Communities in the Coastal Areas of Mt. Malindang, Misamis Occidental. (GT: MS ES), 148pp.

This study was conducted to determine the distribution and abundance of zooplankton in selected coastal areas in the Mt. Malindang area during the wet and dry seasons. Three sampling areas that were considered fishing grounds were investigated for zooplankton diversity – Plaridel, Lopez-Jaena and Oroquieta. Results of the study showed variations between dry and wet seasonal distribution and abundance of zooplankton. The community structure of zooplankton during the dry season differed from those during the wet season within and between sampling areas. A closer investigation of the results revealed there are communities that are closely related based on the presence/absence and from the abundance of selected zooplankton groups. Investigation of the physicochemical profile of the areas show little variations and are within range to influence the distribution and abundance of the organisms thus it was concluded that there are the existence of other variables like weather changes and nutrient supply that may have influenced the changes in the community structure of zooplankton in the three sampling areas.

Master of Science in Mathematics (MS Math)

001

ABABA, Zenaida A. 1985. On Chromatic Polynomials of Graphs. (GT: MS Math), 43pp.

This study was designed to bring about results related to the chromatic polynomials of graphs. Specifically, it aimed to illustrate some techniques in deriving the

chromatic polynomials of the classes of graphs called the fan, the wheel, the cycle with a chord, and the cycle intercepting a path. It also aimed to characterize in terms of the zeros of corresponding chromatic polynomials the classes of the graphs called the complete graph, cycle, the forest, the fan, and the wheel. To achieve these objectives, studies were made on the work of early researchers on the subject and their established results used.

The study is quite theoretical and analytic and the findings arrived at open new frontiers which other researchers in this particular field of mathematics may undertake.

002
ACAPULCO, Juniven P. 1997. On the Strong Lusin Condition and the SL-Integral. (GT: MS Math), 76pp.

This paper is based on the research work by Lee Peng Yee and R. Vyborny [13], where a Riemann-type integral is defined using the Strong Lusin condition. This new integral is called the SL-integral. One interesting shares some common properties with the Henstock integral. One interesting feature of the SL-integral is the integrability of every derivative. It will also be shown that the Henstock integral and the SL- integral are equivalent. This paper will also present a convergence theorem, which is, in a sense, the best possible for the SL- integral.

003
AGDEPPA, Rhoda P. 1999. On the Products of Normal Finite-By-Supersoluble and Normal Locally Finite-By-Supersoluble Groups. (GT: MS Math), 52pp.

The product of two normal supersoluble subgroups need not be supersoluble. Beidleman an Smith showed that of G = HK, where H is a normal finitely generated nilpotent group and K is a supersoluble groups are finite-by-supersoluble, it is but natural to ask: G = HK, where H and K are normal finite-by-supersoluble groups, does it follow that G is also finite-by-supersoluble?

This paper extends the results of Perez [6] into:

The product G = HK, where H and K are normal finite-by-supersoluble subgroups of G and H has a subgroup A having the following properties:

i)   A ◄ G;
ii)   Every subgroup of A is normal in H;
iii)   G/A is finite-by-supersoluble; is finite-by-supersoluble.

Similarly, the product G = HK, where H and K are locally finite-by-supersoluble

297

subgroups of G and M and N are finitely generated subgroups of H and K, respectively, such that M has a subgroup A having the properties:

    i)   A ◄ MN;
    ii)   Every subgroup of A Is a normal in M;
    iii)   MN/A is finite-by-supersoluble; is finite-by-supersoluble.

Other consequential results such as the product of a normal finite-by-supersoluble subgroup and locally finite-by-supersoluble subgroup by a siding subgroup are also presented in this paper.

This paper poses the following question: If G = HK, where H is a normal locally siding subgroup of G and K is a normal finite-by-supersoluble subgroup of G, what can be said of G?

004
ALBIA, Jake A. 2006. On Forcing Geodetic Number of a Graph. (GT: MS Math), 53pp.

This study is an extension of the work on the forcing geodetic number of a graph which was initiated by Chartrand and Zhang almost a decade ago. It seeks to determine the forcing geodetic numbers of graphs and the relationship between the geodetic number of a graph and its forcing geodetic number.

With regard to the foregoing goals, it is shown that there connected graphs for which the geodetic number coincides with the forcing geodetic number.

Other results generated from this study include the determination of (a) the geodetic and the forcing geodetic numbers of the complements of the path P_n and the cycle C_n; (b) the forcing geodetic numbers of the generalized wheel and fan; and (c) the forcing geodetic numbers of the sum of graphs $G + K_n$ and $G + H$, where G and H are connected non-complete graphs and K_n is the complete graph of order n.

005
ALDEMA, Rodelito M. 1998. An Integral with Respect to a System of Paths. (GT: MS Math), 66pp.

This paper focuses on the integral introduced by S. Fu in [12]. This integral is called the *E*-path integral and includes the Henstock integral and the *AP* integral of Burkill [1].

In Chapter II, we will define a system of paths on the real line. We also introduce notion such as limit, continuity, and differentiability with respect to a system of paths. The Riemann type definition of the *E*-path integral and some of its familiar properties will be introduce in Chapter III. The revisions f the Cauchy Criterion and the Henstock lemma for

the *E*-path integral will be presented in this chapter. In Chapter IV, the concepts of the Strong Lusin condition with respect to a system of paths (*ESL*) will be introduce. This concept will be used to give a descriptive definition of the *E*-path integral. In Chapter V, we will introduce the concept of generalized absolute continuity (*ACG**) with respect to a system of paths. We will give some of the relationships between this concept and the *ESL*. Furthermore, using this new concept, we will give another descriptive definition of the *E*-path integral.

006
ALIPAN, Gloria M. 1995. On Generalized N-Cubes. (GT: MS Math), 77pp.

This research work deals with graphs whose vertex- set consists of all the binary n-tuples and where an edge occurs whenever tow vertices differ in precisely k coordinates. We call these graphs the generalized n-cubes or the (n, k) –cubes in short, and denote these graphs with the symbol Q (n, k).

Basic properties of the generalized n-cubes are established. Main results include isomorphism of Q (n, k) and Q (n, n-1) when n is even, and hamiltonicity in Q (n, k) whenever k is odd. Conditions on n and k so that eulerian trails or cycles exist in the graph., are also discussed. These where extended to the components of the graph in cases where the graph is disconnected Q (n, k) for k = 2 and 4, is also established.

This paper also includes some unsolved problems which may be of interest to graph theory researchers who will be doing a similar study, or probably those who want to do further investigations about the said graphs.

007
ALQUIZA, Gina C. 1995. On Matrix Spaces with Zero Determinant. (GT: MS Math), 71pp.

Let $M_n(F)$ denote the space of all n x n matrices over a given field F. In this paper, we are concerned mainly with linear subspaces *L* of $M_n(F)$ with the property that the determinant of every element of *L* is zero. We define a null vector to be the zero vector

$$\theta = \begin{bmatrix} 0 \\ 0 \\ \vdots \\ 0 \end{bmatrix}$$

Thus, *L* has a common null vector means that every element of *L* contains a column equal to θ. Here it is proved that if the dimension of *L* exceeds $n^2 - 2n + 2$ then either *L* or its transpose L^t has a common null vector where L^t consists of the transpose of the matrices in *L*. This extends the result due to Dieudonne and solves a research problem posed by S. Pierce. Also, we consider in this paper the problem of classifying all maximal matrix spaces with zero determinant and offer some examples and observations regarding this apparently difficult problem.

008
ANIVERSARIO, Imelda S. 1996. On the Spectra of Graphs. (GT: MS Math), 104pp.

Parts of chapters 2 and 6 of the "**Spectra of Graphs** Theory and Applications" by Drigos M. Cvetkovic, Michael Doob, and Horst Sachs provided the impetus of this study.

Characteristics polynomial of graphs resulting from some graph n-ray operations was investigated. The Laplace's method for finding determinants was repeatedly used to obtain some of the spectra. Finally, four reduction procedures were established to deduce the characteristics polynomials of graphs derived from other simpler graphs.

Chapter v of this paper enumerates the results of the study. The first group of results composed of the characteristic polynomials of the complement and line graph of a regular graph; direct sum and complete product of two graphs; and the complete product of regular graphs. The second group of results presented the spectra of totally disconnected, complete, complete bipartite, as well as the star and Petersen graphs. The other special graphs whose spectra were considered are as follows:

1.   The 1-regular, the cocktail-party, and the complete multipartite graphs.
2.   The windmill and the dutch-t-windmill graphs
3.   The cycle, the wheel, the crown, the path, the fan, and the double fan graphs

Recommendations in the study include the determination of the spectra of the sum of two paths of a path and a cycle or of two cycles and the mobius ladder. Also, further about the spectra of the line graphs is recommended.

009
ARCEDE, Jayrold P. 2004. Convexity Oriented Graphs. (GT: MS Math), 55pp.

Let D be a connected oriented graph. For vertices u and v in D, the set $I[u, v]$ consists of u and v together with all vertices lying in a $u - v$ geodesic or $v - u$ geodesic in D, For $S \subseteq V(D)$, $I[S]$ is the union of all sets $I[u, v]$ with $u, v \in S$. A set S is convex if $I[S] = S$. The convexity number $con\ (D)$ of D is the maximum cardinality of a proper convex set of D.

It is shown that for every nontrivial connected oriented graph D of order $n \geq 2$, $con\ (D) = n - 1$ if and only if D contains a transmitter, receiver or transitive vertex. Also, it is proved that there is no connected oriented graph of order at least 4 with $con\ (D) = 2$. For $n \geq 4$ and every pair k, n of integers with $1 \leq k \leq n - 1$, there exists an oriented graph of order n with convexity number k.

For a nontrivial connected graph G, the lower orientable convexity number $con^-(G)$ is the minimum convexity number among all orientations of G and the upper orientable convexity number $con^+(G)$ in the maximum of such convexity number. For every graph G of order $n \geq 2$, $con^+(G) = n - 1$.

For a nontrivial connection graph G of order n that contains an end-vertex n, con^-

(G) = *n* – 1. The lower orientable convexity number of a cycle, complete graph and complete bipartite graph in one. Other results on convexity numbers on sums and Cartesian products are also presented.

010
ARTES, Rosalio Jr. G. 2004. On the Edge Cover the Graphs. (GT: MS Math), 66pp.

Let *G* be graph without isolated vertices. An edge in *G* is said to *cover* the vertices with which it is incident. A subset *U* of *E(G)* is an *edge cover* of *G* if for each vertex *v* ε *V(G)* there is an edge in *U* which covers of *v*. The *edge covering number* of *G* is given by e_c *(G)* = min {│*U*│:*U* is an edge cover of *G*} This study seeks to determine the edge covering numbers of graphs which result from some unary or binary operations and other simple graphs.

For any graph without isolated vertices, the edge set of s graph is an edge cover of the graph. Hence, the size of a graph is an upper bound for its edge covering number. The edge covering of a graph is equal to its size if and only if it is a star.

If a graph has a spanning path, then its edge covering number is equal to the least integer greater than or equal to half of its order. Some upper bounds for the sum, the Cartesian product, the composition, and the corona of two graphs, and graphs which result from unary operations are also obtained in this study.

011
AVILES, Mathithias II S. 2006. On Some Trees with Non-Singular Complement. (GT: MS Math), 66pp.

This study gives necessary and sufficient conditions for the complement of some trees to be non-singular.

Formulas are determined for the determinant of the adjacency matrix of the complement of some type of trees such as trees with diameter less than or equal to 5 and having additional property that every non-pendant vertex has a constant degree, trees whose removal of its pendant vertices results into a path which we call as caterpillars and trees S_nP_m called star paths.

From the expressions for the determinant the above non-singular trees are characterized.

Part of this study is an exposition of the papers of Gervacio and Rara [4,5] entitled "Some Trees With Diameter 5 and Non-singular Complement" and " Some Caterpillars With Non-singular Complement".

012
BAYLON, Rowena T. 1996. On the Geometric Index of Graphs. (GT: MS Math), 91pp.

The main concern of this paper is to find the geometric index of G which is the smallest integer n of some special graphs such the graph G is a unit graph in R^n. it only considers graphs which are finite, undirected, without loops nor multiple edges. Also, edge crossings are allowed in the figures but distinct vertices must not pass through any other vertex.

It further aims to determine the following: 1) the unit graphs in R and R^2 ; 2) the necessary and sufficient conditions for a graph G to be a unit graph in R^2 ; 3) the geometric indices of some special graphs; and 4) the relationship between the connectivity K of G and its geometric index.

It was discovered that the geometric index of a path P_n (n > 1) is 1 while some graphs like the cycle, the tree, which is not a path, the crown, the star, the starpath, the book, the stacked books, the planar grid, the ladder, the prism and the P sub n squared have their geometric indices equal to 2. For the fan F_n, its geometric index is equal to 2 when n = 2, …, 6 but for n $\geq$ 7, it is 3. Also, the wheel, the helm, web and the double cone have their geometric indices equal to three for n $\neq$ 6 but when n = 6, they can all be drawn in R^2 except for the double cone which is not yet found out. A bound for torroidal grid was also found out but its geometric index is yet unknown.

The results of this study may serve as steeping stones for other researchers who are interested in expanding the study for geometric index on all graphs.

013
BELIDA, Joseph T. 2005. On the Products of Normal Supersoluble-By-Finite Groups and Normal Locally Supersoluble-By-Finite Groups. (GT: MS Math), 55pp.

The product of two normal supersoluble subgroups need not be supersoluble. However, under some conditions, Beidleman and Smith showed that it can be supersoluble. Agdeppa and Petalcorin also came up with results that under some conditions, the product of normal finite-by-supersoluble group is supersoluble-by-finite and supersoluble groups are just examples of supersoluble-by-finite groups. As a consequence to this, does it follow that under some conditions, the product of normal supersoluble-by-finite groups is also supersoluble-by-finite?

In this paper, we will prove an analogue of the results of Agdeppa and petalcorin on the class of supersoluble-by-finite groups knowing the fact that the class of supersoluble-by-finite groups contain the class of finite-by-supersoluble groups.

014

BENITEZ, Julius V. 2000. On the S-Integral. (GT: MS Math), 65pp.

In 1993, Wang and Ding [8] introduced a Riemann-type integral. This integral, called the S-integral, is defined using Thomson's local system. It was known that this integral includes other integrals, such as dyadic integral, approximately continuous integral and the Henstock integral. Several properties of local system and the S-integral were given and proven by Lim [6].

This study focuses on giving further properties of the S-integral and versions of some well-known theorems in advance calculus. In particular, we state and prove the Fundamental Theorem, the Cauchy Extension Theorem and Integration-by-parts formula for the S-integral. Also, we formulate some convergence theorems for the S-integral such as the Uniform Convergence Theorem, the Monotone Convergence Theorem and the Dominated Convergence Theorem.

015
BERINGUEL, Eugene G. 2004. On the *mth* Roots of a Singular Complex Matrix. (GT: MS Math), 86pp.

This paper discusses the conditions for the existence of the *m*th roots of a singular matrix and how these roots are obtained using the dimensions of the null spaces of the powers of the matrix. It is found out that an *n x n* singular complex matrix *A* has an *m*th root if and only if for every integer v≥0, the ascent sequence of A has no more than one element between *m v* and *m*(*v*+1).

A modified method for constructing an *m*th root of the direct sum of all the Jordan blocks corresponding to zero eigenvalues is presented. Also, a formula in simplifies from for extracting an *m*th root of a singular complex matrix, if it exists is derived.

016
BRITOS, Virgilio Jr. V. 2007. More on Cycle Derivatives of Graphs. (GT: MS Math), 58pp.

The cycle derivative $G^{'}$ of a graph G is a graph obtained from G by treating the prime cycles (also called chordless cycles or induced cycles) of G as vertices of G$^{'}$ and two vertices *x* and *y in* G$^{'}$ are adjacent if and only if the corresponding cycles C (*x*) and C (y), respectively, have an edge in common in G. If G is acyclic , then $G^{'}$ is a null graph.

This study determined the cycle derivatives of the following graphs: generalized wheel, generalized fan, corona fan, corona graphs, line graphs of some graphs, closure of the line of some graphs, and cartesian product of some graphs. It is also established in the study the relationship between the cycle derivatives of the closure of some graphs and the closure of the cycle derivative of some graphs. The sizes of the cycle derivatives of graphs obtained were also determined.

Systematic approaches in constructing the cycle derivative of generalized wheel, generalized fan, and the corona of some graphs were also discussed and illustrated.

017

BUENAVISTA, Rolando N. 1996. On the Tree Chromatic Index of a Graph. (GT: MS Math), 84pp.

This study displayed one of the coloring invariants in graph coloring theory, the tree chromatic index of a graph. It is the minimum number of edge-disjoint trees which E(G) is partitioned.

In this paper, the tree chromatic indices of some special graphs such as the path, the star, the cycle, the fan, the wheel, the complete graph, the complete bipartite and their complements are established.

A characterization of graphs with tree chromatic indices equal to two is established.

Properties of reduced, decreased, persistent and resistant graphs with respect to the tree chromatic index partitioning are given.

018

BUNAYOG, Janet J. 1995. On the Determinant of the Adjacency Matrix for a Planar Sublattice of Z x Z. (GT: MS Math), 56pp.

This paper deals with a special kind of graph G known as full subgraphs of Z x Z, that is, the vertices p =(m,n) of G have integer coordinates and two vertices p =(mn), p´ = (m´, n´) are adjacent if and only if m =m´ $\pm$ 1, n = n´ or n = n´ $\pm$ 1, m = m´. Graphs G is always thought of as imbedded in R^2 so that edge $\overline{pp}$ ' of G are horizontal or vertical line segments of distance one from vertex p to p´. A point p $\in$ Z x Z and p $\notin$ V (G) is not enclosed by the graph G if for every integer n, there exist a sequence of distinct point p_0, p_1, p_2,.. ., p_n of Z x Z where $p_{0=}$p, $p_i \notin$ V (G) and each line segment $\overline{pi\ pi}$ $_{+1}$ where i = 0, 1, 2,. . ., n-1 is either a horizontal or vertical line segment of distance one or a diagonal line of distance $\sqrt{2}$. The graph G is simple connected if for every point p $\notin$ V(G) is not enclosedby G. We definethe adjacency matrix of G to be the n x n (0,1)-matrix A (G) =[a_{ij}], where a_{ij} = 1 if p_i is adjacent to p $_j$ and a_{ij} = 0 otherwise. We will prove in this paper that the determinant of the adjacency matrix of G is 0, 1, -1 if G is simply connected.

019

BUOT, Jude C. 2008. On Topological Properties Involving Generalized Open Sets. (GT: MS Math), 88pp.

Let ρ be an operator for the family τ, where τ is the topology assigned to a nonempty set X. A subset A of X is said to be ρ-open if $A \subseteq \rho Int A$ Colasante [5] used this concept and obtained generalized topological properties for interior and closure of sets. As such, this paper further investigates interesting properties of ρ-open sets by defining and characterizing ρ-continuous, ρ-open and ρ-closed functions, ρ-connected spaces, and separation axioms. Moreover, ρ-open sets in the product space are explored.

020
CABARO, Amerkhan G. 2007. On the Extent of Graphs in the Plane. (GT: MS Math), 54pp.

Some graphs can be drawn in the plane such that the edges are all straight line segments of unit length. These graphs are called unit-distance graph in the plane. A given unit-distance representation of the graph of a graph in the plane can be enclosed in a smallest closed disk. The supremum of the diameters of these smallest closed disk as we range overall possible unit-distance representations of the graph, is called the extent of the graph.

This study deals with the extent of unit-distance graphs in the plane. The first investigations made were focused on special unit graphs. Extent of graphs in the plane resulting from unary and binary operations, were also discussed. Results on the bound for the extent of any graph in terms of the diameter of the graph, were established and were given details. Such results were used in the discussions on the bound for the extent of other graphs.

021
CANOY, Sergio Jr. R. 1987. On Long Line, Extended and Altered Long Lines. (GT: MS Math), 38pp.

Three of the most instructive examples in topology, the long line, the extended long line, and the altered long line, are of interest here. Hence, the main objective of this study is to investigate and prove some properties of the aforementioned spaces.

The constructive of the long line is primarily supported by the axiom of choice and by the well-ordering theorem of Zermelo. The long line is given and order and topologized using the order topology. It is investigated and proven that the long line is connected, count ably compact, and a Hausdorff space. However, it is not a compact space.

The extended long line has almost the same properties as the long line. One main result is that the extended long line is a compact space.

The altered long line which is formed simply by adjoining an element p to the long line is shown to be count ably compact and connected. Like the long line, the altered long line is not compact.

022

CAPILITAN, Oliver R. 2002. Representation of the Automorphism Group of *p* – Groups on the General Linear Group. (GT: MS Math), 73pp.

This study on finite *p* – group is based on the paper of Ursula Martin, "Almost All *p* – Groups Have Automorphism Group a *p* – Group" and the paper of R.M. Bryant and L.G. Kovacs, "Lie Representations and Groups of Prime Power Order". It presents the role of the Frattini subgroup and the Frattini factor group in the characterization of the Automorphism group of a *p* – group. Furthermore, it shows that the Automorphism group of *p* – groups can be embedded in the General Linear Group.

023

CASES, Vincent P. 2006. On the Residue Classes of Real Numbers and Their Properties. (GT: MS Math), 56pp.

The concept of congruence is associated with integers. Thus, a natural question arises. Can this concept of congruence be associated with the real numbers? In this thesis, the researcher give an answer to the question.

Let $\alpha > 0$ be a fixed real number and $a, b, \in R$. Then, $a \equiv b \pmod{\alpha}$ if and only if a-$b = k\alpha$ for some $k \in Z$. This definition is parallel to the concept of residue classes of integers Z_n for fixed $n \in Z$. As a result, this also constitutes a residue classes of real numbers denoted as R_α of residue classes can be extended to topology. Consider the mapping $\gamma = R \rightarrow R_\alpha$ which is defined by $\gamma(x) = [r]_\alpha$ such that x = $r + k\alpha$ for some $k \in Z$ and $0 \leq r < \alpha$. Let $\in > 0$, the symmetric open ball in R center at $x \in R$ of radius $\in$ is defined by $B (\in, x) = \{y : |x - y| < \in\}$. Through this, the basis element in R_α center at $[r]_\alpha \in R_\alpha$ determined by $x \in [r]_\alpha$, can be determined by the set $B_x' (\in, [r]_\alpha) = \{ \gamma(y) : y \in B (\in, x)\}$. The set of these basis elements generate the topology τ in R_α.

024

CASTOR, Emmy G. 1995. On Groups Whose Order is a Power of Prime. (GT: MS Math), 90pp.

This paper deals with a particular algebraic structure, the finite group. Topics in Chapter V of Daniel Gorenstein's book, "Finite Groups" triggered the mind of the researcher to work on groups whose order is a power of prime. Primarily, this study deals on automorphism of p-groups and conditions under which a nontrivial automorphism of a p-group remains nontrivial when restricted to a various characteristic subgroups. This research is interrelated with Characteristic Theory and Representation Theory, thus enhancing the interest of some readers to extend their knowledge on groups and may relate it to other sciences.

025

CLAVANO, Hannah Ilijah L. 2004. On the Nonexistence Results for Hadamard-Like

Matrices. (GT: MS Math), 41pp.

This paper is an exposition of the note entitled "Nonexistence Results for Hadamard-Like Matrices" by Justin D. Christian and Bryan L. Shader, published in the Electronic Journal of Combinatorics 11 (2004) #N1. The results presented by the authors in the note are given detailed proofs in this paper so as to make the said work readable for interested researchers.

Specifically, the main problem focused by the said note is the following: for which values of n does there exist an n by n $(0, 1, -1,)$-matrix whose rows are nonzero, mutually (or pairwise) orthogonal, and the first row has no zeros. The authors then indicated some restrictions on the possible values of n called forth in the problem that may be viewed as nonexistence results. Such restrictions are as follows: n is not the form p^k, $2p^k$, or $3p$, where p is an odd prime and k is a positive integer. Moreover, it has been shown in the said note that the existence of a row-orthogonal n by n $(0,1,-1)$-matrix with a full column is equivalent to the existence of a Hadamard matrix of order n.

026

DAGONDON, Susan C. 1998. Cyclically K-Complementary Graphs of Complete Graphs and Some Regular Graphs. (GT: MS Math), 46pp.

Let G be a graph of order n and let H_1, H_2, H_3,…, H_k be an isomorphic factorization of a graph G where k ≥ 2and k divides the size of G. if there is permutation ß on the V(G) such that ß: $V(H_i) \rightarrow V(H_{i+1})$ is an isomorphism for i= 1, 2, …, k − 1 then a graph G' of order n isomorphic to H_i is called a cyclically k-complementary graph, denoted by G (k, n) and ß a k-complementing permutation of G (k, n). This paper presents the existence of cyclically k-complementary graphs. Characterizations of cyclically k-complementary graphs of complete graphs are also shown.

027

DALAM, Alexis Bernard A. 2007. On Edge-Monophonic Sets in Graphs. (GT: MS Math), 87pp.

This study seeks to characterize the edge-monophonic sets of the join, corona, and Kr-gluing of complete graphs, where a subset S _ V (G) of G is an edge-monophonic set of G if every edge of G lies on some monophonic path joining two vertices of S. It aims to characterize the edge-monophonic sets in graphs resulting from deletion of independent edges of complete graphs. Some of the characterization results obtained here employ the star-neighborhood vertex. This newly defined concept prove to be useful in improving the lower bound of the edge-monophonic number of the graph and characterizing graphs of order n whose edge-monophonic number is equal to n - 1 or n. It explore the relationships both between cutvertices and edge-monophonic sets and between star-neighborhood

vertices and edge-monophonic sets. Finally, this study determine exact expressions for the edge-monophonic numbers of graphs resulting from the aforementioned graph operations.

028

DECASA, Lyndon B. 2005. On Forcing Convexity Number of Some Graphs. (GT: MS Math), 49pp.

The forcing convexity number $f\,con\,(S)$ of a maximum convex set S of G is the minimum cardinality among the forcing subsets for S. The forcing number $f\,con\,(G)$ of G is the minimum forcing convexity number among all maximum convex sets of G.

This study shows that the forcing convexity number of a connected graph G of order $n \geq 1$ is n-1 if and only if it is the complete graph K_n. it is also proved that if G is connected and has k complete vertices ($k \geq 1$), then $f\,con\,(G) = k - 1$. this result generalizes some results obtained by Chartrand and Zhang. In particular, if G is a tree consisting of k endpoints, then $f\,con\,(G) = k - 1$.

The study also gives the forcing convexity number of the wheel, generalized wheel, fan, generalized fan, the sum and the corona of some graphs. The study pointed out that the forcing convexity number of a graph is not always greater that the forcing convexity number of its subgraph.

Moreover, the study gives necessary and sufficient conditions for a connected graph G to satisfy the property the $f\,con\,(G) = con\,(G)$.

029

DUYAGUIT, Ma. Cristina L. 1998. Applications of Thompson's Lemma in Real Analysis. (GT: MS Math), 53pp.

The present work is based on the two presented by M. Botsko, where Thompson's Lemma, characterized by a full cover, is used to prove various theorems in elementary analysis including the well-known Heine-Borel and Bolzano-Weierstrass Theorems. In this paper it will be shown that this lemma can give simplified and unified proof of these various theorems which usually have and longer proofs. This paper will also show two proofs of Thompson's Lemma one using the Nested Interval Theorem, and another using the Completeness Axiom.

030

ESTILLORE, Natividad Virginia D. 1995. On the Particular and Excluded Point Topologies. (GT: MS Math), 68pp.

This paper deals with two different topologies that may be defined on a nonempty set X. We call these topologies the particular point topology and the excluded point topology.

It is the aim of this study to exhibit the exact relationships between some of the

compactness, countability and connectedness properties by investigating those which are satisfied by the space X with respect to the said topologies.

The second chapter of this paper covers some basic topological concepts which may help the reader in following the proofs of the main results presented in the next two chapters.

The main results include the relationships between the following: limit point and ω-accumulation point; first countability and second countability; connectedness and hyperconnectedness; path and arcwise connectedness; pseudocompactness and weakly countably compactness; a compact space and its open continuous image. The properties of the above mentioned spaces which are dependent on the size of X are also included.

031
FABRERO, Calixto B. 1999. Borel Measures. (GT: MS Math), 96pp.

The area of measure theory has a vast number of applications in analysis, topology, probability, and others. The main thrust of this paper is on measures defined on topological spaces. A good acquaintance with point set topology and measure theory is prerequisite for reading this paper.

The first two chapters are on notations, set theoretic and topological preliminaries. Several examples are also explored which are needed in the sequel.

The third chapter is a brief review of measure theory including some examples. The idea of outer measure is also discussed including completeness, saturation, and σ – finiteness.

The concept of measure defined in a topological space or Borel measure is explored in the fourth chapter. The regularity and support properties are studied in a topological setting with at least a Hausdorff separation property. Important examples, including the celebrated Lebesgue measure in R^n, are discussed to illuminate how the idea works. Some of these examples are quite new and some are standard.

The last chapter studies the regularity of finite and σ – finite Borel measures and establishes few basic connections between regularity, T-additivity, and support properties. Question arising between full-support and regularity is also answered.

032
FERNANDEZ, Reynard T. 1995. Properties and Models of Some Probability Distributions. (GT: MS Math), 257pp.

This paper is a survey and exposition on the mathematical as well as the statistical properties of seven discrete and nine continuous probability distribution functions, namely: discrete uniform, Bernoulli, binomial, hypergeometric, geometric, negative binomial and Poisson for discrete; and uniform, normal, gamma, exponential, chi-square, beta, Cauchy, Laplace, and Weibull for continuous.

The investigation makes extensive use of methods of calculus, particularly integration, limits and series for the exposition of the statistical features of each of the distributions included in this study. These statistical features are the mean, variance, moment generating and characteristic functions. Models of the distributions applied in various fields of interest are also presented.

Relationships among some of the distributions are established via the concept of limiting distribution; in particular, Poisson a limiting distribution of binomial. The chi-square, Student –t and F- distributions are derived from the distribution of normally distributed random variable using the concept of function of random variable/s and the technique of Jacobian transform. In addition, binomial distribution is shown as a distribution of sum of Bernoulli random variables.

Special cases of some distributions are presented. Geometric distribution is shown to be a special case of negative binomial; chi- square and exponential are established to belong to the family of gamma distributions and exponential as a particular case of Weibull.

033
FLORIDA, Veronica B. 2005. On Groups with Cyclic Quotient. (GT: MS Math), 50pp.

This study on groups with cyclic quotient is based on the author's undergraduate paper. GV-groups are defined as groups having proper normal subgroups such that its quotient group is cyclic. These GV-groups only deal with non-simple groups. The present study characterizes further the GV-groups which gives the sufficient condition of G/K for G to be a GV-group. This paper also shows a construction of a proper normal subgroup of a subgroup H in a GV-group G so that H is also a GV-group. Furthermore, an investigation is also made if the direct product of two GV-groups is a GV-group. The researcher also finds some known results for G/N to be cyclic. Moreover, this study introduces some properties for a non-simple group to be a GV-group of which some are based from B. Ikenaga's "Almost Cyclic groups'. The paper provides conditions for G so that G/N is cyclic, given that G has a proper normal subgroup N such that G/N is abelian but not cyclic. In addition, consequences for N and G/N are presented provided that G is an almost cyclic GV-group with N the proper normal. Finally, this present study confirms the results obtained in the author's undergraduate paper.

034
FRONDOZA, Michael B. 2007. On Edge Steiner Sets and Edge Steiner Numbers of Graphs. (GT: MS Math), 70pp.

Given a connected graph G and a nonempty subset W of V(G), a Steiner W-tree is a tree of minimum order that contains all of W. Let $S_e(W)$ denote the set of all edges of G that lie on any Steiner W-tree. If $S_e(W) = E(G)$, then W is said to be an edge Steiner set of G. the edge Steiner number $st_e(G)$ of G is defined as the minimum cardinality of an edge Steiner set of G. this study provided a characterization all graphs G whose edge Steiner

numbers are equal to |V(G)| –1. This characterization employed the notion of cutvertices. Also, characterizations of the edge Steiner sets in the join and corona of any to graphs, the K_r- gluing of complete graphs and the edge deletion from complete graphs were obtained. Moreover, generated in this study are the formulas that can be used to determine the edge Steiner number of graphs the above mentioned operations.

035
FUSCABLO, Lourdes G. 1992. Automorphism Groups of Graphs. (GT: MS Math), 102pp.

This study is about the automorphism groups of graphs. In particular, this study is to determine and prove the automorphism of some special and composite graphs.

In order to attain these objectives, some special graphs like path, cycle, complete, and complete bipartite graphs are investigated. All possible permutations of the non-adjacency as well as the degree of the vertices of the said graph are enumerated and studied. The set of all these permutations that preserve degree and adjacency is proved to form a group and is called the automorphism group of the graph or simply the group of the graph.

Moreover, composite graphs are also considered and several remarkable results are verified and proved.

The results on the automorphism groups of both special and composite graphs considered in this study hold true for any graph without loops and multiple edges.

036
GAQUING, Napoleon Jr. A. 1991. On a Generalization of the Riemann Integral. (GT: MS Math), 81pp.

The present work is a follow-up study on a new integral called the G integral introduced by Michael W. Botsko in his paper, which appeared in the American Mathematical Monthly (1986). This new integral is an extension of the Riemann integral. Since the Riemann integral depends upon the concepts of upper and lower sums, a method of constructing the G integral is by extending these concepts to the concepts of upper and lower functions. Using this new idea, it will be shown that the G integral shares some common properties with the Riemann integral. One interesting feature of the G integral is that while the Riemann and the Lebesque integral do not guarantee that every derivative is integrable the G integral does so. It will also be shown that some functions, which are either not Riemann or not Lebesque integrable are G integrable. This paper will also show a necessary and sufficient condition for the integrability of a function. It will also be shown that the continuity need not be a requirement for integrability. In addition, G integral analogs of integration by parts, change of variable, and uniform convergence theorem are proved here using slightly different hypotheses.

037

GO, Carmelito E. 1996. Linear Representations of Inverse Semi Groups. (GT: MS Math), 72pp.

We shall consider linear representations of inverse semigroups, that is, homomorphisms from inverse semigroups into the inverse semigroup of all multi-automorphisms of a linear space over the set of complex numbers. Specifically, this study aims to discuss this inverse semigroup of all muti-automorphisms and to establish that two vector spaces are isomorphic if and only if their corresponding inverse semigroups of all multi-automophisms of such two vector spaces are also isomorphic. It also aims to give and construct a kind of linear representations of inverse semigroup. Several books and manuscripts were acquired and studied to help in achieving these objectives.

Many papers and researches have been published as new contributions to inverse semigroup theory. This study is just one of these new contributions. Other types of representations can be a part of the inverse semigroup theory which other researchers may consider to study and construct.

038

GOPO, Gualberto L. 1998. Improving Productivity of Hot Strip Mill by Knowledge-Based Pacing Control System. (GT: MS Math), 84pp.

As the intensity of local and global competition increases, it has become necessary that manufacturing firms improve productivity of its facilities. In the steel industry, a hot strip mill is one manufacturing facility that requires large investment to install, hence getting the most out of the facility has become more crucial. One pressing problem in the hot strip mill is how to pace the manufacturing processes so as to maximize utilization of the mill facility in order to improve the overall mill throughout. This paper is a technical evaluation of the feasibility of implementing a knowledge-based control application in improving productivity of a hot strip mill by maximizing mill utilization. It is concerned with the domain. Specifically, a framework for the use of the mill pacing control is developed for National Steel Corporation Hot Strip Mill No. 2 in Iligan City, Philippines. The framework details the type of expert system support that is appropriate for the specific application.

From the findings, it can be summarized that implementing a knowledge-based mill pacing control system significantly improves productivity of hot strip mill, maximizing mill utilization. The technical feasibility is confirmed by a prototype expert system which demonstrates the ability to determine the optimum-pacing interval based on material characteristics, process parameters, and product specifications.

039

GOZO, Beaunonie Jr. R. 1995. On the Value of Determinants. (GT: MS Math), 66pp.

Hadamard has shown that the maximum value of a determinant of order n, each entry of which is not greater in absolute value than unity, is $n^{n/2}$. Further, it was proved that this maximum value can be attained only, if each entry of the determinant has the value -1

or 1 and if n = 1, 2, or n = 0 mod 4. This study is designed to solve the problems in finding the maximum value of determinant of order n, each entry of which is (a) o or 1, (b) −1 or 1, and (c) −1, 0, or 1. Specifically, it aims to show that these problems are related. It also aims to show that the maximum value of the determinant of matrices subject to condition (b) is greater than or equal to $n^{(1/2 - \epsilon) n}$ for sufficiently large n and for any given positive ϵ. It also investigates the maximum value of the nth order determinants when n = 3, 4, 5, 6, 7 and there is essentially only one type of determinant with maximum value. To achieve these objectives, studies are made on the work of John Williamson and John Cohn on parallel subjects and their results are combined and verified.

040
IMASA, Catherine N. 1992. On the Density of Graphs. (GT: MS Math), 121pp.

The problem of finding the density of graphs was proposed by Harary as early as 1962. It was stated in the following manner: "Given a graph of G or order n, how can its vertices be labeled with positive integers 1, 2,, …, n such that the maximum difference between labels of adjacent vertices is minimum?"

In this paper, a characterization of graphs with density 2 was established. The density of more than twenty classes of graphs was studied and their corresponding labeling was demonstrated. For many of these graphs, such as the star path, the fan, the double fan, the wheel, the helm, the double cone, the friendship graph, the windmill, and the stacked books, the formulas for determining their densities were obtained. For graphs like the planar grid, the prism, the toroidal grid, and the books whose formulas for density were not explicitly solved, bounds for their densities were given.

Other miscellaneous results were also derived, like the exact values for the densities of the mobius ladder, the Petersen graph, the crown, the octahedron, and the icosahedron.

041
JALAGNA, Anna Fe B. 2001. Spectral Decomposition of Linear Transformation. (GT: MS Math), 61pp.

This paper is an exposition of one of the selected applications of Linear Algebra in [7], that of spectral decomposition of linear transformation.

The representation of the linear transformation σ in the form of $\sigma = \Sigma \lambda_i \pi_i$

Where λ_i is an eigen value of σ and πi is a projection, is called a *spectral decomposition* of σ. Given a matrix representing σ there are several effective methods for finding the matrices representing the projections πi, and from them, the spectral decomposition. Any computational procedure, which yields the eigenvectors σ must necessarily give the projections since with the eigenvectors as basis the projections have very simple representations.

This paper presents a method for finding projections, which does not require finding the eigenvector. This is useful in the situation where the basis of eigenvector does not exist. However, it is assumed that the characteristic polynomial of σ where this set of linear transformation is shown to be a set of projections.

042
LAJA, Ladznar S. 2004. On Convex Sets and Convexity Numbers of Some Graphs. (GT: MS Math), 57pp.

A subset C of a vertex set $V(G)$ of a connected graph G in convex if the vertex set of every geodesic connecting any two vertices in C is contained in C. the largest cardinality of a proper convex set in G is the convexity in graphs and number of G.

This study considers both the concepts of convexity in graphs and convexity number of a graph. It seeks to find necessary and sufficient conditions for graphs and determine their convexity numbers.

Results generated in this study include (*a*) a characterization of convex sets in the corona of graphs and a formula for its convexity number; (*b*) a characterization of convex sets in the conjunction of a connected graph and a complete graph and a formula for its convexity number; (*c*) a characterization of convex sets in the graph obtained from a complete proper subgraphs and a formula for its convexity number and (*d*) formulas for the convexity numbers of the wheel, the generalized wheel, and the gluing of two complete graphs.

043
LEAŇO, Leavilla V. 2002. On Universal Topological Spaces. (GT: MS Math), 63pp.

A topological space χ is said to be universal if any topological space whatsoever is homeomorphic to a substance of some topological power χ^Λ of χ.

The set $U = \{a, b, c\}$ together with the topology $\Im = \{ \varnothing, U, \{a\} \}$ is a universal space. Indeed, this is one of the applications of Embedding Lemma.

In this study, the characterizations of universal topological space based on the Embedding Lemma are presented. A topological space χ is universal if and only if χ if is T_0-space and it contains two points x and y also contains x. Also, a topological space χ is universal if and only if it contains a copy of one of the spaces $(U, \Im_1)$, $(U, \Im_2)$, or $(U, \Im_3)$.

As a consequence, we investigate properties of universal topological space and its examples particularly those minimal universal spaces.

Further, there is an extension of the type of result to the class of T_0-spaces and Tychonoff space that contains an arc.

044

LEMENCE, Richard S. 2000. On Topological Spaces Induced by Graphs. (GT: MS Math), 86pp.

Let $G = (X, E)$ be a simple graph. Then G induces a topology X, denoted by $\tau(G)$, with base consisting of sets of the form $F_G(A) = X \setminus N_G(A)$, where $N_G(A) = A \cup \{ x : [x, a] \in E$ for some $a \in A\}$ and A ranges over all subsets of X. In this paper, topologies induced by some special graphs; namely, the path, fan, cycle, wheel, star, the graph with isolated vertices and the complete bipartite graph, the complement of a graph, the sum of graphs, Cartesian product of graphs, and the composition of graphs are described. Furthermore, the researcher established that isomorphic graphs induce homeomorphic topological spaces and was able to find two non-isomorphic graphs that induce homeomorphic topological spaces.

Finally, a certain condition on a topology τ on X that guarantees existence of a graph $G = (X, E)$ that induces it was proved.

045

LEONIDA, Rene E. 1999. Characterization of the Henstock and the McShane Integrals Involving Contractions. (GT: MS Math), 55pp.

The Henstock is a natural generalization of the Riemann integral. It is also known as the Kurzweil – Henstock integral. Since the Riemann integral can be defined in terms of the upper and lower Riemann integrals, it is worthwhile to verify if the Henstock integral can also be defined in terms of the upper and lower Henstock integrals. This paper, which is based on the work by Lee Peng Yee and Zhao Dongsheng, defines the contraction of intervals into their subsets and the upper and the lower Henstock integrals; and the relaxed-contraction of intervals into their subsets and the upper and the lower McShane integrals. It is also provides detailed proofs to results and claims on contractions and the upper and the lower upper Henstock integrals. Similarly, detailed proofs are provided to results and claims on relaxed-contractions and the upper and the lower McShane integrals. The main results provide alternative definitions to integral involving relaxed-contraction. These main results provide alternative definitions to Henstock and McShane integrals.

046

LIM, Daisy Lou C. 1998. On the Convergence Theorems for the Riemann Integral. (GT: MS Math), 60pp.

The study is based on the paper of H. Carpio [1] that includes a survey of the convergence theorems for the Riemann integral. As part of the survey, an exposition is done on a separate work by J. Lewin [4] on the Bounded Convergence Theorem.

It will be shown that the equicontinuity of a sequence (f_n) of real valued functions that converges pointwise to a function f defined on a closed interval [a,b] is a sufficient and necessary condition for uniform convergence of the sequence (f_n) to the function f. Thus, a new convergence theorem based on this notion will be presented as Theorem 4.11. Though Theorem 4.11 can be proven as a consequence of the Bounded Convergence Theorem, a different proof will be given using Cousin's Lemma.

Furthermore, a simple and elementary proof of the Bounded Convergence Theorem is now accessible to students whose knowledge of countability, measurability, and infinite series is limited. Also, its proof can now be treated independently and not as a corollary to Lebesgue's Dominated Convergence Theorem.

047
LIM, Penelyn C. 1995. Integration Using Thomson's Local System. (GT: MS Math), 73pp.

The present work is based on the paper presented by Wang Cai-Shi and Ding Chuan-Song [2], where a Rieman-type integral is defined using Thomson's local systems. This new integral is called the S-integral. This integral includes many known integrals as special cases, e.g., the Henstock integral and Burkill's approximately continuous integral. In this paper it will be shown that the S-integral share some common properties of the Henstock integral. One feature shared by the S-integral and the Henstock integral is the integrability of every derivative. This paper will also give a necessary a necessary and sufficient condition for the S-integrability.

048
LLIDO, Emmeline Victoria M. 1999. Nine- Numbers. (GT: MS Math), 94pp.

The present work is an expository study on the article presented by Leavitt about nines-numbers, the term used for denominators of positive fractions reduced to lowest terms which even length of periods and the sum of corresponding digits in the half-periods if 9. This paper contains detailed proofs of lemmas, theorems, and corollaries established by Leavitt in discussing the theory of repeating decimals and the nine numbers. Leavitt proved Midy's Theorem about nine-numbers making use of the concept of the order of an element of a group. This paper shows that the length r of the period of a reduced fraction with denominator m is equal to the order of 10 in the multiplicative group (modulo m) of all integers less than m and relatively prime to m. Furthermore, this paper shows that if reduced fraction with denominator m has a period of even length r and $10^{r/2} \equiv$ -1 (mod m), then m is a nines number. Some theorems on the characterization of nines-numbers are formulated in this paper. A table of periods of $1/m$ for integers $m < 100$ where (m, 10) = 1 are developed in this paper to illustrate integers which are nine-numbers and those which are not nines-numbers.

049

MILAN, Sheila S. 1998. On Decycling Number of Some Graphs. (GT: MS Math), 93pp.

This is an expository study on the work of Lowell W. Beineke and Robert C. Vandell that introduces the concept of decycling number of a graph G as the minimum number of vertices that must removed in order to eliminate cycles in G. Their works which deals with the extract value of the decycling number of two families of graphs products, the hypercubes Q_n for $n \leq 8$ and planar grids $P_m x P_n$, $m \leq 7$ and $m=1$(mod 3) when n is even and some general bounds for higher dimension is given cursory study for possible extension.

In this study, an extension is made using the methods presented in decycling $P_m x P_n$ in establishing the decycling number of prisms $C_m x P_n$ for $m \leq 7$ and $m=0$(mod 3) when n is even, and further extension is done to some bounds for higher dimensional prisms.

050

MILO, Yamalita B. 1999. On *K*- Degenerate Graphs. (GT: MS Math), 109pp.

A graph G is said to be *k*-degenerate, for a non-negative *k*, if for each included subgraph I of G, the minimum degree of I is less than or equal to *k*. The point partition number of G, $p_k(G)$ is the minimum number of sets into which the point set V(G) can be partitioned so that each set induces *k*-degenerate subgraph of G.

In this study, an alogorithm for finding the minimum *k*, for which a graph G is *k*-degenerate is explicitly expressed. Furthermore, the *k*-degeneracy (where *k* is minimum) and the point partition number of some special graphs an graphs obtained by binary operations such as the sum and the product of two graphs; the complement of a graph and the line are derived. Moreover, the relationship between $p_k(G_1+G_2)$ and $p_k(G_1) + p_k(G_2)$, where G_1 and G_2 are any connected graphs is also established.

051

OCAREZ, Felix R. 2002. On Unit Graphs in the Plane. (GT: MS Math), 58pp.

This work is an exposition on the unit in the Euclidean plane R^2. It shows several methods of showing that a graph is a unit graph in R^2. These methods make use of the countability and denseness of some subsets of R^2.

Several unit graphs in R^2 are constructed here from those graphs, which are identified to be unit graphs in R^2. The construction makes use of graph operations like

cartesian product, vertex-gluing, and edge-gluing.

Introduced here is the subdivision number of a graph. It is a graph invariant defined only for unit graphs in R^2 where n $\geq$ 2. By this, the concept of a graph homeomorphism is introduced. It is established that every graph is homeomorphic to a unit graph in R^2.

052
OMAMALIN, Ramon D. 1996. Mathematical Modeling: The Block System Schedule of Regular Freshmen Students of MSU-IIT. (GT: MS Math), 118pp.

This research works deals with the Block System Schedule of Regular Freshmen Students of MSU-IIT by designing a mathematical model using graph theory. A graphical model is derived for each college namely; College of Science and Mathematics, College of Engineering, College of Education, College of Business Administration, College of Arts and Social Sciences. Finding the chromatic number of each graph determines the minimum time periods needed for the courses offered and thus give an efficient way of scheduling classes. The schedule of courses for each college and the institute in general is then made using information from the chromatic number of each graph. Then, a simple graphical model integrating all the colleges is likewise derived. This graphs exhibits the different colleges as among its subgraphs. The chromatic number of this graph determines in a centralized way the minimum time period needed for the courses offered.

053
PACTOR, Reyh U. 2005. On the Prime Circumference of Graphs. (GT: MS Math), 65pp.

Let G be a simple graph. Let S be a non-empty subset of the vertex set V_G of G. the subgraph $\langle S \rangle$ of G induced by S is the maximal subgraph with vertex set S, i.e., $\langle S \rangle$ it the graph having the vertex set of S and whose edge set consists of all edge of G incident with two elements of S. if $\langle S \rangle$ is a cycle, then $\langle S \rangle$ is called an induced cycle in G. the *prime circumference* of G, denoted by $\Psi(G)$, is the order of any largest induced cycle of G if G has a cycle; otherwise, $\Psi(G) = 0$. if $v \in V_G$, then $\Psi(G\text{-}v) \leq \Psi(G)$. if G is a line graph and G is its component, the $\Psi(G) \leq 6$. If G is the sum of two graphs G_1 and G_2 such that $\Psi(G_1) \geq 4$ or $\Psi(G_2) \geq 4$, then $\Psi(G) = \max \{\Psi(G_1), \Psi(G_2)\}$. If G is the corona or two graphs G_1 and G_2 such that G_1 or G_2 has a cycle, then $\Psi(G) = \max \{\Psi(G_1), \Psi(G_2)\}$. If G is a $K_{r\sim}$ gluing of two graphs G_1 and G_2, then $\Psi(G) = \max \{\Psi(G_1), \Psi(G_2)\}$.

054
PALUGA, Rolando N. 1996. On L-Groups by a C-Subgroup. (GT: MS Math), 76pp.

This paper presents a new group, the L-group generated by a c-subgroup by L(A). In particular, this paper considers the L-groups generated by a c-subgroup of a cyclic group.

The study provides criterion and correspondingly obtains a new subgroup criterion. It points out some important relationship between L(A) and A^c. More precisely, it is shown that L(A) is an extension of the direct product $\prod_{x \ni X} A^c$ by S_x, the set of all permutations on X.

In the finite case, the order of L(A) is k^m m! where I A^c I = k and I x I = m. In particular, if G is a finite cyclic group, L(A) is an RP-group. That is, L(A) = L(k,m) where L(k,m) = [(1,2,..., m-1, m+1, m+2,…, 2m-1,…,(k-1)m+1, (k-1)m+2,…,km-1), (1,2,3,…,km)]

Moreover, an RP-Group is the set of rotations or permutations of m copies of k-gons.

The work considers the case where G is an infinite cyclic group. It is proved that in this case (LA) is infinite but it is a finitely generated group. More Specifically, L(A) is a 2-generator group.

055
PARADERO, Jocelyn S. 1997. On Locally Finite-By-Supersoluble, and Supersoluble-By-Finite Groups. (GT: MS Math), 43pp.

This paper presents some characterizations of tree classes of groups, namely, the class of locally finite-by-supersoluble groups, the class of supersoluble-by-finite groups and the class of locally supersoluble-by-finite groups.

Those three classes of groups can be seen to be closed with respect to forming subgroups, homomorphic images and finite direct products. Aside from this, the class of supersoluble-by-finite- groups satisfies the maximal condition on subgroups while the locally finite-by-supersoluble groups and locally supersoluble-by-finite groups satisfy the maximal condition on subgroups locally.

One nice result this paper presents is the finding that locally finite-by-supersoluble groups are locally supersoluble-by-finite.

056
PAUYA, Eveyth S. 1995. On Relatively Prime Integer Topology and Prime Integer Topology. (GT: MS Math), 68pp.

This study focuses on the two of the most instructive examples in topology namely: the relatively prime integer topology and prime integer topology. Using the concepts of relatively prime integer topology one can prove important results such as the infinitude of primes. Also, these topological spaces serve as counterexamples of the converse of some important results in topology.

This study requires familiarity of the basic concepts in number theory such as divisibility and congruences. Also, it is expected that the reader have some previous

knowledge in topology especially on the topological properties. Hence, the introductory chapters recall very briefly the basic definitions, important results, as well as mathematical symbol and notations. In particular, the well-known Division Algorithm plays an important role in this study, as it will be sued repeatedly here.

Chapter Three discusses the construction of the relatively prime integer topology. This topology is actually generated by a base whose elements arithmetic progressions of positive integers. It shows that the rest of positive integers with respect to this topology is a T_0, T_1, T_2, pseudocompact, connected, and semi- regular spaces. However, such a topological space is not Urysohn, compact, locally compact, paracompact, countably compact, locally connected, and regular space.

Chapter Four deals with the prime integer topology. This is a subtopology of the relatively prime integer topology. Hence almost all of the interesting properties of relatively prime integer topology are inherited by it. The only difference between these spaces is that the first is not locally connected while the other is locally connected.

Furthermore, this study shows that connectedness does not imply local connectedness. Interestingly, neither does local connectedness imply connectedness.

057
PIMENTEL, Jonald L. 1995. On the Indiscrete, Pointed and Discrete Extension of the Space of Real Numbers. (GT: MS Math), 69pp.

This study is primarily designed to discuss and provide detailed proofs of some of the known properties of the three instructive examples in topology: the indiscrete, the pointed, and the discrete rational and irrational, the pointed, and the discrete rational and irrational extension of the space of real numbers. Specifically, it aims to verify whether the three spaces possess some of the properties of the original space or not.

The concepts and properties of the topological spaces are used to verify whether the known topological properties of the space of real numbers are preserved or still valid on these spaces or not.

The indiscrete and pointed extension of the set of real numbers with the usual topology was analyzed. It is found out that these two spaces are connected, totally pathwise disconnected; second countable, completely Hausdorff, T_1, and T_0-space. However, both spaces fail to be σ-compact, locally connected, T_3, T_4, T_5, and completely normal. One main result shows that in a particular case, this space is metrizable. In general, however, it is neither locally compact nor count ably compact.

058
PONDOYO, Cristina B. 1999. On the Applications of Graphs in Matrix Theory. (GT: MS Math), 95pp.

Graph theory has existed for many years not only as an area of mathematical study

but also as an intuitive and illustrative tool. There are applications of graphs and directed graphs in almost all areas of the physical sciences and mathematics, and in this study we apply graph-theoretic ideas to some of the fundamental topics in linear algebra. While there are many such applications, we shall focus on matrix operations and the theory of determinants.

059
RANARA, Luzviminda T. 2000. Some Weaker Conditions of Continuity. (GT: MS Math), 60pp.

The present work is based on the articles presented by Y. Zhou, J. Chew and J. Tong, and S. Canoy, where some weaker conditions of continuity such as weak continuity, closure continuity, and relative continuity were introduced. Mapping satisfying condition (Z), which is weaker than a continuous onto mapping, was also introduced. This paper shows that local connectedness is preserved by a connected almost open mapping satisfying condition (Z). This paper also characterizes weakly continuous mappings, closure continuous mappings, and includes the study of closure continuity of maps in the Cartesian Product.

060
REUYAN, Nancy M. 1999. Some Results Concerning Nonnormal Subgroups. (GT: MS Math), 35pp.

An expository on the works of Capitt, Blackburn, Verardi and Barndl regarding nonnormal subgroups; this research contains detailed proofs of established theorems. For non- Dedekind groups, it was shown that the subgroup generated by all nonnormal subgroups is the subgroup generated by all nonnormal subgroups cyclical subgroups. Moreover, the intersection of all nonnormal subgroups turns out to be normal in the whole group. Another important result is the normality of $Aut_{nn}(G)$ in $Aut(G)$.

061
RULETE, Ricky F. 2006. On Topological Properties Involving Semi-Open Sets. (GT: MS Math), 55pp.

This study revitalizes the notion of semi-open sets in a topological space introduced by Norman Levine in 1963.

In this present study, new concepts such as semi-connectedness and separation axioms that involve semi-open sets are introduced. Results concerning the relationship between connectedness and s-connectedness are generated. It is shown that connectedness is weaker than s-connectedness. Characterizations of s-connectedness and the separation axioms involving semi-open sets are also obtained.

Furthermore, this study establishes the equivalence of semi-continuity and continuity of functions into the cofinite topological space.

062

RICABLANCA, Deodato L. 1998. Tree Indices of Graphs. (GT: MS Math), 111pp.

This is a study on tree indices of graphs. Specifically, this study is intended to find upper bounds and lower bounds for the tree indices of:

1. Any graph
2. Disjoint union of two graphs
3. Sum of two graphs
4. Composite of two graphs
5. Cartesian product of two graphs

To achieve this objective, the researcher investigated the unions of graphs, especially those that involve trees, and other operations on graphs like composition and Cartesian products. In addition to this, induces tree-graphs and their behavior under different operations were studied and many results were established. Probing into induced tree-graphs and operations on graphs constitutes a vita and major component of this study. The researcher found it necessary to do this extra task due to dearth of previously established results on these subjects, which are needed for the completion of his work.

The results on tree indices, which were established in this study hold in general for any graph or any two graphs under operations mentioned above.

063

RIVERA, Heinrich M. 2006. On the Cycle Derivatives of Some Graphs. (GT: MS Math), 60pp.

The cycle derivative of a graph G, denoted by G', is obtained from G by treating the prime cycles (also called chordless cycles or induced cycles) of the graph G as vertices of G' and where two vertices are adjacent in G' if and only if they are prime cycles with a common edge in G'. In case no graph can be constructed in this manner, we say that the cycle derivative of G does not exist.

This study determined the cycle derivative of the closure of some graphs (e.g. complete graph, cycle, fan, wheel, helm, ladder, book and complete bipartite graph) and the sum of two paths. Some results have characterized the cycle derivative of graphs obtained in the preceding results in terms of regularity, eulerian and hamiltonian properties. The sizes of the cycle derivative of the graphs considered were also determined.

Systematic approaches in constructing the cycle derivative of the closure of complete bipartite graph and sum of two paths were also discussed and illustrated.

064

SAGPANG, Alben P. 2004. On the Subdivision Number of Graphs. (GT: MS Math),

69pp.

This study aims to examine the subdivision numbers of some special graphs and the subdivision numbers of graphs resulting from some graph operations. Specifically, this study obtains upper bounds of subdivision numbers of the generalized wheel and the generalized fan. This is achieved by extending the constructive proofs for the upper bounds of the subdivision numbers of the wheel obtained by Isla and Gervacio.

The preceding upper bounds are not sharp as they can be improved for some cases. This improvement is made possible by specifying the coordinate points of some vertices of the generalized wheel with the use of formulas. The known results of Gervacio and Maehara on the subdivision numbers of the complete bipartite graph are used immediately as lower bounds of the same special graphs above.

Results related to the following operations, namely, vertex-gluing, disjoint union, power of a graph, complement of a graph, and line graph, are also investigated. Moreover, proofs are provided for the results on the subdivision numbers of the closures of the cycle, wheel, and fan obtained by Isla.

065
SERQUIÑA, Ruth P. 1993. Analysis of Predator-Prey Systems with Refuge. (GT: MS Math), 163pp.

A. Sih et al. developed a simple dynamic model of prey refuge use. It was appropriate for a short-term study only. It did not include the four fundamental parameters—birth, death (other than predation), emigration and immigration.

This study starts with A. Sih et al.'s mathematical model. The four fundamental parameters and the predator dynamical system were incorporated into the model. The refuges were classified into two types: the density-independent refuge and the density-dependent refuge. The persistence and extinction of the predator and prey population were analyzed. The long-term behavior (and/or the stability) of the systems was determined.

The main results showed that when the prey population grow either exponentially or logistically and the refuge is density-independent, the prey migration, when the prey population continuously reproduces and at least one prey subsystem maintains a density-independent refuge, then the prey population likewise persists.

066
SOJO, Rhodelia A. 1992. On Graceful Graphs and Harmonious Graphs. (GT: MS Math), 180pp.

A graph G of size m is graceful if all of its vertices can be labeled distinctively with positive integers 0,1,…,m that the difference between labels of adjacent vertices is also distinct. One additive analog of graceful labeling is that of harmonious labeling.

In this paper, a graceful labeling for trees with a diameter greater than four and with some sort of regularity of structure was shown. Cycle related and complete graphs were also investigated for their harmonious labeling and as a result, a graph called the K_4-train was discovered and shown to be harmonious. This paper also showed that all Helms are harmonious and that there is a harmonious labeling for B(,r,m), the graph consisting of m copies of K_n with a K_r in common, when $(n,r) = (3, 2)$ or $(n, r) = (4,3)$.

067
SORIANO, Harold C. 2004. On the Cantor Set and Its Cantor Function. (GT: MS Math), 59pp.

This study is based on the work of Hille and Tamarkin [1] that includes a survey on the elements of the Cantor set E and the underlying properties of the Cantor function.

In this paper, a construction of the Cantor set E will be presented. Then, it will be shown that this set is of measure 0, closed, nowhere dense on (0,1), and that it contains all its limit points. Furthermore, the complement set of the E will be denoted as D and will be shown to have a measure of 1.

It will be shown that any point x on the interval [0,1] that has a ternary representation $_3.a_1a_2a_2...,$ where a_i's are either 0's and 2's only, is a sufficient and necessary condition for x to be in the Cantor set. A cantor function w will then be defined such that when x is in Cantor set, $w(x) = _2.b_1b_2b_3...$ where $bi = a_i/2$ for every $I,$ and $w(x) = \dfrac{2k-1}{2p}$ otherwise. The rest of the paper will then be focused on establishing the properties of the function $w,$ for which some of them are as follow: w is monotone non decreasing and continuous on [0,1]; its derivative is zero almost everywhere; and it satisfies the Lipschitz condition of order log 2 / log 3.

068
SUMALPONG, Felipe Jr. R. 2008. On Lights Out Puzzle: Solvability of Some Graphs. (GT: MS Math), 89pp.

A state of a simple graph G is an assignment of either a 0 or 1 to each of its vertices. For every $v \in V(G)$, the move [v] is defined as the switching of the state of the vertex v, and the vertices adjacent to v from 0 to 1, or from 1 to 0. Every initial state of G is solvable if there is a sequence of moves that will change all the vertices of G to a 0-state. If every initial state of G is solvable, then we say that G is a solvable graph. In this paper, the solvability of circulant graphs, trees, unicyclic, bicyclic, and special tricylclic graphs are characterized. The solvability of graphs resulting from some graph operations are also discussed. Moreover, obtained in this study are the formulas of the determinant of the matrix B(G) = A(G) + I_n, where A(G) is the adjacency matrix of the graph G and I_n is the identity matrix, to characterize the solvability of some of the above mentioned graphs.

Also, this study provides the generalized graph pruning operation to characterize the solvability of any graph with pendant trees.

069
TACBOBO, Teresita L. 2006. On the Linear Sum of Graph. (GT: MS Math), 89pp.

This study is mainly involved with determining the linear sum of some special graphs resulting from some unary graph operations.

Exact values are determined for the linear sum of the following special graphs: the path, cycle, and complete graph, each of order n; the star S_n, fan F_n, and wheel W_n, each of order $n + 1$; $G(n, k)$, P^2_n and the ladder graph L_n; and the windmill $K^{(m)}_n$ when m is even. Bounds are established for the linear sum of the book, stacked book, star path, crown, prism, helm, planar grid, complete bipartite graph, and the Petersen graph.

Exact formulas are also determined for the linear sum of some graphs resulting from the following unary graphs operations: vertex deletion, edge deletion, closure of a graph, line graph, complement and power of a graph.

070
TEJANO, Corazon P. 1993. On Self-Complementary Graphs. (GT: MS Math), 84pp.

This study dealt with a special kind of graphs known as self-complementary. It aimed to present definition, illustrations and proofs of threorems, and some construction algorithms. It further aimed to investigate the algebraic structure of automorphisms and complementing permutations of self-complementary graphs. The investigation included other results on self-complementary graphs.

This research, which was based on K M. Koh's "Survey on Self-Complementary Graphs", made use of seven construction algorithms but did not exhaust all possible self-complementary graphs. The study has established the following results:

1. The set of automorphisms and complementing permutations of a self-complementary graphs form a group.
2. The set of automorphisms of a self-complementary graphs G is a normal subgroup of the set of automorphisms and complementing permutations of a self-complementary graph.
3. The index of the automorphisms group in the set of automorphisms and complementing permutations of a self-complementary graphs is 2

This finding of this research may serve as springboards for future researches on other algebraic structures of self-complementary graphs.

071
TRANI, Ma. Sheila N. 2000. On Some Inequalities in Mathematics. (GT: MS Math), 80pp.

A survey-expository study on mathematical and statistical inequalities; it investigates established inequalities by development of some lemmas precursory to the proofs. Some applications of theorem about arithmetic and geometric means on maxima and minima problems geometry and algebra are solved. Inequalities about some discrete and continues probability density functions with respect to the increase in sample sizes are established. The study also provides a cursory review of inequalities about moments of random variables.

072
UNDANG, Sushela Marie C. 2005. On the Clique Partition Number of Graphs. (GT: MS Math), 45pp.

The clique partition number is the smallest size of all possible clique partition. In this study, we determine the clique partition number of some special graphs. The graphs being considered here are complete graphs, paths, cycles, complete bipartite graphs, the Petersen graph, crown graphs, tree graphs, fans, wheels, generalized fans, generalized wheels, and some platonic solids.

Also investigated are the clique partition number of graphs obtained from some graph operations like sum of graphs, product of graphs, and deletion of an edge. Finally, the relationship between clique number and clique covering number was established.

073
UY, Joselito A. 1989. On the Number of Chordless Cycles of Graphs. (GT: MS Math), 88pp.

This study is designed to bring about results related to the number of chordless cycles of graphs. Specifically, it aims to find a graph of order n with the maximum number of chordless cycles. It also aims to find bounds or exact expressions for the number of chordless cycles of (a) the complement of cycles, paths, wheels, fans, and trees, (b) the line graphs of wheels, fans, and complete bipartite graphs, and (c) the sum, disjoint union and composition of two graphs. To achieve these objectives, studies are made on the work of early researchers on parallel subjects and their methods are followed and supplemented.

The study is quite the first extensive and intensive inquiry on the subject. Thus, the result arrive at serve as springboards for future researches in this particular topic.

074
VEGA, Mary Ann Ritzell P. 1995. On the Folding of Some Graphs. (GT: MS Math), 93pp.

This paper is an attempt at finding other properties and characteristics related to the new concepts of folding a graph G, span of G (denoted by δ (G)), and perimeter of G (denoted by $\varnothing$(G)), introduced by Dr. Severino V. Gervacio in 1992.

With the basic concept of a complete graph K_n as the union of a graph G of order n

and its complement $\overline{G}$ the relationship between $\delta(G) + \delta(\overline{G})$ and $\delta(K_n)$, as well as the relationship between $\varnothing(G) + \varnothing(\overline{G})$ and $\varnothing(K_n)$ are established. The properties of G for which $\delta(G) + \delta(\overline{G}) \leq \delta(K_n)$ and $\varnothing(K_n)$ are identified and enumerated.

Folding a graph continuously until no two non-adjacent vertices remain gives a complete graph whose order depends on the manner by which the identified pairs of vertices are chosen. The maximum- folding of G denoted by mxf (G), is the complete graph of minimum order while the minimum- folding of G, denoted by mnf(G) is the complete graph of maximum order. If the order is neither minimum nor maximum, we get a sub- folding of G denoted by sf (G). It is easy to see that mxf(G) $\subseteq$ mnf (G) and sf (G) exists only if mxf (G) + $K_1 \subset$ mnf (G) with sf (G) not necessarily unique.

A theorem on how to find mxf (G) in terms of stable subsets of vertices and mxf ($\overline{G}$) in terms of subsets of mutually adjacent vertices are proven. With it, some special graphs with maximum folding equal to K_2, K_3, and K_4 are identified.

For minimum folding, the formulas for finding mnf (P_n) and mnf (C_n) are derived using the concepts of span and perimeter of complete graphs.

075
VILLETA, Ricky B. 2007. On the Pure Trace and Kernel of a Torsion-Free Abelian Group. (GT: MS Math), 94pp.

For any torsion-free abelian groups G and H in G is tr (H,G) = { $g \in$ G : $ng \in \langle \sum$ f (H), $f \in$ Hom (H,G) $\rangle$ for some n $\in Z^+$} and the kernel of H in G is ker (G,H) = $\bigcap_{f \in \mathrm{Hom}(H,G)} ker\ f.$ the pure trace and kernel of H in G are pure fully invariant subgroups of G.

This study which is based in the paper of Phill Schultz [11] characterizes these classes of pure fully invariant subgroups of a torsion-free abelian group. Their algebraic and homological properties developed by Phill Schultz [11] led to concepts of the trace and kernel groups which are defined as follows:
A torsion-free abelian group G is said to be a trace group if for every pure fully invariant subgroup M of G, M = tr (M, G) and G is said to be a kernel group if M = ker (G,G/M) fro every pure fully invariant subgroup M of G. Some interesting results on these groups are established.

A portion of this study is an exposition of a section of the paper of Phill Schultz [11] which are presented in Chapter 3. Moreover, some results on trace and kernel groups generated by the author in this paper are established in Chapter 4.

Master of Science in Marine Biology (MS MB)

001
ANTONIO, Emily S. 2000. Coastal Resource Profile of Linamon, Lanao del Norte. (GT: MS MB), 181pp.

The coastal resources of Linamon, Lanao del Norte were assessed from May 1999 to October 1999 using the manta tow survey, Line Intercept Transect (LIT) Method, fish visual census, transect-quadrant method and transect-plot method. The coral reefs in Linamon were in "poor" to "fair" condition with higher coral cover in the shallow than the deep station and were dominated by massive corals. The trend for live coral cover was Poblacion > Samburon > Larapan. A total of thirty-three (33) coral genera belonging to thirteen families were identified with *Fungia* and *Porites* being the most abundant. One hundred twenty-two species of reef fishes belonging to twenty – four families were categorized as target (29 species), indicator (27 species) and demersal group (65 species). Pomacentridae (66%), Serranidae (18%), Labridae (8%) and Scaridae (3%) were the abundant reef fishes.

Macrophytes were observed in all coastal Barangays except Napo consisting of forty-one (41) seaweed species and five (5) seagrass species dominated by *Gracilaria coronopifolia* and *Thalassia heprichii,* respectively. Macrophytes were most abundant in Magoong. Mangal forest was found only in Poblacion, Larapan and Napo covering an estimated total mangrove area of 5.61 ha of which 0.77 ha was found in Poblacion, 1.00 ha in Larapan and 3.84 ha in Napo. *Nypa fruticans* was the dominant species in a generally sandy-clay soil.

002
BALALA, Arvin C. 2002. Isolation Characterization, Identification, and Evaluation of the Biosorptive Efficiency of Heavy Metal-Resistant Bacteria from Iligan Bay. (GT: MS MB), 143pp.

Heavy metal-resistant marine bacteria were isolated from sediments of Iligan Bay near the effluent of certain factories. Isolation was done using marine agar fortified with corresponding different heavy metal concentrations. Isolates were grouped using their morphological and colonial growth characteristics. Nineteen cadmium-resistant, 29 lead-resistant and 13 mercury-resistant isolates were obtained from the respective heavy metal-containing media. These isolates were tested for their biosorptive capability using marine broth with different heavy metal concentrations and subsequently analyzed using Atomic Absorption Spectrophotometer (AAS). Ten isolates with the highest biosorptive capability were tested for identification. Out of the ten isolates, 3 were Gram-positive and 7 were Gram-negative rods. The Gram-negative rods were identified using some conventional methods and API 20E Test Kit. All Gram-positive bacteria belong to the genus *Bacillus* and were found to absorb lead metals at 94.16% biosorptive efficiency. Of the Gram-negative bacteria, *Enterobacter* sp. 2 had the highest absorptive efficiency at 99.69%, followed by *Chryseomonas* sp.2 with 96.52% biosorption for cadmium. Among the mercury resistant isolates, *Enterobacter* sp.3 had the highest biosorptive efficiency at 79.33%. All heavy metal-resistant isolates that exhibited the highest absorptive efficiency

were able to form a zone of growth promotion around a heavy metal-containing filter paper disk. This could suggest that growth in these isolates is enhanced by the presence of heavy metal in their cells.

003

CARMONA, Marvelisa L. 2000. Antimicrobial Properties of Selected Marine Sponges in Mantique Islet, Camiguin, Philippines and the Isolation and Chemical Characterization of Bioactive Compounds from *Dysidea* sp. (GT: MS MB), 76pp.

Thirty-two (32) marine sponges collected from Mantigue islet, Camiguin Province were screened for antimicrobial properties. Extracts of these sponges were obtained using the solvents ethanol, methanol, and a mixture of methanol-toluene. Only 16 species have antimicrobial properties, twelve (12) of which were identified at the genus level, namely: *Thorecta, Dysidea, Acanthella* sp1, *Aaptos, Theonella, Polyfibrospongia, Halichondria, Acanthella* sp2*, Phyllospongia, Pseudosuberites, Halicclona* and *Acanthella* sp3. *Thorecta* and *Dysidea* demonstrated broad-spectrum antimicrobial activities. Methanol-toluene (3:1) mixture extracted bioactive metabolites from a greater number of sponges. Two Gram-positive bacteria *Bacillus subtilis* and *Staphylococcus aureus* have the highest mean inhibition values. *Thorecta* sp. and *Dysidea* sp. showed the greatest antigungal potentials. *Dysidea* sp. was selected for further isolation and purification of bioactive substances.

Supercritical fluid extraction (SFE) was used for extracting bioactive compounds for isolation. All fractions collected at hourly intervals for six hours demonstrated similar antimicrobial activity. Thin layer chromatography (TLC) showed two bands with Rf values of 0.71 and .078 HPLC analysis showed two major peaks with retention time 81.378 minutes (peak 1) and 89.908 minutes (peak 2). Spectroscopic analysis employing NMR and HRFABMS identified the two compounds as isomers of 2,4-dibromophenoxy-2,4-dibromophenol with molecular mass of 501.7065 mz (peak 1) and 501.7070 mz (peak 2).

004

DAPANAS, Anelyn L. 2001. Spatial Variability of Zooplankton Communities in Iligan Bay During Southwest and Northeast Monsoons. (GT: MS MB), 128pp.

This study involved the determination of species composition, spatial distribution, abundance and biomass of zooplankton in Iligan Bay during July-August and November-December 2000. The physico-chemical parameters and the correlation with spatial and temporal variability of zooplankton were determined.

Twenty-seven (27) zooplankton categories were recorded during the two sampling dates. Zooplankton biomass was higher during July-August, and a clumped-type distribution pattern of zooplankton was observed during the two sampling dates. Pearson Rank Correlation Analysis showed that some of the zooplankton categories are dependent

with some of the physico-chemical parameters.

Monsoon-type climate affects the hydrographic conditions of Iligan bay leading to changes in plankton abundance and distribution. High zooplankton counts and biomass during July to August is probably related with the fact that during this time, certain parts of Iligan bay are possible upwelling areas.

005

DEOCAMPO, Annielyn H. 1999. Community Structure of Plankton from Neritic Waters Near a Steel-Making Plant and a Flour-Making Plant in Iligan City. (GT: MS MB), 92pp.

This study involved the analysis of plankton community structure specifically composition, abundance and distribution in the neritic zones of the NSC and PFMC plant sites during October to December 1997. Water samples were taken during daytime from nine stations, ten (10) meters apart, at 3 depths (0m, 12.5m, 25m) with 3 replicates giving a total of 81 samples at each site.

There were thirteen (13) phyla of plankton collected and identified in the study composed of three (3) phyla representing the phytoplankton. The most abundant phytoplankton were C*haetoceros, Bacteriastrum, Coscinodiscus,* and *Nitzschia.* There were nine (9) phyla of zooplankton dominated by cyclopods, *Calanus,* harpacticoids, gastropods and polychaetes.

Of the plankton, *Noctiluca, Skeletonema,* forams, *Ditylum* and *Trichodesmium* were not observed at PFMC.

The zooplankton (~ 70%) were more abundant than the phytoplankton (~30%) at both NSC and PFMC waters with the latter occupying only the surface waters. In general the zooplankton were also abundant at the surface and decreased with depth.

006

EYA, Anna Arlene A. 2000. Biodiversity of the Exploited Estuarine Sandflat in Panguil Bay. (GT: MS MB), 145pp.

This study was designed primarily to determine the biodiversity in the exploited estuarine sandflat in Panguil Bay. Specifically, this study was conducted to determine the species composition, abundance, species diversity and community structure of the macrophytes, benthic mollusks, meiofauna and mangrove. This would also determine the physico-chemical parameters of the water and sediment of the study area, which is important in the distribution, and abundance of the organisms.

A stratified sampling method using transect lines quadrat was employed to study the intertidal flat of Darumawang. Only one species of algae (*Eucheuma*) and one species of seaweeds (*Thallasia*) was found. There are 32 species of mollusks found in the area with 29 bivalves and 3 gastropods. The dominant species is *Modiolus metcalfei,* next is *Kaylesia hiantina* and third is *Meretrix meretrix.* There are 11 groups of meiofauna present in the

areas with nematoda as the dominant organism. There are only two species of mangrove found, *Sonneratia* and *Avicennia*. Generally, an estuary has only few species, so, low species richness value.

007

GARCIA, Maricris Gay P. 1999. A Microbiological Assessment of the Surface Water Quality in the Iligan City Port Area. (GT: MS MB), 100pp.

The water quality of five (5) stations in Iligan City port area was assessed in terms of the microbiological and physical characteristics. Collections were done at both high and low tide from December 1997 to February 1998. Of the five stations, station 1 had the most turbid waters being close to the mouth of Iligan River, which transports sediment, suspended particles and other pollutants of terrestrial origin. The BOD in all stations ranged from 0.6 mg/l to 5.5 mg/l differing with tides significantly. The coliform counts (640 to 3900/100 ml) were high in the five stations while the vibrios ranged from 0 to 4.25 x 10^6 CFU/ml which were not detectable during low tide but observed in high amount during high tide. Up to 40% of the cultivable marine bacteria in the area turned out to be vibrios. Mercury-resistant, chlorine-resistant and sporeforming bacteria grown on freshwater agar ranged from 1.15 x 10^3 to 9.6 x 10^7 CFU/ml. The ratio of freshwater to marine bacteria showed more freshwater bacteria in many stations indicating a high terrestrial input into the coastal waters. Chlorophyll a concentration ranged from 0.5 to 66 *u*g/l. The Substrate Richness of respiratory carbon source utilization of heterotrophic bacteria at the five sampling stations ranged from 63 to 79%.

008

HATAAS, Liza T. 2002. Morphometric and Genetic Variability within Between and Among Populations of *Pitar* sp. in Panguil Bay. (GT: MS MB), 143pp.

The study was conducted to determine variability within, between and among populations of three species of *Pitar*. Morphometric variation within, between and among populations was measured based on fourteen significant biological characters of the shell by descriptive statistics, analysis of variance (ANOVA) and *Turkey's post hoc* test. The results revealed that there is significant difference within, between and among populations of *Pitar* sp., *P. frizzelli* and *P. philippinarum*.

Physico-chemical parameters, which included sediment pH, salinity and temperature and type of substrate, showed significant relationship with the morphological characters.

Variability in esterase expression in the hepatopancreas was likewise used to further observed variation within, between and among populations of *Pitar* sp. Based on the genotypes expressed. Results showed that there exists genetic differentiation within,

between and among populations.

009

JIMENEZ, Buenaflor D. 1996. Bioactivity of Crude Extracts from Marine Sponge *Xestospongia exigua* (Kirkpatrick, 1990) and Its Associated Bacteria. (GT: MS MB), 70pp.

Crude extracts of marine sponge *Xestospongia exigua* (Kirkpatrick) and its bacterial associates were prepared and assayed for antimicrobial and embryonic activity against selected test organisms.

Antimicrobial activity was tested by Bauer – Kirby disc diffusion method using *Bacillus subtilis. Escherichia coli, Pseudomonas aeruginosa* and *Staphylococcus aureus.* For embryonic activity, eggs of *Penaeus monodon* Fabricius were used.

The sponge extract greatly inhibited *E. coli* and *S. aureus* but slightly on *B. subtilis* and *Ps. Aeruginosa.*

Of the 13 bacterial extracts assayed, six have shown antibacterial activities, *Alteromonas* sp., *Moraxella* sp., *Flavobacterium* sp., *Alteromonas hanedai, Pseudomonas* sp. and *Corynebacterium glutamicum.* Two isolates, *Alteromonas* sp. and *C. glutamicum* extracts showed highest antibacterial potency against four test bacteria. The bacterial isolate, *Pseudomonas* sp, had the least inhibition with only one bacterium, *S. aureus* sensitive to it.

Embryonic assays for both sponge and bacterial extracts did not show any inhibition of cell cleavage although some adhesion of the fertilization membranes were observed. Furthermore, eggs subjected to *Corynebacterium glutamicum* extract has demonstrated faster development rate compared to the control which may suggest some potential for treatment of eggs infested with some bacteria.

010

MORANDARTE, Rosabeth B. 2001. Spatial Distribution Pattern of Phytoplankton Communities in Iligan Bay During Northeast and Southwest Monsoon Periods. (GT: MS MB), 178pp.

Spatial distribution, abundance and biomass of phytoplankton in Iligan Bay during northeast and southwest monsoons were being determined. Iligan Bay was divided in to 5'x5' grids. There were twenty-four (24) designated phytoplankton samplings points determined by Greenwich coordinates. Two major sampling were conducted for each sampling stations.

There were 44 genera of phytoplankton identified during the two sampling periods. Biomass readings were greater in November-December as compared distribution while a few exhibits uniform distribution. Pearson Rank Correlation Analyses suggest that phytoplankton richness and diversity of the phytoplankton communities are affected by certain physico-chemical parameters.

The higher phytoplankton abundance, biomass and chlorophyll-*a* readings during November-December could be attributed to the prevailing circulation pattern within the bay. The notable high phytoplankton counts and biomass in certain parts of the bay suggest that certain are possible upwelling areas.

011
PLASENCIA, Jocelyn A. 1999. Isolation, Purification and Identification of Chitinolytic Bacteria Isolated from Marine Sediments in Iligan Bay. (GT: MS MB), 64pp.

Sediment samples collected from the three designated sampling sites in Iligan Bay were inoculated in an enrichment medium containing 0.25 % colloidal chitin.

Eight different kinds of bacterial colonies with zone of clearing around them were isolated, purified and identified. Of the eight bacterial isolates, seven were found to be gram-negative short rod and facultative anaerobe while one was a gram-positive pleomorphic rod, and a strict aerobe. Using API 20E (bio Merieux, France), six gram-negative rods were identified as *Aeromonas hydrophila* while one was *Vibrio metschnikovii.* The gram-positive rod was identified to be *Corynebacterium aquaticum* using BBL crystal (Becton and Dickinson).

Chitinase assay of the crude enzymes produced by the three identified chitinolytic bacteria using cyclinder cup and turbidimetric methods showed higher activity by *A. hydrophila* followed by *V. metschnikovii* and *C. aquaticum.* Furthermore, *C. aquaticum* hydrolyzed more chitin from the powdered shrimp while *A. hydrophila* hydrolyzed colloidal chitin more actively.

012
RESPONTE, Angelo A. 1998. Coral Community Structure on the Reefs at Sitio Mapalad, Barangay Dalipuga, Iligan City. (GT: MS MB), 100pp.

The community structure of corals on tire reefs in Mapalad, Dalipuga, Iligan City was evaluated from June 1996 to January 1997. The seven-month survey provided data on coral composition, distribution, abundance, diversity and some environmental parameters. A total of twelve (12) coral families and nineteen (19) genera were observed in all the upright tire modules deployed at depths between 8 to 27 m. Eleven (11) genera were identified at 8 m, fourteen (14) at 14 m, three (3) at 24 m and six (6) at 27 m depth.

Intermediate depths (8 and 14 m) were associated with higher mean surface area of colonization (1,042 and 2, 601 cm^2, respectively) and percent coral coverage (1.6 and 3.98, respectively). *Favia* recorded the highest percent live coral cover at 8 m and *Pocillopora* at 24 and 27 m. *Pocillopora* recorded the highest percent cover among all scleractinian corals in all the four depth stations. Brillouin's index of total genus diversity (HSG) was high in modules at 8, 14, and 27 m (1.77, 1.86, and 1.34 respectively) while a low index was observed at 24 m depth (0.86). Results of Kruskall-Wallis One Way Nonparametric Analysis of Variance indicated that there is no significant difference in the

relative abundance, area of live of coral colonies and percent cover of coral genera found at 8, 14, and 27m 0.05 level of significance. In comparison, fifty-six (560 colonies were recorded from the five toppled modules with *Favia* constituting the highest number of colonies and *Leptoseris* exhibiting the highest percent cover. The temperature, salinity, pH, dissolved oxygen, turbidity, total suspended solids, inorganic phosphate and nitrate showed minimal variations at the surface and bottom waters (8 and 24) and were within the range observed for Iligan Bay.

013

SASIL, Maria Luisa W. 1998. Composition and Abundance of Epibiotic Microalgae and Bacteria on Tire Reefs at Sitio Mapalad, Barangay Dalipuga, Iligan City. (GT: MS MB), 120pp.

The composition and abundance of epibiotic microalgae and bacteria on tire reefs installed at two depths, 8 m and 24 m, at Sitio Mapalad, Barangay Dalipuga, Iligan City were determined from November 1996 to January 1997. The composition of microalgae was noted, the abundance was determined by cell counting and the biomass by chl a analysis. The cell density of bacteria was obtained by acridine orange direct cell count (AODC), biomass by protein analysis and the total viable counts of heterotrophic bacteria and vibrio by colony forming units on Plate Count (PCA) and Thiosulfate Citrate- Bile Sucrose Agar plates (TCBS).

Twenty (20) genera of microalgae were encountered and identified of which sixteen (16) genera belong to Class Bacillariophyceae, two (2) genera belong to Class Chrsophyceae and one (1) genus belong to Class Cyanophyceae. Order Centrals was represented by *Coscinodiscus, Rhizosolenia, Bacteriastrum* and *Chaetoceros.* Order Pennales was represented by *Fragilaria, Thalassiothrix, Grammatophora, Rhabdonema, Licmophora, Cocconeis, Navicula, Diponeis, Mestogloia, Pleurosigma, Nitzschia* and *Amphiprora.* Order Oscilltoriales was represented by genus *Anabaena. Navicula* and *Nitzschia* dominated the microalgae population at 8 m and 24 m depth, and occurred all throughout the sampling period. Some microalgae were observed either at 8 m or 24 m depth only. Microalgae abundance significantly differs with sampling period but not between sampling depth. In comparison, micro algae biomass decreased with depth but did not show any significant difference.

Similarly, bacterial cell number, biomass and total viable counts of heterotrophic bacteria and vibrio decreased with depth. The values obtained for the colony-forming bacteria were three orders of magnitude lower than the direct cell count. Three (3) genera of bacteria were tentatively identified, namely: *Bacillus* sp., *Pseudomonas* sp., *Vibrio* sp., and four (4) were tentatively related to *V. parahaemolyticus, V. cholerae, V. alginoyticus,* and *V. mimicus.* Majority of the bacteria obtained were gram-positive and were identified to be *Bacillus* sp.

The temperature, salinity, pH, dissolved oxygen, transparency, TSS, inorganic phosphate and nitrate shows minimal variations with the range observed for Iligan Bay.

014

VILLEJO, Mary Jocelyn U. 2002. Analysis of Concentration and Biotoxicity Determination of Three Heavy Metals in the Coastal Waters of Pagadian Bay. (GT: MS MB), 103pp.

Analysis of concentrations and biotoxicity of Cd, Pb and Zn in the coastal waters of Pagadian Bay is the primary focus of this study. A comparison was made between concentration of the three heavy metals in seawater and in tissues of molluscan species *Lingua* sp. in the three stations over three sampling periods using the Atomic Absorption Spectrophotometer (AAS). Analysis from the AAS, revealed presence of lead and zinc while it gave negative results for cadmium. Tissue samples were found to contain more heavy metal concentrations than seawater, which implies the abundance of heavy metals in the tissues of *Lingua* sp. Among the three stations, station 3 (Barangay Bomba) contained the highest concentration of lead and zinc while station 1 (Barangay Moricay) was found to contain the lowest concentration of the same heavy metal both for water and tissue samples. Results obtained from lead analysis exceed the permissible concentration of lead under American Standard which is 0.05ppm while values obtained from zinc analysis is within the range of the permissible concentration which is 5ppm as set by the Environmental Protection Agency.

Toxicity of the three heavy metals was also determined by obtaining its lethal concentration values using probity method. Lethal concentration (LC50) values at 72 hours gave the following concentration values: 33.81ppm Cd, 184.68ppm Pb and 29.37ppm Zn. LC50 values of the three heavy metals varied with respect to test concentration at a given exposure time.

Master of Science in Physics (MS Phys)

001

ALGUNO, Arnold C. 2001. Energy Band Gap Calculations on Conducting Polymers: *Ab Initio* and Density Functional Studies. (GT: MS Phys), 64pp.

Geometries and energy band gaps of intrinsic thiophene, pyrrole, furan, aniline and acetylene monomers and dimers have been systematically calculated. Geometries were fully optimized at a*b initio* (Hartree-Fock [HF], M∅ller-Plesset [MP2]) level theories. Further investigation was carried out using density functional theory (DFT); employing pure (BLYP) and hybrid (B3LYP and B3P86) functional methods employing electron core potential (ECP) split valence (CEP-31G), polarization function (CEP-31G*) and diffused function (CEP-31+G) as basis sets.

This study shows that at HF and MP2 levels of theory, energy band gaps are overestimated compared with the experimental values because of the absence of correlation of contribution. Pure DFT functional (BYLP) underestimate the energy band gaps and hybrid functional (B3LYP and B3P86) showed a substantial improvement in the energy gaps of thiophene (4.06 and 4.11 eV), a pyrrole (4.71 and 4.77 eV), aniline (4.45 and 4.48 eV), acetylene (5.24 and 5.27 eV) dimmers and furan (6.29 and 6.38 eV) monomer which are in good agreement with the experimental values of these organic conducting polymers. For geometry calculations, HF revealed more accurate estimates, indicating that it may not be necessary to perform MP2 and DFT calculations to obtain good geometries.

002

AMBOLODE, Leo Cristobal II C. 2008. Simulation Study on GLD Electromagnetic Calorimeter Performance Using Distributed Computing. (GT: MS Phys), 103pp.

The performance of the Global Large Detector (GLD) Electromagnetic Calorimeter (EMCal) for the International Linear Collider (ILC) have been investigated through computer simulation in this study. The simulation is done using distributed computing under the MSU-IIT CompHEP Condor pool which is composed of 3 *compute* machines. The results have shown that good scalability and linear speedup in the simulation were attained. It was found out that the data simulated in the Condor pool have achieved efficient reproducibility as compared to the data generated in High Energy Accelerator Research Organization (KEK) in Japan. The gathered results agreed excellently in terms of energy response and energy resolution with a maximum error of less than 1%. Moreover, a linear energy response of EMCal to γ beams is also attained. It showed that for every 1 GeV incident energy of γ particles, 41.2 MeV of energy is deposited in the EMCal. The resulting energy resolutions are $16.20\%/\sqrt{E} \oplus 0.17\%$, $16.03\%/\sqrt{E} \oplus 0.18\%$, $15.96\%/\sqrt{E} \oplus 0.17\%$ and $16.14\%/\sqrt{E} \oplus 0.15\%$ for 1-machine, 2-machine and 3-machine set-ups, and for the data generated in KEK, Japan respectively. These results are consistent with the performance goal of the ILC which have values from $14\%/\sqrt{E}$ to $17\%/\sqrt{E}$ for the stochastic term and about 1.0% for the constant term (ILC Reference Design Report. ILC Global Design Effort and World Wide Study, 2007).

003

AROGANCIA, Dennis C. 2002. Measurement of the W Boson Mass at JLC. (GT: MS Phys), 89pp.

At the proposed Joint Linear Collider (JLC) the W boson mass is measured through computer simulation using its hadronic decay channel, $e^+ e^- \rightarrow e^- \bar{\nu} W^+ \rightarrow e^- \bar{\nu} q \bar{q}$. Beamstrahlung and initial state radiation (ISR) effects are take into account.

In this study, an integrated luminosity of $\int L \, dt = 100 \, fb^{-1}$ is assumed. The center – of – mass energy is set as at $\sqrt{s}$ = 500 GeV. Monte Carlo data obtained in the JLC detector is analyzed using the JLC Study Framework (JSF) and Physsim libraries. Event generation is performed using BASES/SPRING and Pythia. In the simulation of events, the JSF Quick Simulator is used with the 3 Tesla detector configuration.

An event selection criteria is formulated to minimize background events. Possible backgrounds of the 2–jet signal considered are the following: $e^+ e^- \rightarrow e^+ e^- Z^0$, $W^+ W^-$, and $\gamma + \gamma^* Z^0$. When detector smearing effects are not included the W mass resolution is about 5 MeV due to the undetected particles which go into on the detector hole near the beam pipe and the undetected neutrinos. When detector smearing effects are included the applied selection criteria and the pure Lorentzian mass fit yield a statistical error of more

than 20 MeV on the W mass measurement. The mass shift is about 1GeV from the input value due to large systematic errors and limited detector acceptance.

004
BASTATAS, Lyndon D. 2008. White Noise Path Integral Treatment of Dirac Oscillator in a Uniform Magnetic Field. (GT: MS Phys), 60pp.

The Dirac oscillator is solved using the white noise path integral prescription. In particular, the Green functions and energy spectra of a three-dimensional pure Dirac oscillator and a two-dimensional Dirac oscillator in a uniform magnetic field are obtained. To carry out the calculations, the linear Dirac equation for each system is iterated to express it in terms of a second order Green function. The structure of the integrand of the second order Green function that satisfies the iterated Dirac equation for each system appears to be similar in form to that of a non-relativistic quantum propagator evolving in a time-like parameter which can then be expressed as a Feynman path integral. The effective Lagrangian of the three-dimensional pure Dirac oscillator turns out to be similar in form to a non-relativistic harmonic oscillator with spin-orbit coupling terms while that of a two-dimensional Dirac oscillator in a uniform magnetic field is similar in form to a non-relativistic charged particle in a uniform magnetic field with spin terms and some constants. The quantum propagator for each system is then cast into the framework of white noise analysis and evaluated using the same procedure done in the non-relativistic case. From the poles of the second order Green function, the energy spectra for the two Dirac oscillator models are obtained. The extracted energy spectra agree to those found in the literatures [(Benitez, Romero, Yepez and Britos, 1990), (Villalba, 1994) and (Villalba and Maggiolo, 2001)].

005
CASTILLON, Ancelie A. 2000. Study on the New Organic Semiconductor Radiation Detector. (GT: MS Phys), 83pp.

Thin freestanding films of polythiophene and polypyrrole that are prepared by electrochemical polymerization are the subjects of this study. Potentiostatic electrochemical polymerization is done by passing a constant electric potential across the two electrodes, indium-tin oxide and platinum-plated titanium plate, that are immersed in an electrolytic solution containing thiophene or pyrrole (monomer), lithium tetraflouroborate (electrolyte salt) and acetonitrile (solvent). The resulting films are dedoped in pure acetonitrile at a higher negative bias potential for a longer time and they found to have conductivities of order of magnitude 10^{-10} to 10^{-5} $S \cdot cm^{-1}$.

Polypyrrole and polytiophene sensors are fabricated using the corresponding films prepared. Good ohmic relationship is established on the film using silver paste and sputtered gold. Aluminized mylar sheets and gold sheets are attached at the ends of the films to serve as electrodes for voltage-current readout.

V-I curves show evident responses of these sensors from 365-nm UV light illumination and to ^{90}Sr beta ray irradiation. Real time signals coming from these sensors are also observed when they are irradiated with Nd:YAG laser. These signals are found to

be similar to that from Si-PIN photodiode.

006

CONFESOR, Mary Grace P. 2006. Debye Screening on Helium: A Monte Carlo Simulation. (GT: MS Phys), 90pp.

Variational Monte Carlo calculations are performed for the ground state and integration energies of the Helium atom placed in the Plasma. The Coulombic interaction potentials for electron–nucleus and electron-electron are replaced by an effective screened Coulombic petential. This screened potential is known in Plasma Physics as the Debye-Hückel potential. Several trial wavefunctions are used for the Monte Carlo simulation to investigate which would give the best energy values. The best wavefunction gives the ground state and ionization energy values with a difference from the standard data of 0.43% and 1.36%, respectively. It was observed that as the screening increases the energy value becomes positive resulting to the instability of the system.

007

CONFESOR, Mark Nolan P. 2007. On the Winding Probability of Entangled Polymers with Length Dependent Potentials. (GT: MS Phys), 64pp.

In this thesis, the simple entanglement problem of two polymers is considered. Here, the first polymer is taken to be on a plane subjected to a potential V, while the second polymer is assumed to have a straight line conformation oriented along the z-axis. Following the differential equation approach of Wiegel [7,21], the winding probabilities for the first polymer to wind n-times around the straight polymer for cases where $V = q\vec{A}.\vec{r}$ and $V = f(s)\theta$ calculated. The results obtained agree with that by C.C. Bernido et.al. [5,6] using white noise functional approach.

008

DE ASIS, Rico M. 2001. Characterization of *p-n* Junction. (GT: MS Phys), 77pp.

Characteristics of *p-n* junction devices such as the maximum reverse current, I_s; ideality factor, η; temperature coefficient of junction voltage, dV/dT; energy band- gap, ε_g; and depletion capacitance, C_D are determined at the MSU-IIT material research laboratory. A compact *p-n* junction measurement apparatus is used in the measurements. Using the apparatus, the response of the junction current with the junction voltage is investigated. From the relationship between the junction voltage and the natural logarithm of the junction current, the maximum reverse current and the ideality factor are determined at room temperature. The same apparatus also allows the diode sample to be heated from room temperature up to 360 K. The response of the junction voltage against the varying temperature is also investigated and a linear relationship is found. The slope represents temperature coefficient of junction voltage. Knowing this coefficient and using a definite value of a point (V,T) on the line, the energy band gap of the samples are calculated. The

depletion capacitance is also directly determined using the same apparatus.

Results show that the measured values of all the above-mentioned characteristics of a silicon *p-n* junction device are in agreement with accepted values. Other common material samples such as a germanium diodes, light emitting diodes (LED) and PIN photodiodes are also being investigated.

009
ENOBIO, Eli Christopher I. 2008. Multiple Refractive Index Holographic Contouring Using Coherent Diode Laser. (GT: MS Phys), 104pp.

A low-cost coherent diode laser is employed to generate holographic surface contours on a spherical opaque object using Double-Exposure Holographic Interferometry (DEHI) and multiple refractive index immersion method. The holographic recording is done utilizing one mirror to guide the natural divergent beam of the diode laser to produce both object and reference wave fields. Without variable beam splitters, the method has achieved an optimal reference to object beam intensity ratio of 10:1 yielding to a relatively high contrast hologram. Using a novel method in measuring fringe positions and fringe spacing on the reconstructed image, a relatively precise measurement of contour depths is obtained. Using 0.8%, 1%, 2%, and 3% Water-Ethanol solutions, the corresponding contour intervals were measured to be 1.0655 mm, 0.8734 mm, 0.3660 mm, and 0.2758 mm, respectively. Using the experimental setup, the index of refraction of the Water-Ethanol solutions was also measured to be 1.33247, 1.33253, 1.33299, and 1.33326, respectively.

010
GARCIA, Merlita C. 2001. Lifetime Measurement of the 14 KeV State in ^{57}Co (EC)^{57}Fe. (GT: MS Phys), 80pp.

The beta decay of ^{57}Co to ^{57}Fe undergoes two modes. In this research the mode which leads to two excited states for ^{57}Fe is taken into consideration. The de-excitation of the second excited state to the first excited state gives off a 122 keV gamma ray photon while the de-excitation of the first excited state to the ground state gives off a 14 keV gamma ray photon.

The detection of these two energies is made possible by the assembly of two different sizes of scintillation detectors. Using the NIM (Nuclear Instrumentation Modules) and the CAMAC (Computer Automated Measurements and Control) systems with their proper calibrations, and using a macro in fortan, the energy spectra of the particles of interest incident on these detectors can be viewed in the monitor of a personal computer. The spectra can be analyzed using the ROOT data analysis system for histogramming and fitting. The mean lifetime of the 14 keV state of ^{57}Fe can be determined by plotting the distribution of the time between the detection of the gamma ray of these two energies. Using the ROOT suite of programs, an exponential fit is made to the TDC time distribution and the mean lifetime is then calculated.

011

GOOC, Hermogenes Jr. C. 2002. Two Track Separation Study of the JLC – CDC Baby Chamber. (GT: MS Phys), 125pp.

JLC (Joint Linear Collider) is a proposed e^+e^- linear collider to be built in Japan, which is expected to discover and determine the properties of the Higgs boson. One of its components is the Central Drift Chamber (CDC), which will determine the information of the tracked particles. A small test chamber called the baby chamber was fabricated with the same jet cell structure as the 4.6 m – long test drift chamber, which is constructed with the current design of the CDC, in order to carry out bean tests on basic chamber performance using cosmic rays and different beams. The data, stored on CD – ROM, taken during the beam test using the electron – positron pairs produced by bremsstrahlung photons from the internal target of REFER (Relativistic Electron Facility for Education and Researches) in Hiroshima University, Japan was shipped to MSU – IIT for analysis. The results of the computer analyses of the beam test data show that the wire efficiency of 98% is obtainable over the entire drift length, spatial resolution of less than 85 μm when the drift length is less than 3.0 cm and two – track separation efficiency of 97% when the distance between two tracks is 2mm.

012

JACOSALEM, Editha P. 1999. Gamma-Ray Detection Using NaI(TI) and Csl Scintillators. (GT: MS Phys), 78pp.

Two scintillator detectors were constructed using inorganic crystals: the thallium-doped sodium iodide [NaI (TI)] and the pure cesium iodide [Csl] crystals, as scintillators. The spectra of different radioactive sources were determined for each type of crystal detector using the standard nuclear physics instrumentation called NIM and CAMAC. The calibration curve and energy resolution for each detector was determined from the gathered spectra. These spectra were then compared with the standard spectra using the Personal Computer Analyzer II (PCA II).

The study reveals that the NaI(TI) and Csl crystal used in the research possess the desired properties of inorganic crystals. This was indicated in the characterization of each detector signal and from comparing the obtained results with that of PCA II. The results also showed that the computed energy resolutions were found to be within the standard values and that the constructed gamma-ray detectors could identify unknown radioactive source using the calibration curve.

013

LINTASAN, Abdurajan B. 2006. Wavelet Analysis on Low Energy Gamma Ray Source Using NaI (TI) Scintillator Detector. (GT: MS Phys), 55pp.

Wavelet is a new and advanced method in signal processing industry, which is useful for high-energy studies. Its unique ability to perform a multi-resolution analysis made it as an approach of this study.

In this study, Continuous Wavelet Transform (CWT) was used to explore some of the applicability's of wavelet to analyzing low energy gamma ray source using NaI(TI) scintillitor detector. Personal computer, the Matlab 6.1 version and a data acquisition card were used to process analog input coming from Cesium-137, Sodium-22, Barium-133 and Cobalt-60. Digital signals were analyzed by matlab routines and CWT Coefficients of localized signals were determined.

Study reveals that the signals constitute superposition of different frequencies. CWT coefficient plots showed multi-resolution aspect of the signal from each source. The computed high frequency content in the x-ray range conforms to the known values of associated gamma frequency in the electromagnetic spectrum.

014
MAGALLANES, Jingle B. 2002. A New Analysis of 6 – Jet Higgsstrahlung Channel at JLC. (GT: MS Phys), 116pp.

The measurement of the *Higgs boson total decay width,* $\Gamma_{total}\left(H^0 \rightarrow X\right)$, at the 3/*tesla* parameter of the JLC through the 6 – *jet Higgsstrahlung Channel* $e^+e^- \rightarrow Z^0H^0 \rightarrow q\bar{q}WW^* \rightarrow q\bar{q}q\bar{q}q\bar{q}$ is important. The feasibility of the 6 – jet Higgsstrahlung for total decay width measurement is determined by a lower relative Higgs total decay width error, $\Delta\Gamma_{total}/\Gamma_{total}$.

It is assumed that electrons and positrons collide at center – of – mass energy of $\sqrt{s} = 300 GeV$ at an integrated luminosity of $\int L\ dt = 500\ fb^{-1}$ with Higgs mass, $M_H = 120$ GeV. The resulting particles and tracks of the collisions are analyzed through JSF and PhysSim libraries. PYTHIA generates all the different events. JLC QuickSim is employed for detector simulation.

The data from the 6 – jet Higgsstrahlung and background events are compared to determine the *event selection criteria* for the measurement of the relative total decay width error and target – background ratios as well the approximate mass, energy, and momentum of the Higgs boson. The backgrounds considered in the study are: $99^-(8)$, W^+W^-, 2^02^0, and $2(\rightarrow X) H (\rightarrow b\bar{b})$.

After the application of the event selection criteria, the relative Higgs decay width error calculated is near 12%, which is very promising. Also, the mass, energy, and momentum of Higgs are 121.7 GeV/c^2, 159.2 GeV, and 102.5 GeV/c respectively. The target signal efficiency is higher at around 18%.

015
MANIGO, Jonathan P. 2008. Synthesis and Characterization of Chemically

Deposited ZnS Thin Films on Glass and *p*-Si(100). (GT: MS Phys), 106pp.

ZnS semiconductor thin films are deposited using Chemical Deposition technique onto glass and *p*-Si(100) substrates under acidic conditions from solutions containing zinc chloride, urea and thioacetamide. The electrical properties of the films are investigated using Van der Pauw conductivity and Hall Effect measurements, and photoconductivity measurements and the structural properties using X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM) and SEM-Energy Dispersive X-Ray (SEM-EDX) Spectroscopy. The films have sheet conductivities in the range of 10^{-8}S and have very high hole and electron Hall mobilities in the range of 10^2-10^4 cm^2/V.s. The calculated sheet densities are low (10^7-10^8cm^{-2}) indicating the high mobilities of the charge carriers. The conductivity type of the films varies from *n*- to *p*-type by changing the Zn and S source concentrations. Increasing the Zn source concentration produces *n*-type films and increasing the S source concentration produces *p*-type films. XRD patterns indicate that the films are predominantly of sphalerite ZnS structure and are nanocrystalline. These are supported by the SEM results showing that ZnS nano-sized spheres with size varying from 100-500nm are produced and by the EDX elemental analyses showing that the films are composed mainly of Zn and S.

016

MOSQUEDA, Meinhart A. 2002. Image Enhancement of Horsehead Nebula Using Fuzzy Technology. (GT: MS Phys), 82pp.

Image processing has been widely used in many fields of endeavor. Problems relating to imaging are usually solved with the aid of computers and mathematical tools. The images are converted into mathematical equivalent using computers. This mathematical representation of the image is being manipulated by the different algorithms to get the desired image output.

This paper investigates the applicability of fuzzy logic technique in enhancing the image contrast. Fuzzy system is designed to represent the image manipulation process. Fuzzy sets, fuzzy rules and fuzzy inference engine are developed to do the enhancement process. A computer software is designed and developed to implement the actual manipulation of image, to get the pixel values of the image, to display the input and output image, to plot the histogram of the image, and to manually fine-tune the fuzzy sets. This software has been named *Meinhart iMage Pro*^{TM}.

Meinhart iMage Pro^{TM} is developed using Microsoft's Visual Basic 6.0, Microsoft's standard ActiveX and other ActiveX from third party developer, dynamic link library from other developers and the personally developed Class Modules and ActiveX. It uses the single tier and object oriented development paradigms.

Horsehead nebula, an absorption nebula, is used as a sample image. Based on the findings of the study, the sample image using the fuzzy technique. Manual fine-tuning of the fuzzy sets allows a better image output.

017

NAWANG, Salasa A. 1999. Gamma Ray Attenuation Using Na-22. (GT: MS Phys), 59pp.

The intent of this study is to find out the penetrating power of gamma ray through matter by measuring its attenuation coefficient at a particular energy. It also seeks to understand the basic principle of the interaction of radiation with matter at moderate energies. These things are accomplished using Gamma Ray Spectroscopy Technique. Electronic signal or pulse, carrying the physical information, is displayed in histogram style with pulse height on the horizontal scale and number of pulses per channel on the vertical scale. The inputted pulses are digitized, and are processed by the Multichannel Analyzer.

The net integral count is plotted for every thickness of absorber. PAW fitting shows an exponential behavior consistent with established literature, and a reduced chi-square close to unity. The fitted attenuation coefficient parameter for 0.511 MeV and 1.0275 MeV are 0.1430 ± 0.0006 cm^2/gram and 0.056 ± 0.001 cm^2/gram for lead, 0.084 ± 0.002 cm^2/gram and 0.060 ± 0.004 cm^2/gram for glass, and 0.090 ± 0.002 cm^2/gram and 0.064 ± 0.005 cm^2/gram for wood, respectively.

018

NIÑOFRANCO, Eufemio F. 1999. Measurement of Cosmic Ray Flux. (GT: MS Phys), 51pp.

Cosmic ray flux is measured using two identical plastic scintillators with each coupled to identical Hamamatsu H1161-RB9038 photomultiplier. The two detectors are connected to Nuclear Instrument Modules (NIM) for discrimination and for counting coincident signal over fixed and the same interval of time for both day and night. Appropriate statistical treatment were given to the recorded coincidence rates to determine if there are time or day to day variations of the cosmic ray flux. A Monte Carlo simulation was also done in order to determine the acceptance of the setup used for the measurement. The gathering of coincidence rates was done in the months of February and March of the year 1999 at the MSU-IIT, High Energy Physics Laboratory, Iligan City.

019

NONESA, Jelly Grace B. 1999. Energy Resolution of Plastic Scintillation Detectors. (GT: MS Phys), 51pp.

Five cylindrical plastic scintillators of the same diameter but of different thickness are optically mounted to one type of photomultiplier tube to consist the five scintillation detectors. By making a counter plateau measurement, the operating voltage of each detector is determined. The anode signal coming from each detector is characterized using the oscilloscope. The energy spectra of the incident particles in each detector are measured with the aid of standard nuclear instruments called NIM and CAMAC. The energy resolution of each detector is determined from the energy spectrum exhibited by the incident particles. The energy resolutions of the detectors are then compared to one another.

020

OUANO, Johnny Jim S. 2003. Investigation of Cosmic Ray Flux at Higher Altitude. (GT: MS Phys), 60pp.

Cosmic ray flux is measured in Mindanao State University (MSU), Marawi City by using two plastic scintillators of dimensions 20 x 20 x 1 cm3 each coupled optically to a H1161 – RB9038 photomultiplier tubes (PMT). MSU, is elevated at about 850 meters above sea level. The two scintillation counters are mounted on a wooden stand parallel to each other at 1 meter apart. Signals detected from both detectors are channeled to the NIM for discrimination and counting of coincidences. Simultaneous measurement between MSU and Ateneo de Zamboanga University (ADZU), Zamboanga City was done right after the measurement in MSU.

Statistical values of data analysis such as the means, standard deviation, variance, coefficient of variance and the Levene's test for equality of variation and the t - test for equality of the means, the probability values are generated by using SPSS (Statistical Package for Social Sciences) software. Results show that there is no significant variation on day to day or night to night cosmic ray flux measurements in MSU with an average of 16.39 counts per minute. Levene's test and t-test showed that the MSU flux as compared to ADZU flux is significant different from each other. The difference of the means between MSU-Marawi and ADZU-Zamboanga is 6.23 counts per minute in favor of MSU-Marawi.

021

PANDUYOS, Jocelyn B. 2001. Characterization of Ferromagnetic Samples. (GT: MS Phys), 66pp.

Ferromagnetic materials are characterized by measuring its coercivity, retentivity, and saturation magnetization. The number of magnetic phase present in the samples system is also identified. This is done using the hysteresis loop tracer apparatus in the Material Research Laboratory of MSU-IITHEP. The samples used are commercialized nickel, soft iron, hard steel and needle sample.

The sample of wire form is placed in a pickup coil which is placed coaxially in a solenoid. The hysteresis loop trace of the sample is measured for its corresponding ferromagnetic properties. Obtained values are then compared with the known parameters of a standard sample. Results obtained are within acceptable range and signifies a fair accuracy in the characterization of the sample. The characterized sample of commercial nickel has the coercivity of 36.37±0.24 *oersted,* retentivity of 262.58±1.8 *gauss* and saturation magnetization of 499.13±2.37 *gauss.* It is also identified to have two different magnetic phases in its system.

022

PATTUINAN, Anwar Zeus S. 2007. Calorimeter Hits Clustering Using Minimal Spanning Trees. (GT: MS Phys), 68pp.

This study presents one of the initial stages of a Particle Flow Algorithm (PFA) for the Global Large Detector (GLD) concept for the proposed International Linear Collider (ILC). One of the research and development studies for a detector is to analyze the hits produced inside the calorimeter. The Minimal Spanning Tree (MST) algorithm is utilized for clustering the hits. The MST algorithm is also being tested for its capabilities as a clustering algorithm for the GLD-PFA. The data analyzed in this study are Monte Carlo data generated using the Pythia and Jupiter generator at KEK, Japan. The Calorimeter hits are grouped using MST clustering. The clustering efficiency is calculated by taking the percentage difference of the calorimeter hit energy deposit of the Monte Carlo (cheated) data and the clustered hits. The number of MST clusters produced is also compared to the number of cheated clusters. The energy per cluster and the total cluster energy obtained from MST clusters are compared to that of cheated clusters. The results show that the percentage difference is less than 4%, and the clustering efficiency is within 96% to 99%. The numbers of MST clusters are less than the number of cheated clusters. Also, the calculated energy of the MST clusters is close to the cheated clusters

023
RAMIREZ, Anthony Paul D. 2008. Light Monitoring System for Scintillator-based Calorimeter. (GT: MS Phys), 86pp.

An optical monitoring system is proposed to check the performance of the International Linear Collider's electromagnetic calorimeter during its operation. The system is composed of light emitting diodes and current pulse generators as light source, attached to leaky fibers that disseminate light to the scintillators of the electromagnetic calorimeter.

In this study, efficiency of the leaky fibers with different cut designs and dimensions are investigated. The cuts are imposed to the fibers in two different configurations: 15-cut and 5-cut configurations. The results show that type E exhibits the best results among the other designs. Efficiency of the cuts are also investigated using GEANT4 simulation.

024
RESERVA, Rosario L. 2001. Mean Lifetime Measurement on Muon Decay. (GT: MS Phys), 79pp.

Experimental efforts have been made to investigate the mean lifetime of muon decay, a purely leptonic process, by measuring and analyzing the lifetime of cosmic ray muons decaying in four different absorbers: wood, aluminum, copper, and iron. In each absorber, the lifetime of cosmic ray muon is measured and compared with the worldwide muon lifetime value.

Muon decay detection system is composed of high precision plastic scintillation detectors, each with a sensitive volume of 20 x 20 x 1 cm^3. Pulses generated in the scintillator are directed into the standard electronic nuclear physics instrumentation, Nuclear Instrument Modules (NIM) and Computer Automated Measurement and Control (CAMAC). The whole system I controlled by PC analyzer running with Fortran software

via an interface board which stores data for further offline analysis. The method employed on this study is a measurement of the distribution in duration of the time intervals between the stopped cosmic-ray muons in plastic scintillation counters given by the coincidence circuit and the detection of the decaying electron in the downward direction.

The raw data from the lifetime measurement are converted into decay time distribution and are displayed in histograms. A fit to the distribution yielded a mean lifetime whose value is significantly consistent with the Standard Model. Using wood absorber, $\tau_\upsilon = 2.180 \pm 0.04258 \ \upsilon$ s; aluminum absorber, $\tau_\upsilon = 2.121 \pm 0.04255 \ \upsilon$ s; copper absorber, $\tau_\upsilon = 2.059 \pm 0.0472 \ \upsilon$ s and iron absorber, $\tau_\upsilon = 2.052 \pm 0.0558 \ \upsilon$ s In each absorber, muon decay showed a characteristic of simple exponential decay conforming to the radioactive decay law, $N(t) = N_0 e^{-t/\tau\upsilon}$. The international υ decay mean lifetime is $\tau_\upsilon = 2.197 \pm 0.00004 \ \upsilon$ s as presented by the particle Data Group, 2000 Physical Review.

025
SALOMSOM, Edmond B. 2006. Fabrication and Characterization of Polyaniline / Zinc Oxide Diode by Chemical Bath Deposition Method. (GT: MS Phys), 66pp.

PANI/ZnO diodes are fabricated using a p-type HCl doped polyaniline (PANI) and n-type zinc oxide (ZnO) films glass slides. The ZnO films are annealed at 500^0C in an electric furnace for 20 minutes before coating a portion of it with the green conducting emeraldine salt (ES) form of PANI film. The concentration of dopant is varied in increments of 0.2 (from 0.2 to 1.0M). These films are prepared using the chemical bath deposition method (CBD).

The electrical properties and characteristics of the PANI, ZnO films and PANI/ZnO composite are obtained using the "Characteristics of Semiconductor Diodes" apparatus. Measurements are done under illuminated and dark conditions at 25^0C. Both the PANI and ZnO samples show a linear dependence of current on the applied voltage indicating a good ohmic contact between the film and the electrodes are established. The PANI/ZnO samples on the other hand, show a rectifying behavior with an ideality factor greater than 2.0. The threshold voltage values are found to range from 0.33 to 0.83V. These cut-in voltages fall within the common 0.3 to 0.7V turn on voltage range defined for materials made of germanium and silicon except for the 0.83V. The current of the fabricated composite films increases when exposed to the $365nm$ wavelength ultraviolet (UV) light both in the forward and reverse bias regions. The dynamic resistance of the samples is high under zero illumination while values of the maximum reverse current and cut-in voltage are low under dark condition measurements.

X-ray diffraction (XRD) results and scanning electron micrographs (SEM) show that the fabricated ZnO samples are of hexagonal (zincite) structure and highly oriented along the *c*-axis perpendicular to the glass substrate. The fabricated samples of PANI show a high crystallinity HCl-substituted oligo-polyanilines. Measurements of the X-ray diffraction spectra and surface imaging of the samples are performed in Niigata University, Japan.

026

SANCHEZ, Allister Levi C. 2000. Measurement of the 6-Jet Higgs Channel at the Joint Linear Collider (JLC) Using the JLC Study Framework. (JSF). (GT: MS Phys), 98pp.

The possibility of using the 6-jet Higgs channel $e^+e^- \rightarrow Z^0H^0 \rightarrow q\bar{q}WW^* \rightarrow q\bar{q}q\bar{q}q\bar{q}$ for the measurement of the total Higgs boson decay width $\Gamma_{total}(H^0 \rightarrow \chi)$ at proposed Asian Joint Linear Collider (JLC) is being investigated by computer simulation in this study.

The Higgs boson is assumed to have a mass $m_H = 120 GeV$. The JLC center-of-mass energy is set at $\sqrt{s} = 300 GeV$ and the integrated luminosity $\int Ldt = 500 fb^{-1}$. Expected results of collisions inside the JLC detectors are analyzed using the JLC study Framework (JSF) and the PhySim libraries. Generation of events is done through the JSF interface to the PHYTHIA Monte Carlo generator. The JLC Quick Simulator in JSF is used for event simulation.

Data gathered from the generation and simulation of both signal and background are used to formulate an event selection criteria for the measurement of the total decay width $\Gamma_{total}(H^0 \rightarrow \chi)$ of the Higgs boson. For the 6-jet signal, only the following possiblebackgrounds are considered: $e^+e^- \rightarrow Z(\rightarrow X)H(\rightarrow b\bar{b}),\ Z^0Z^0, W^+W^-, q\bar{q}$ and $e^{\mp}vW^{\mp}$.

The application of the developed event selection criteria yields 72 out of 3, 906 6-jet events. Background was greatly reduced but were still large enough to smear the desired signal. The relative error in Γ is $\dfrac{\Delta\Gamma_H}{\Gamma_H} = 37.2\%$. This is very large compared desired signal to the other possible measurements of $H \rightarrow WW^*$ using the leptonic or semileptonic modes.

027

SOLIDUM, Ruelson S. 2002. Development of Pin Photodiode Readout for Y-Ray Spectroscopy. (GT: MS Phys), 55pp.

We have developed a small prototype PIN photodiode read out system for use with gamma ray spectroscopy. In this application, scintillators are used to convert gamma ray into UV or visible light which is detected by the PIN photodiode coupled directly to the scintillator. The high density light output, and short decay time of cesium iodide doped

with thalium CsI(T1) make it an attractive scintillator for gamma ray spectroscopy. The low cost, small size, high quantum efficiency, less than 100V power requirement, and insensitivity to magnetic field make silicon photodiodes attractive photodetectors for gamma ray applications. A CsI(T1) scintillator crystal of dimension 2 x 5 x 6 cm^3 and a silicon PIN photodiode of active area 10 x 10 mm^2 directly coupled to a high impedance FET first stage charge sensitive preamplifier (CSP) is used in this prototype. A charge is supplied from the pulse generator via the capacitance connected to the input end of a CSP. The output of the CSP is amplified once with the pulse – shaping amplifier (Gaussian shaping circuit) and is input to the Multichannel Analyzer (MCA) in PHA mode. The pulse height distribution is measured and obtained the noise ~ 10keV FWHM. When irradiated with known γ source we obtained a good resolution signal of 15keV for ^{60}Co and 32keV for ^{137}Cs.

028

TABUDLONG, Naomi M. 2008. Fabrication and Characterization of Chemical Bath Deposited ZnO on Amorphous SiO$_2$ and on p-Si(001). (GT: MS Phys), 134pp.

This study is on the fabrication of ZnO thin films on amorphous SiO$_2$ and p-type silicon. The formation of ZnO thin films is facilitated through chemical bath deposition at 70 °C and dried at 80 °C. These films are characterized to determine its structural and electrical properties. Also presented in this study are the thorough analyses of the XRD and SEM data of films by E.B. Salomsom. These films are also characterized for their electrical properties. The reagents used are ZnSO$_4$ and NH$_3$. The pH of the bath is dependent on the NH$_3$ concentration. XRD results show that wurtzite ZnO thin films are deposited on the substrates when the concentration of the ZnSO$_4$ is low. SEM images show that these wurtzite ZnO thin film form a nano structure composed of hexagonal rods arranged similar to that of a sea urchin. Elemental analysis through EDX confirm that the ZnO nano structure formed is composed of zinc and oxygen and nothing else. The thin films formed have conductivities in the range of semiconductors and are n-type. They also exhibit responses to UV illumination and ^{60}Co irradiation. The pn junction formed between the thin film and the p-Si substrate show rectifying behavior.

029

TERIO, Rosemarie M. 2001. Angular Distribution of Cosmic Ray Flux at Sea Level. (GT: MS Phys), 105pp.

Angular Flux Distribution of Cosmic rays is measured using two identical plastic scintillators of dimensions 100 x 10 x 1.0 cm^3 each coupled optically to a Hamamatsu H1161 – RB9038 photomultiplier tubes. The two scintillation counters are mounted on an auxiliary wooden structure that is bilaterally constrained to rotate through angles 0^0, -31^0, -45^0, -60^0, -75^0, -85^0, 29^0, 43^0, 55^0, 77^0, 85^0, and 90^0. One of the counters forms the exterior layer and extends parallel to the other from detector that forms the interior layer at a separation distance of 1.5 m. signals detected from both detectors at a particular angular position are channeled to the Nuclear Instrumentation Modules (NIMs) for discrimination and counting the coincidences.

Standard statistical methods of data analysis are used to calculate the mean and corresponding uncertainties of cosmic –ray flux measurements in every angular displacement of the detector assembly. Results show that the angular flux distribution as measured at the MSU-IITHEP Laboratory is very nearly proportional to the square of the cosine of the zenith angle.

For instance, at 0^0 the mean flux with corresponding uncertainty is found to be 26.2322 ± 0.2701 particles min^{-1}, a value that agree closely with standard data taken from Review of Particle Physics and with the previous experiments done in same location using fixed dual horizontal detectors.

Monte Carlo Calculations yields approximate mean flux of 25.6740 ± 0.0863 particles min^{-1} at 0^0.

030
VEQUIZO, Reynaldo M. 2002. Radiation Detectors from Semiconducting Polythiophene and Polyaniline Films. (GT: MS PHYS), 87pp.

A compact tetrafluoroborate (BF_4^-) – doped polythiophene (PT) film is produced electrochemically in a two-electrode cell. Chemically synthesized polyaniline (PA) films doped with hydrochloric acid (HC1), is also produced. Radiation detectors are being fabricated out of the cut samples from these films.

The polyaniline detectors are characterized by electrical measurements. The sensors from 200 μm thick polyaniline film dedoped with sodium hydroxide show non-ohmic behavior while the I-V curves of the HC1 doped 70 μm thick PA sensors depict no variation from the ohmicity of the electrode contact. The sensors with very small activation energy show maximum photoconductivity at room temperature. The conductivities of these sensors plotted against temperature obey the variable range-hopping model of charge transport mechanism in the polymer.

At room temperature, the signals from both the polythiophene and the polyaniline sensors show a risetime in the order of 10^{-9}- 10^{-6} seconds. However, the polyaniline signal is more dispersive than the polythiophene.

During the online data acquisition, the polytiophene sensor at room temperature exhibits a characteristic resolution of less than 25%. It can operate at about 325 Volts as a detector.

Doctor of Philosophy in Biology (Ph.D. Bio)

001
AMPARADO, Beverly B. 2003. Species Diversity of Microbial Cellulose Degraders from the Leaf Litter of Three Mangrove Plants. (D: Ph.D. Bio), 234pp.

This study was conducted to determine the species diversity of bacteria and fungi

from decomposing leaf litter of the mangrove plants; *Sonneratia* and *Nypa* and a seagrass, *Thalassia,* from a pristine mangrove site in Bacolod, Lanao del Norte and a disturbed site in Kauswagan, Lanao del Norte. Seventeen (17) species of fungi (*Apodachlya* sp.*,* three species of *Aspergillus, Brotrytis* sp., *Chrysosporium* sp., two species of *Geotrichum, Microsporum* sp., three species of *Penicillium, Phialophora* sp.*, Phythophthora* sp., *Rhodotorula* sp., *Scopulariopsis* sp., and *Sporothix* sp.*)* and 15 bacterial species (two species of *Aeromonas,* two species of *Flavobacterium, Moraxella* sp., two species of *Pasteurella,* four species of *Pseudomonas, Serratia* sp.*, Sphingobacter* sp., and two species of *Vibrio)* were isolated in the study. Most of the microbial species showed cellulolytic activity using the Filter Paper Disc Method.

Samples of decomposing plants from the Bacolod site showed higher species diversity, species richness and density of bacteria and fungi as compared to the sample from the Kauswagan mangrove site. *Sonneratia* substrate showed the highest density of bacteria and fungi over *Thalassia* sp., and *Nypa* sp., respectively. However, *Nypa* sp. was the substrate with highest species diversity and species richness of bacteria and fungi over *Sonneratia* and *Thalassia* substrates.

Species diversity and species richness of fungi were higher during the dry season whereas species diversity and species richness of bacteria were higher during the wet season. Results showed differences in the growth requirements of bacteria and fungi as well as the possible occurrence of antibiosis and mutual inhibition between the two microbial groups.

This study showed that the two mangrove sites and the three types of leaf litter varied significantly in the density of fungi whereas bacterial density differed significantly among the three substrates during the two sampling periods. Spearman correlation analysis showed that soil salinity and soil texture showed linear correlation with bacterial density. The density of fungi, however, did not show linear relationship with salinity, pH, temperature and organic content of the soil substrates. It is, therefore, suggested that more studies be done on the mangrove ecosystem to gain more understanding on the dynamic of microbial populations and decomposition in this very valuable ecosystem.

002
GOROSPE, Jessie G. 2007. Morphology, Trophic Ecology and Genetic Variability of the Golden Rabbitfish *Siganus guttatus* Bloch (Pisces: Siganidae) and Their Implications to Fishery Management. (D: Ph.D. Bio), 314pp.

The morphology, trophic ecology and genetic variability of the golden rabbitfish, *Siganus guttatus* Bloch were examined, described and compared within between and among populations in Bacolod-Kauswagan, Lopez Jaena-Plaridel, Ozamis and MSU at Naawan. Statistical analyses (descriptive statistics, coefficient of variation, discriminant function and cluster analyses) of the morphology of *S. guttatus* (15 convetional morphometric characters, 23 landmark distances, six (6) meristic characters and five (5) gut morphomeristic characters) indicated 96.3% accuracy of the classification and identification of the fish species. The Ozamis City and Bacolod – Kauswagan population of S. *guttatus* are morphologically similar. The Bacolod - Kauswagan population was different from Lopez Jaena – Plaridel, Ozamis and MSU Naawan based on handedness of

the anal fin spines phenotype. Investigation of the trophic ecology of *S. guttatus* using gut morphology and composition (assessed based on volume, dry weight biomass and occurrence frequency) revealed that *S. guttatus* is an omnivore and have different feeding strategies in different locations. Genetic variability of *S. guttatus* as determined through protein electrophoresis using *EST** in the brain, heart and epaxial muscles tissues. About seven (7) tissue specific EST* loci were elucidated. Population structure was determined based on *EST** expression. Genetic variability on heterozygosity and Hardy-Weinberg proportion were assessed and determined

Implication to fishery management based on results from morphology, trophic ecology and genetic variability indicate that there are two management units composed of Bacolod – Kauswagan and Ozamis – Lopez Jaena – Plaridel populations of *S. guttatus* in the wild. Cultured *S. guttatus* are also distinct morphologically and genetically but are approaching homozygosity.

003
MINO, Samson A. 2007. Hatchability, Larval Growth and Survival of African Catfish, *Clarias gariepinus* Burchell and Asian Catfish, *Clarias macrocephalus* Gunther Under Different Photoperiods and Diet. (D: Ph. D. Bio), pp. 165.

Fertilized eggs of *Clarias gariepinus* and *Clarias macrocephalus*, were metamorphosed to determine the effect of varying levels of photoperiod (P_1 – natural photoperiod (control), P_2 – 6-hour light (L)/18-hour dark (D), P_3 – 12-hrL/12-hrD, P_4 – 18-hrL/6-hrD, P_5 – 24-hrL/0-hrD, and P_6 – 0-hrL/24-hrD) on fertilization rate, segmentation rate, hatching rate and hatching time and to evaluate further the effect of varying levels of photoperiod and different dietary preparations (D_1-fry mash, D_2- fry mash with homogenized shrimps and D_3- fry mash with homogenized fresh fish) on growth and survival rate of ten - day old 100 hatchlings measuring 9 mm and 8 mm for *Clarias gariepinus* and *Clarias macrocephalus*, respectively, reared in a 61 cm x 31 cm x 10 cm cubicle following a completely randomized block factorial design with three replicates for each treatment.

Quantitative observations revealed that the species significantly enhanced its fertilization rate ($P<0.05$), segmentation rate ($P<0.001$), hatchability rate ($P<0.01$) and hatching time ($P<0.001$) while photoperiod significantly improved segmentation rate ($P<0.001$), hatching rate and hatching time ($P<0.001$) with their mean value of 74.4–82.1%, 64.8–72.9% and 24.2–27.2 hr, respectively. The interaction between photoperiod and species had significantly improved segmentation rate and hatching time ($P<0.05$).

Furthermore, results showed that photoperiod significantly ($P<0.001$) influenced body length, growth increment, biomass and survival with their mean range of 26.8–28.3 mm, 18.2–20.4 mm, 2.44–2.65 g and 48.0–58.1%, respectively. P_6 was significantly different over the rest of the levels of photoperiod. Likewise, diet significantly ($P<0.001$) improved body length, growth increment, biomass and survival with their mean range of 25.7-28.1 mm, 17.2–19.7 mm, 2.22–2.64 g and 46.9–55.4%, respectively. No significant difference between D_3 and D_2 were observed but both diets and treatments were significantly different against D_1. The interaction between photoperiod and species had

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significant influenced body length (P<0.05), and survival rate (P<0.001) while the interactions between photoperiod and diet, and photoperiod, diet and species significantly improved survival rate (P<0.001). In conclusion, photoperiod in conjunction with diets played a vital role on the survival and growth performance of *C. gariepinus* and *C. macrocephalus* fry.

004

NANUAL, Bernadette J. 2008. Biology and Assessment of Reef Resources in Pujada Bay, Davao Oriental with Implications on Their Management. (Ph.D. Bio), 152pp.

Pujada Bay economically supports a wide number of people of Mati and harbors ecologically important species. Following exploitative activities, management initiatives are made before by line agencies based from limited baseline information. To provide for strong scientifically-based management direction,   key bioresources in Pujada Bay are examined in this study to come up with a more accurate picture of the species-habitat status in the area and assess its implication to management. Corals and reef fish assessment follows the standard methodology of Line Intercept Transect and Fish Visual Census, respectively. Sediment sampling to collect soft-bottom macrobenthos uses the line-transect quadrat method and the 1-mm. aperture of sieve in sediment screening. Body size of *Siganus fuscescens* samples is measured using a weighing scale and caliper while separated gonads are weighed using an analytical balance. Seagrass information is taken from a recently conducted seagrass assessment in the area. The ichthyoplankton is examined by sampling horizontally the water column through towing a plankton net with a 297 µm mesh size aperture. Over a ten-year formal management, it is found that live coral cover remains in the poor-fair condition and reef fish shows indication of under high fishing pressure as shown by few target and indicator species, dominance of low-valued and small-sized species and shift in reproductive pattern in *Siganus fuscescens* and in some species. Soft-bottom macrobenthos are moderately diverse with the bivalve mollusks dominating. The preponderance of herbivore fishes shows the functional support system performed by the vegetation in the area. Specific inshore reef areas may be utilized by fishes for spawning, hence the likelihood that Pujada Bay is a "source area". The inward water movement of the bay may have facilitated the retention of eggs and larvae. Anthropogenic and natural factors are operating to control the reef communities of Pujada Bay. The differing biology among conspecifics points to a generally differing set of factors affecting the reef biota in their habitat, thus the need for the employment of appropriate specific management intervention. Coral reef and seagrass bed protection, rehabilitation and habitat enhancement activities, and improvement of legal arrangement and institutional development must be prescribed. Management activities must not only focused within the coral reef but should also include the surrounding environment.

005

TORRES, Mark Anthony J. 2008. Variability in Populations of *Lantana camara* Linn. (Lamiales: Verbenaceae), *Uroplata girardi* Pic (Coleoptera: Chrysomelidae), *Scotinophara* sp. (Hemiptera: Pentatomidae), and

Pomacea canaliculata Lamarck (Caenogastropoda: Ampullariidae). (Ph.D. Bio), 205pp.

This study was conducted to describe and explain the morphological and morphometric variation within and among populations of three invasive species, namely: lantana (*Lantana camara* L.), rice black bug (*Scotinophara* sp.) and the golden apple snail (*Pomacea canaliculata* Lamarck) using the geometric morphometric approach. The evolutionary role of host plant-herbivore interaction between the host plant *L. camara* and the herbivore *Uroplata girardi* Pic was also explored. The foundation of this research is the description of the patterns of morphological and morphometric variations in both natural and managed populations. These descriptions are then used to frame hypotheses on the roles of natural selection and geographical isolation in the evolution of species. Results showed variabilities within and among populations of the weeds and pests. The various populations of *L. camara* showed diversity in terms of flower color. In contrast, minimal differentiation in the shape of the abdominal dorsum was exhibited by its herbivore, *U. girardi*. This could possibly explain why control measures using this "biocontrol agent" have been spotty and unpredictable. Results also showed a wide range of variabilities in the shapes of the shell and top within, and among populations of *P. canaliculata* and that geography alone could not explain such variabilities. One population from Zamboanga-Sibugay showed a distinct inner lip shape. This is especially true for the populations that were collected from the agricultural areas. Relative warp and partial warp analyses of the populations of the rice black bug, *Scotinophara* sp., showed that the Philippine samples are distinct from those collected from Omar, Malaysia with regards to the shape of the pronotum and prosternum. Geographic differentiation can also be observed among the Philippine populations based on the shape of the first closed marginal cell based on the results of the Procrustes Analysis of Variance. Results of this study are discussed in the light of how geometric morphometric variations within populations are translated into differences between populations, species, and higher taxa.

Doctor of Philosophy in Mathematics (Ph. D. Math)

001
AGPALZA, Estrelita P. 2002. Singularity and Nonsingularity of Graphs and Digraphs. (D: Ph. D. Math), 91pp.

The singularity or nonsigularity of a graph depends on whether the adjacency matrix is singular or nonsingular. This study investigates the singularity of some graphs and oriented graphs. The methods used in finding the determinant of adjacency matrix of a graph and a digraph are the following: reduction formulas for graphs, reduction formulas for digraphs, and the 1-regular method. The graphs considered in this study are paths, cycles, complete graphs, and graphs arising from some graph or digraph operations like cartesian product, tensor product, corona, and vertex-gluing.

A significant result obtained is the characterization of the singularity and non-singularity of oriented graphs. This result helps in identifying whether a graph has a nonsigularity orientation or all its orientations are singular.

002

ALDEMA, Rodelito M. 2002. Asymptotic Normality of the (r, β) – Stirling Numbers. (D: Ph. D. Math), 98pp.

The (r, β) –Stirling numbers introduced by Corcino in [12] represent certain kind of extension of both the ordinary Stirling numbers of the second kind and r-Stirling numbers of the second kind. These numbers share some remarkable properties of the ordinary Stirling numbers.

The main focus of this study is to prove that the behavior of the (r, β) –Stirling numbers is asymptotically normal by using one of the most general versions of the central limit theorem (Bounded Normal Convergence Criterion [23]). In establishing this result, we first obtain an asymptotic formula for the (r, β) –Bell numbers and used it to prove a lemma which is essential to the proof of the main theorem.

Moreover, this study gives some combinatorial and statistical applications of the (r, β) –Stirling numbers. Combinatorial interpretations involving distribution and drawing of balls under some restrictions are obtained, while the statistical applications include some probability distributions concerning the (r, β) –Stirling numbers. Furthermore, some interesting properties of the (r, β) –Bell numbers which include the exponential generating function, recurrence and congruence relations are established. It is also shown that the behavior of (r, β) –Stirling numbers is unimodal.

003

ANIVERSARIO, Imelda S. 2007. On Closed Geodetic Numbers of Graphs. (D: Ph. D. Math), 127pp.

This dissertation deals primarily with the closed geodetic number of a connected graph, a geodetic closure invariant introduced briefly by Buckley and Harary in [3]. All connected graphs G with closed geodetic numbers equal to 2, 3, $\lvert V(G) \rvert$ are characterized. It is shown that for these particular graphs, the geodetic number and the closed geodetic number coincide. For the complete bipartite graph $K_{m, n}$, these two invariant coincide if and only if m, $n \leq 4$. It is also shown that a connected graph can be constructed with a prescribed pair of geodetic and closed geodetic numbers.

Two other but closely related invariants involving connected graphs are introduced, namely, the upper closed geodetic number and the minimal closed geodetic number. The closed geodetic number and the upper closed geodetic number coincide if and only if the graph is complete. The same result holds for the minimal closed geodetic number and the upper closed geodetic number. In particular, the closed geodetic number of a connected graph G is $\lvert V(G) \rvert$ - 1 if and only if the minimal closed geodetic number of G is $\lvert V(G) \rvert$. For the complete bipartite graph $K_{m, n}$, the closed geodetic and the minimal closed geodetic numbers coincide if and only if $m = n$. For every positive integers a and b, with $2 \leq a \leq b$, a and b are realizable as closed geodetic number and upper closed geodetic number, respectively, of a connected graph. For every triple a, b and c, with $2 \leq a \leq b < c$, a connected graph can be constructed with a, b and c as its closed geodetic number,

minimal closed geodetic number and upper closed geodetic number, respectively.

In this paper, the closed geodetic number, the minimal closed geodetic number and the upper closed geodetic number of graph resulting from a join, a corona, and a connected graphs are also determined.

004
CAGAANAN, Gilbert B. 2004. On Geodesic Convexity in Graphs. (D: Ph. D. Math), 124pp.

This study focuses on geodexity in graphs. It seeks to characterize the geodetic covers and hull sets and to determine the geodetic number and hull number of graph resulting from some binary operations.

One of the results revealed that some relations exist between the convexity concept and a non-connectivity concept in the graph. In particular, it is shown that such non-connectivity concept can be used to characterize those subsets of the vertex set of a graph that yield convex complements.

Beside this, the study also generates other substantial results such as the following: (a) a characterization of the geodetic covers of the join of a non-complete connected graph G and the complete K_n, (b) a characterization of the geodetic covers of the composition of a connected graph G and K_n, (c) a characterization of the hull sets in the join of non-complete connected graph G and K_{ns}, and (d) a characterization of the hull sets in the cartesian product of two connected graphs. Moreover, either the exact value or bounds for the hull number and geodetic number of the join, corona, composition, and cartesian product of any two connected graphs are determined. A number of results obtained in this study.

005
CHUA, Elvira V. 2005. On Amalgamations of Graphs. (D: Ph. D. Math), 126pp.

This study focuses on some amalgamation operations, such as n-amalgamation and nth self-amalgamation of graphs. The number of cycles and cycle-sectors in self-amalgamation of graphs is determined, and some relations between an n-amalgamation and an mth self-amalgamation of graphs are established.

Investigations regarding the amalgamation number of graphs are made. It is found that the amalgamation number of graphs is related to some graph invariants such as order, diameter, and vertex independence number of graphs.

This paper includes results on how some graphs are expressed as n-amalgamation of their nontrivial connected subgraphs H and J. the bounds of n for which G may be expressed as such n-amalgamations of H and J are established.

Lastly, this study determines the bandwidths of 2-amalgamations of cycles and

paths, and the stability numbers of cycles of and paths.

006

EBALLE, Rolito G. 2005. Convex Hulls and Steiner Sets Under Some Binary Operations. (D: Ph. D. Math), 99pp.

This study sought to construct set-theoretical formulas for the convex hull and m-convex hull of subsets of the vertex sets of graphs under some binary operations, where as usual the convex hull (respectively, m-convex hull) of $S \subseteq V(G)$ is defined as the smallest convex set (respectively, m-convex set) of G containing S. among those obtained were formulas for the convex hull and m-convex hull of subsets in the join, corona, composition, and Cartesian product of two connected graphs, and in the K_r-gluing of complete graphs.

Moreover, this study also aimed to characterize the so-called Steiner sets of the join, corona, and composition of any two graphs, and of the K_r-gluing of complete graphs, where a subset $W \subseteq V(G)$ is defined as a Steiner set of G if G is connected and the set of vertices of all order-wise minimal trees in G spanning w coincides with $V(G)$. Some of the characterizations obtained here employed the notion of an essential cutset of a graph. This newly defined concept also proved useful in improving the upper bound of the Steiner number of an arbitrary connected graph G given by Chartrand and Zhang [20]. The final bonus points generated in this study are the formulas that can be used to determine the Steiner number of graphs under the above-mentioned binary operations.

007

EGUIA, Lopito C. 2004. Vertex Covers of Graphs. (D: Ph. D. Math), 130pp.

For any graph G, there is a minimum set U of vertices in which all the edges of G are incident to some element s of U. The study aims (1) to find the vertex covering of graphs and (2) to characterize vertex-covering number.

The following was frequently used in finding the vertex covering of a graph: (1) Find independent subgraphs of G. The sum S of the vertex covering numbers of these subgraphs is lower bound for the vertex covering number of G. (2) Find a vertex cover U of G such that the cardinality of U if equal to S. If U exists, then S is the vertex covering number of G.

Among the special graphs considered are paths, cycles, complete graphs, complete bipartite graph, the Petersen graph, fans, wheels, generalized fans, generalized wheel, and the platonic solids. Results are obtained from the graph resulting from the following operation: complement, deletion of edges, line graph, power, amalgamation, sum, product, gluing, and corona.

Vertex covering is characterized in terms of vertex independence. Hamiltonicity of complete bipartite graph is characterized in terms of vertex covering number. The star and the complete graph are characterized in term of their vertex covering numbers.

008

EVARDONE, Chita P. 2002. Shadowability of Statistical Averages at Blowout Bifurcation. (D: Ph. D. Math), 136pp.

The study, motivated by Lai, *et al.,* 1999 [30], investigated and analyzed, through simulation, the stabilities and dynamics of statistical averages at *blowout bifurcation,* a phenomenon in nonhyperbolic chaotic dynamical system with *unstable dimension variability* (UDV) which occurs when a chaotic attractor, lying in some invariant subspace, becomes transversely unstable and thus, there is severe modeling difficulty. In particular, the sensitivity of statistical averages was explored under various perturbations of dynamical system at blowout bifurcation using *model shadowability* by Poon, *et al.,* 1996 [54]. In the study, the following *Hénon* type model, which is a class of nonhyperbolic chaotic system with UDV was considered [43].

$$\chi_{n+1} = 1.4 - \chi_n^2 + 0.3 y_n$$

$$y_{n+1} = \chi_n$$

$$Z_{n+1} = \frac{\alpha \chi_n \sin(2\pi z_n)}{2\pi}$$

The study demonstrated through valid arguments and graphical evidences the unstability of statistical averages at blowout bifurcation for the model. Specifically, the following results were obtained: (1) the existence of unstable dimension variability of the model as manifested by a fluctuating Lyapunov exponent at the blowout bifurcation point $\alpha_c \approx 1.33$; (2) a crossover in the behavior of the mean $\langle z \rangle$, the variance σ^2 and higher moments at the blowout bifurcation point; (3) the behavior of the mean varies for different initial points and different error distributions, such as the Gaussian and uniform distribution; (4) a small additive perturbation of the model induces an *on-off* intermittent behavior of the mean for $\alpha > \alpha_c$, which is different from the behavior in the noise-free situation; (5) a sudden "burst" of the variance at the blowout bifurcation point is manifested as the model is perturbed with a very small noise; (6) unstability of the natural measure at blowout bifurcation as evidenced by different frequency distributions of the z iterates for different error levels and the increasing variance of the distributions as α increases; (7) increasing variance for different error levels; (8) different effects on the mean for errors coming from different distributions; (9) an evidence of robustness for the Kolmogorov-Smirnov (K-S) statistics is found at blowout bifurcation, regardless of the error distribution; (10) the K-S test unambiguously discriminated the two sets of data coming from different attractors; (11) an *on-off* intermittent type of behavior of the mean, as a function of α , can be generated by a *bootstrapped mean* of the unperturbed model; and (12) the effect of an error, driven chaotic using the logistic function, agrees well with error generated using the random number generator.

009

GAQUING, Napoleon Jr. A. 2007. On Forcing Monophonic Convexity Numbers of Graphs. (D: Ph. D. Math), 73pp.

This study focuses on the forcing m-convexity numbers of graphs. Specifically, the study investigates the forcing m-convexity numbers of two graphs, say G and H, under the binary operations: join, Cartesian product, corona and composition.

A number of results have been established. Under some conditions, $fcon_m (G + K_n) = fcon_m (G)$, where K_n is the complete graph of order n. If G has no extreme vertex, the $fcon_m (G[K_n]) = fcon_m (G)$. New notions have been defined and new notations have been introduced. If G and H are noncomplete graphs, then $fcon_m (G + H) = fcn (G) + fcn (H)$, where $fcn (G)$ denotes the forcing clique number of a graph G. Moreover, if G and H are connected graphs, the $fcon_m (G \circ H) = (| V(G) - 1) \cdot acon_m (H) + fcon_m (H)$, where $acon_m$ denotes the anti-m-convexity number of a graph.

Exact values in terms of expressions involving G and H have been obtained for the forcing m-convexity numbers of $G + H$, $G \times H$, and $G \circ H$. For $fcon_m (G[H])$, only an upper bound has been obtained.

010

GUERRERO, Romulo C. 2002. On Graph Folding. (D: Ph. D. Math), 125pp.

If two non-adjacent vertices of a connected graph G that have a common neighbor are identified and the resulting multiple edges are reduced to simple edges, then we obtain another connected graph of order one less than that of the original graph. If a similar process is applied to the new graph, and we repeat the operation until there are no more non-adjacent vertices, we finally get a complete graph. We say that the graph is folded into a complete graph. This process of folding a graph into a complete graph induces in a very natural way a partition of the vertex-set of G.

Here, we shall state a characterization theorem of such an induced partition of the vertex-set of the graph.

This study aimed at folding certain classes of graphs such as bipartite and 3-partitte graphs, graphs of the form $G' + K_1$, for some graph, and regular graphs like the Petersen graph. Exact orders of the maximum compete graphs into which the wheel and the fan were obtained,

Furthermore, a characterization of the graphs that fold into a complete graph of order 2 was obtained. The concept of folding index of a graph was introduced and found to have some relation with the independence number of a graph.

This study was able to find the effect of some graph operations such as sum, cartesian product, and complementation on folding.

The order of a complete graph into which a graph can be folded is found to have

relations to the following graph invariants: chromatic number, independence number, clique number, domination number, and maximum degree.

011

HERRERA, Mariluna L. 2005. The Limit of the Differences of the Generalized Factorials. Its *q*- and *p, q*- Analogues. (D: Ph.D. Math), 146pp.

The differences of the generalized factorials, denoted by $[\Delta^k_t(\beta t + \gamma|\alpha)_n]_{t=0}$, have been studied over the years by Gould and Hopper [24] and Charalambides and Koutras [9]. In this study, we investigate the limiting form of the expression

$$\frac{[\Delta^k_t(\beta t + \gamma|\alpha)_n]_{t=0}}{k! \, \beta^k}$$

as $\beta \to 0$, and determine the *k*th derivative of the generalized factorial with respect to β which helps evaluate the limit completely. By the special choice of α and γ, the explicit form of the limit reduces to the explicit formula for the signless Stirling numbers of the first kind [10] and that of the *r*-Stirling numbers of the first kind [5]. Some combinatorial properties of the limit are derived which are analogous to those of ordinary Stirling numbers of the first kind. Moreover, the *q*- and the *p, q,*-analogues of the limit are obtained. These numbers share some interesting properties of the limit, such as recurrence relations and horizontal generating functions.

Finally, the limit and its exponential variant and analogues are discussed in the context of 0-1 tableaus. Consequently, some remarkable identities are obtained that relate the numbers to some special functions and Stirling type numbers.

012

ISLA, Rowena T. 2000. On the Dimensions of Graphs. (D: Ph. D. Math), 163pp.

This study focuses on determining the dimension of graphs resulting from various graph operations. It also establishes relationships between dimension and some graph invariants.

Known results about the dimensions of some special graphs are compiled and presented here, after which other special graphs (like the complete *n*-partite graph, the generalized octahedron, and the generalized fan) are considered and their dimensions found.

Under certain conditions, exact value are determined for the dimensions of disjoint union, K_r- gluing, sum, or Cartesian product of certain graphs. Exact expressions are likewise established for the dimension of the closure of some special graphs and the dimension of graphs obtained from the complete graph K_n by deleting either complete subgraphs or complete bipartite subgraphs. Upper and lower bounds that differed by at most 2 are found for the dimension of the complement, the line graph of K_n and the power graphs of the cycle C_n and the helm H_n.

Finally, the dimension of a graph is found to be bounded from above by expressions involving the following graph invariants: order, vertex independence number, chromatic number, maximum degree, detour number, dominance number, and clique number.

013
JAMIL, Ferdinand P. 1999. Henstock- Stieltjes Integrals in Banach Spaces. (D: Ph. D. Math), 221pp.

When the functions under the integral sign have common one-sided discontinuities, both the bilinear Riemann-Stieltes and Moore-Pollard-Stieltjes integrals do not exist. This study deals with the Banach-valued Stieltjes integral which is defined in Henstock's sense.

In the process of investigating the properties of the Henstock-Stieltjes integral, three levels of generality are considered, namely, the integral $\int_a^b f dg$, the bilinear integral $\int_a^b A(f, dg)$ and the multilinear integral $\int_a^b A(d_1 f_2, \ldots, d_p f_p)$. In the simplest case, the discussion is focused on two major results: one is on the integration by parts formula which does not involve a function of bounded variation, and the other is on the strong version of Henstock's lemma.

For the bilinear integral $\int_a^b A(f, dg)$, results are geared towards an existence theorem involving regulated functions. The Cushy extension theorem is also proved for this integral.

The elementary integral properties and convergence theorems are proved in the multilinear case. Presented also in the same case is the condition where the Henstock-Stieltjes integral is equivalent to some Henstock integral.

014
PALUGA, Esamel M. 2005. On Monophonic Convexity in Graphs. (D: Ph. D. Math), 116pp.

This research study considers the monophonic convexity in graphs. Specifically, it seeks to determine the *m*-convex sets, *m*-convexity numbers, monophonic numbers, *m*-hull sets, and the *m*-hull numbers of graphs under some binary operations.

Results generated in this study include characterization of *m*-convex sets in G + H and G o H, for any graphs G and H, and characterizations of *m*-convex sets in G X H and G [H] for any connected graphs G and H. other results are the characterization of monophonic sets in G + H, where G and H are any connected graphs. For any connected graph G, necessary and sufficient conditions for a subset of a vertex set to be monophonic in G X K_n and G[K_n] are likewise established. Furthermore, *m*-hull sets in G + H, where G and H are any connected graphs, are completely characterized. Characterization of *m*-hull sets in G X K_n and G[K_n] are also presented.

Finally, exact expressions for the *m*-convexity number, monophonic and *m*-hull numbers of graphs resulting from the aforementioned graph operations are determined. In other cases, bounds are established.

015
PALUGA, Rolando N. 2002. On the Henstock Integral in Topological Vector Spaces. (D: Ph. D. Math), 125pp.

Several extensions of the theory of Henstock integration for real-valued functions had already been done. Cao had extended the theory to Banach-valued functions. Nakanishi had also successfully developed the theory for functions with values in ranked vector space and for functions with values in a (Hausdorff) topological vector space is defined and established.

Most of the results in the real and the Branch cases carry over to topological vector space case. These results include the Cauchy criterion for integrability (if the space is complete), the integrability of functions which are bounded and continuous almost everywhere (if the space is complete and locally convex), the linearity of the integral, the additive property on subintervals, the integrability on a subintervals (if the space is complete), the Fundamental Theorem (if the space is locally convex), the first version of the Henstock Lemma (if the space is complete), the Cauchy Extension Theorem (if the space is complete and locally convex), the Uniform Convergence Theorem and the Equi-integrable Convergence Theorem (if space is complete and locally convex). It is also shown that in topologically vector space not all bounded and continuous almost everywhere functions are Henstock integrable.

In this study, we define the Strongly Henstock integral or the SH integral in topological vector spaces. We also define the SH_1-integral in a locally convex topological vector space. It is shown that the SH_1-integral is equivalent to HL-integral in the Banach case. The basic properties of the SH_1-integral and the SH_1-integral are also presented.

016
PENASO, Anthony M. 2002. Chaos in Traveling Waves of Lattice Dynamical Systems. (D: Ph. D. Math), 151pp.

This study describes lattice dynamical systems, specifically coupled map lattices (CMLs) of multidimensional and multicomponent media as discretizations to partial differential equations (PDEs). It determines some topological, hyperbolic, and ergodic properties that would describe a traveling wave map. It then establishes spatio-temporal chaos associated with the set of traveling wave solutions of CMLs as well as describe the dynamics of the evolution operator on this set. Moreover, it investigates the dynamics of the traveling wave map in the case where the local map is hyperbolic such as the FitzHugh-nagumo equation.

Under certain conditions in the nonlinear term, this study shows that the set of traveling waves running with the same sufficiently large velocity contains a finite-dimensional strongly hyperbolic subset invariant under both evolution operator and space

translations. Likewise, it shows that the natural measures which are concentrated on the set of traveling waves solutions are invariant under space and time translations with "good" ergodic properties (i.e., such measures which are mixing). If the local map is hyperbolic in a strong sense then so are the traveling wave solutions. It guarantees the existence of a mixing measure invariant under space and time translations, which is supported on the set of traveling wave solutions; hence, spatio-temporal chaos can be observed. An example of this case is the two-dimensional local map for the FitzHugh-Nagumo equation in some range of parameters. Further, this study shows that the periodic points are dense in the set of nonwandering points of the local map of FitHugh-Nagumo equation.

017
ROSALEJOS, Gloria A. 2002. On Minimal Rigidity of Graphs. (D: Ph. D. Math), 105pp.

When a graph G with vertices in the Euclidean d-space R^d is in motion, it is often assumed that the length of the edges of G are all fixed. Thus, a deformation of a graph G in R^d is a motion of G in R^d that changes the Euclidean distance between at least a pair of its non-adjacent vertices. If a graph G in R^d admits a continuous deformation, the G is called *d-flexible,* otherwise, it is called *d-rigid*. If for any e of a d-rigid graph G the graph $G - e$ is d-flexible, then G is called a *minimal d-rigid* graph.

This study deals with unit-distance graphs, which are flexible in R^d, $d \geq 2$. It aimed to extend such graphs to become minimal d-rigid graphs in R^d, by adding a minimal number of unit edges. The first investigations made were focused on special unit graphs, which are flexible in R^d, of a graphs resulting from some graph operations, were also discussed. Results on the rigidity of the complete bipartite graphs in the higher dimensional spaces R^d, $d \geq 4$, were established and were given details. Such results were used in the discussions of the minimal rigidity of the graphs called the generalized n-cubes.

018
UY, Joselito A. 1999. On the Span of Graphs. (D: Ph. D. Math), 129pp.

An investigative survey on studies about unit graphs and rigidity was done to attempt at finding expressions of the span of graphs. Spans of complete graphs, generalized octahedrons, tree, fans, bipartite graphs, cycles, n-cubes, graphs $G(n,k)$, wheels, generalized wheels were either determined or given bounds.

The relations of span with chromatic number and vertex independence number yielded expression linking span with maximum degree, detour number, dominance number and clique number. Also, graphs can be constructed so that the rations of their spans to their diameters are arbitrarily small.

The effects of some graphs operations on the span of graphs were established as follows; (a) $span_2(H)=1$, where H is the full subdivision of a nonempty graph; (b) $span_{n-2}(K_n-e)=span_{n-2}(K_{n-1})$, where e is an edge of the complete graph K_n ($n \geq 3$); (c) $span_{n-2}(K_n-S) \leq span_{n-2}(K_{n-2})$, where S is a nonempty independent set of edges in the complete graph

K_n($K_n \geq 3$); (d) if G is the line graph of the fan F_n ($n \neq 2$) or the wheel W_n, then $span_{2n}$ (G)=$span_{n-1}$(K_n); (e) if G_1 and G_2 are graphs with chromatics χ_1 & χ_2, respectively, then $span_{2(\chi_1+\chi_2)}(G_1+G_2) \leq span\chi_{1+}\chi_2\text{-}1(K\chi_1+K\chi_2)$; (f) if G and H are unit graphs in R^m and R^n, respectively, then $span_{m+n}(G \ x \ H) \leq span_n(H)$.

019
VEGA, Mary Ann Ritzell P. 2007. Asymptotic Approximations of the Generalized Stirling Numbers of the First Kind. (D: Ph. D. Math), 111pp.

Asymptotic expansions are derived for the generalized Stirling numbers of the first kind $S_{n,m}^{\alpha,\gamma}$ for three overlapping subranges of m. for the first range, the formula obtained is exact when n is finite and $m = 1,2,3,4$. It is valid as an asymptotic formula when $m = 0\{\log n\}$. Another asymptotic approximation is derived for integral values of m in the range $h(n) \leq m \leq n - O(n^\delta)$ where δ is any fixed constant between 0 and 1, and $h(n)$ is any function which tends to infinity as $n \to \infty$. For the third range, the formula derived is exact when n is finite and $m = n,\ n\text{-}1,\ n\text{-}2,\ n\text{-}3$. it is asymptotic approximation when $n\text{-}o(\sqrt{n}\ ) \leq m \leq n$.

SCHOOL OF COMPUTER STUDIES (SCS)

Master of Science in Computer Application (MS CA)

001

ALBIS, Esther V. 2005. Development of a Computer-Based Tutoring System for Introductory Business Mathematics with Tausog Interpretations. (GT: MS CA), 92pp.

This study purports to design and develop a Computer-based Tutoring System for Introductory Business Mathematics with Tausog Interpretations using the Bloom's taxonomy of cognitive domain in teaching. Specifically, the system is geared towards helping the Tausog slow learners understand Business Mathematics through the use of a computer-based tutoring system which includes the translations of English lessons into Tausog by integrating text, images, sounds, button and voice-over manipulations into the system. Neutral Networks is used to classify the student's learning ability.

Results of the pretest, post-test, and final evaluation showed that students who studied under the computer-based tutoring system got higher passing marks than those who did not.

002

ANTONE, Agnes H. 2005. A Framework for Building a Knowledge-Based Decision-Support System for Acute Febrile Infectious Diseases. (GT: MS CA), 195pp.

The major public health problem nowadays in many developing countries including the Philippines is the continuously increasing of dengue fever, typhoid fever and malaria infection. This being the case, building a decision-support system to assist health care professional in diagnosing of infectious diseases would be a great help.

The main objectives of the study were to design a knowledge-based decision-support system which would use a set of clinical findings associated with a particular disease, and to implement a prototype using an expert system shell. First-Order Predicate Logic was used to formalize the captured knowledge, and resolution principle was applied to prove the soundness, completeness and validity of the knowledge encoded in the knowledge base. EXSYS Corvid 2.0.5 expert system shell was used to implement the system, linking graphical user interface with Hypertext files using an internet browser. The input interface and the output interface were based on inference engine matching, using both forward and backward chaining.

Results showed that DSS-AID got 100% accuracy when pre-test in twenty (20) actual cases of dengue fever and (20) actual cases of typhoid fever; and 66.67 % accuracy in three (3) actual cases of malaria infection.

003

BACALLA, Chere O. The Design and Development of an Accounting Cycle: An Interactive Multimedia Tutorial System. (GT: MS CA), 118pp.

Interactive Multimedia Tutoring System is one recent technologies that enhances learner's capability to understand certain instructional topic in all levels of education.

In this study, the design and the development of an interactive multimedia tutoring system of accounting cycle, specifically the first three phases of accounting cycle namely, transactional analysis, journalizing and posting to the ledger were undertaken. The design of tutorial itself was based on the instructional software components, the study undertook the conceptualization of the design of the system, which starts from identifying learner's objective of each subject matter, flow of the program and lesson structure, which comprises the tutor model of the system. The rest of the system components were developed based on the different model such as the pedagogical model, the student model and the user interface. The development of the system covered the integration of the different teaching strategies such as text and image manipulation, drag and drop, text and audio integration were implemented with the use of Autoware version 5.0, an authoring tool.

The test and gathering of feedback on the developed system was found acceptable during the pilot testing of ten (10) students have accounting background and are also computer literate.

004

CAGAMPANG, Juliet P. 2001. Artificial Neural Networks and Temporal Difference Learning Application on the Game of Dama. (GT: MS CA), 105pp.

An intelligent player agent was developed using artificial neural networks trained by the method of temporal difference to learn the game of dama from experience alone through self play. The implementation was done in AllegroCL a Common Lisp language.

The addition of a random noise offset to the network's output during the training greatly increased the state space exploration. Mimicking the opponent has facilitated more learning as well as reduced learning time.

The performance of the agent was measured by the win, loss, and draw percentages after a series of games against opponents of different skill levels. The agent achieved a decent playing with minimal search and without any expert game analysis.

005

DADULA, Cristina P. 2005. Intercept Method of Grain Size Measurement of Structural Steel Bar Material Using Image Processing Techniques. (GT:

MS CA), 110pp.

Intercept method of measuring grain size using image processing techniques was developed.

A photomicrograph of a structural steel bar material was taken after it was ground, polished and etched to reveal grains. Morphological image processing techniques and thresholding were used in the enhancement and segmentation of the micrograph images to produce the input binary image for grain size measurement. The grain boundary and grain area pixels were indicated by 0 and 1 respectively.

The intercept algorithm used circles as test lines. The laying of test circles were done virtually. Each pixel that intersected the test circle was *ended* by 1. The number of intersection counts was determined by evaluating the result of the *ending* operation. The average number of grains that intercepted the test lines described the grain size.

The developed intercept method was successful in laying test circles and counting the number of grain intersections. A count tolerance was introduced to compensate the difference of intersection counts between manual and the developed intercept method. The value of count tolerance can be varied to fit accuracy or judgment of the user

006

FAMADOR, Sandra Mae W. 2001. Digital Segmentation of Medical Chest X-Ray. (GT: MS CA), 67pp.

This paper discusses the methods used to segment x-ray images of the human chest region particularly the lungs, mediastinum and the ribs. An a priori knowledge of the physical structure of the human body is utilized as an aid in the segmentation process. Digital techniques such as morphology, histogram, and wavelet transform are used to divide the objects into regions of interest. Erosion and dilation are used to eliminate noise in the image. Daubechies function is used as the mother wavelet. Implementation will be done using a MATLAB program. Results using the application of the techniques to x-ray images of chest region will be presented.

007

GAW, Alexander R. 2002. An Expert System for Television Troubleshooting. (GT: MS CA), 84pp.

An expert System for television troubleshooting was developed based on human knowledge in solving problems in the domain of television troubleshooting. It was developed using the VP-Expert Version Shell 3.0. The system will automate the process of finding the cause as well as possible remedy of the television problem.

The system was evaluated by the faculty members of the Electronics Department of MSU-IIT and expert television technicians in Iligan City. They made the following observations regarding the expert system:

1. outstanding accuracy in determining the cause and providing solution to

common television troubles
2. user-friendliness
3. acceptable performance of the system.

Moreover, based on the findings of the study, the following recommendations for further study were made:

1. enhancement of the Graphical User Interfaces (GUI) using Windows-based expert system shell
2. expanding the system by including other TV models/brands
3. inclusion of additional troubles
4. system enhancement in calling any executable file other than bitmap to make the GUI more presentable.

008
GUIRNALDO, Sherwin A. 2000. A Prototype Knowledge-Based Agent to Diagnose Diesel Engine Troubles. (GT: MS CA), 123pp.

A prototype intelligent agent was designed based on human knowledge in solving problems in the domain of diesel engine trouble-shooting. The prototype agent was developed from scratch. Instead of using commercially available shells, the inference engine was implemented using the Amzi! Prolog. The Graphical User Interface was designed and implemented in Delphi. The advantage of using Prolog was a highly flexible knowledge representation scheme tailored from predicate calculus.

The prototype agent was evaluated by automotive faculty and showed that: the agent has successfully acquired enough knowledge in trouble-shooting Perkins diesel and Detroit diesel; the agent GUI is the user friendly and intuitively easy to use; and the application of knowledge-based systems in the domain of engine trouble-shooting is feasible.

009
LLANTOS, Orven E. 2007. Visualization and Trend Analysis of Energy Data Consumption Obtained from a Network of Sensors. (GT: MS CA), 269pp.

Energy Information System (EIS) is an important component for any building that uses electrical energy because it allows the user to view the energy consumption patterns, via its visualization and trend analysis facility, which is not present in ordinary electric meters. Most of the EIS implementations employ averaging of recorded energy consumption data (e.g. every 15 minutes), so as to minimize the storage requirement. However, if a more accurate historical data is required, such as using the data for detailed playback visualization, it can not be obtained using this scheme.

In this thesis, a methodology for storing historical data obtained from an energy monitoring device was developed. In addition, an energy information system prototype, which does detailed visualization and trend analysis, was created. It utilizes a network of

sensors to obtain real-time energy consumption readings from a power line. Furthermore, it introduces a new data structure called *binary cycle string*, for storing energy readings that requires less storage, allowing for a more accurate real-time and historical visualization and trend analysis. Tests showed that binary cycle strings only require 2,678,784 bytes, compared to 39,845,888 bytes when stored as numeric data, for 1,000,000 1-minute readings, a 93.3% savings. However, numeric data are much faster to access than binary cycle strings. For 1,000,000 1-minute readings stored as binary cycle strings in the database, it takes 19,983 microseconds to access all of these data, while storing them as numeric will only take 2,450 microseconds to retrieve. Since this study is more focused on the visualization and trend analysis of energy utilization, storing real-time data and not averaged data is very important, especially if the user wants a detailed playback of the energy utilization.

010
MANGUILIMOTAN, Erlyn Q. 2001. Syntactic Representation of Simple Verbal Tausug Sentences Using Lexical-Functional Grammar Formalism. (GT: MS CA), 97pp.

This study presents sentence representations of simple verbal Tausug sentences based on the c-structure and f-structure of the Lexical-Functional Grammar formalism. The c-structure in LFG presents the hierarchical order of constituents of the sentence, while the f-structure presents the grammatical relations in the sentences in attributive-value matrix. The implemented sentence analyzer for Tausug determines the grammaticality of a sentence (based on LFG's grammaticality and generates the c-structure and f-structure sentence representations of the grammatical inputted sentences. This study provides a foundation for the development of natural language system for the Tausug language.

011
PORQUIS, Lope Ben C. 2007. MARBENUS 3: A Real-Time Monitoring System for Energy Utilization Using a Sensor Network. (MS CA), 174pp.

Energy monitoring is a process of determining the trend of energy utilization. It is an activity that could increase the awareness on the organizational base costs and enables a significant company-wide money-saving decision. The traditional approach takes regular readings on a kilo-watt hour meter at fixed time intervals. This method is very manual, time consuming, and is prone to error. An alternative approach is developed where labor-saving means of monitoring power, and trending usage can now be performed at a centralized level. This study intends to improve the traditional scheme of monitoring electrical energy utilization by using a sensor network. A sensor node prototype was constructed based from its model architecture. Voltage and current samples from a three-phase electrical network are processed by the sensor node and information is transmitted using UDP/IP to the base node were it would display data readings. The power measurement accuracy of the sensor node reaches up to about 98% on its operating range which is 220V ±20% and 5A to 200A. Energy accumulation accuracy declined to about 90% due to ineffective data transmission to the base node. However, the system can be used satisfactorily for monitoring energy utilization in near real-time.

012

ROPEROS, Robert E. 2003. Design and Development of an Expert System for Leukemia Diagnosis. (GT: MS CA), 128pp.

Medicine is one of the areas of computers where automated diagnosis is the most common transaction that has been practiced in the field.

In this study, designing and developing an expert system that will serve as an aid for leukemia – diagnosis was undertaken. The design of the expert system was based on the actual proceedings in the process of diagnosing leukemia. Pathologist from Surigao City, Butuan City, and Iligan City served as the experts. Moreover, books pertaining to Medicine and Hematology were also used for additional references.

Signs, symptoms, and disorders of blood components were used as the data that will serve as input to the expert system in a form of answers to the questions during the consultation session.

Meanwhile, after initial findings based on the combinations of the signs and symptoms were made, the system allows the user (through an option) to perform the preliminary laboratory diagnosis by means of the peripheral smear images. From these images and with the initial findings, diagnosis can be made. Images can be viewed through the image viewers that were developed by the researcher that is callable by the VP – Expert module.

Test models were developed and test results were compiled which showed that the expert system is able to perform its diagnosis almost in the same manner as that of the human expert.

013

SAAVEDRA, Amy C. 2002. A Distributed Database Design for the Enrolment System of Saint Joseph Institute of Technology, Butuan City. (GT: MS CA), 97pp.

This study was conducted to determine the feasibility and applicability of distributed database system for the enrollment system in SJIT modeled as three remote campuses acting as independent database hosts. Thirteen database relations were developed and several users' views were designed to meet the system requirements of the enrolment system. These relations were normalized with respect to the database design requirement. Most of the database tables were fragmented horizontally to accommodate separate datasets.

A prototype was developed in PostgreSQL 7.2, to test the three hosts for data access, users' query and users' update. The data from the different database sites were installed. Global queries and local updates were implemented. The results of the study revealed that: The prototype perform very satisfactorily with respect to global accessing, query processing from each of the remote host and updating local and remote data; Distributed database provided data reliability, availability, and local control; It is feasible to

fully implement a distributed database system using Linux Manandrake 8.2 platform and PostgreSQL 7.2 object – relational database as the alternative to proprietary and commercial software systems.

014
TABADA, Cherry I. 2003. Computer Crime Identification Using Knowledge – Based System. (GT: MS CA), 118pp.

This study aimed at developing a system on computer crime identification using knowledge – based system. The development of knowledge – based system is necessary for the purpose of automating the jurisprudential rules of identifying computer crimes.

Based on this inquiry, the jurisprudential rules of knowledge base was successfully implemented in the expert system shell. First – order logic was used to represent knowledge. It was effective in the sense that by acquiring most of the data, the ontological commitments of the knowledge base made the knowledge base design easier. As such, facts and objects, and relations between objects in the domain are easier to translate into predicate variables and to apply into the knowledge base.

To prove the validity of the jurisprudential rules, resolution principle in first – order logic was applied in a set of clauses of normalized form. Using resolution together with factoring, it shows that the set was unsatisfiable by deducing a contradiction and yields an empty clause denoted by nil.

The implementation of the input interface as well as the output interface was based on the matching of the interface engine using forward chaining process. With the expert system shell, the graphical user interface could link in Hypertext files using the internet browser.

015
TAUTHO, Yalanda C. 1999. Performance Evaluation of Relational Data Bases on Selected Programming Languages. (GT: MS CA), 72pp.

This study was conducted to determined the execution time by FoxPro 2.6, Clipper 5.2 and dBase IV 1.1 to perform the operations Select, Index, Update, Join and Sort on three database files with varying number of records using i486 DX2-S, AMD-K5 and Intel®Celeron™-MMX microprocessors. In addition, the study was done to determine the trend in execution time of each microprocessors. Source codes for each operation were written and compiled in FoxPro 2.6, Clipper 5.2 and dBase IV 1.1.

Result of the study showed that regardless of the kind of microprocessor, FoxPro has the fastest running time ($P < 0.01$) in all operations. Clipper and dBase IV followed respectively for operations select, index, update and join. In sort operations, dBase IV is faster ($P < 0.01$) than Clipper in the 486 and MMX microprocessors while the two are not significantly different ($P > 0.01$) in an AMD-K5 microprocessors.

Finally, the study showed that there is a pooled linear and quadratic effect of

language, operation and number of records on the execution time.

SCHOOL OF GRADUATE STUDIES (SGS)

Master of Library Science (MLS)

001
ADIL, Myrlie L. 2007. Evaluation of Library Software Usability: Basis for Web-Cataloging. (GT: MLS), 92pp.

This study assessed the features of different library software as well as the suggestions of librarians and system administrators as bases for designing a web-cataloging model. The survey was conducted to know (1) the different computer software in use at the libraries of selected colleges and universities in Iligan and Cagayan de Oro cities, (2) the cataloguing functions that may be used as bases for software evaluation, (3) the capabilities common to all the software evaluated, (4) the limitations of the software evaluated, and (5) the guidelines that can be proposed for developing a model for web-cataloging software.

A questionnaire was constructed by the researcher and pretested among selected expert librarians in public and academic libraries in Marawi, Iligan and Cagayan de Oro cities. It was then administered to forty-two (42) librarians and system administrators in the libraries of selected colleges and universities in Iligan and Cagayan de Oro cities in August 2006. The schools surveyed in Iligan City were the Mindanao State University-Iligan Institute of Technology, St. Michael's College, Iligan Medical Center College and St. Peter's College. In Cagayan de Oro City, the schools included were Xavier University, Mindanao Polytechnic State College, Liceo de Cagayan University, Capitol University and Lourdes College. The data collected were tabulated showing each software's capabilities and limitations. The suggestions of the librarians and system administrators were also considered in proposing guidelines for designing a web-cataloging software.

The results of this study showed that there were two well-known computer software, viz., *Follet* and *Maelisa*, and one *In-house* program being used by the libraries surveyed. Follet was used in Capitol University, Liceo de Cagayan University, Lourdes College, Mindanao Polytechnic State College, and Xavier University in Cagayan de Oro City; and in St. Peter's College and Iligan Medical Center College in Iligan City. Maelisa was utilized only by the Mindanao State University-Iligan Institute of Technology in Iligan City. The St. Michael's College in Iligan City used its own created version of library software.

From the results of the survey and interviews done, the most important feature of the Follet and the Maelisa is the MARC that facilitates sorting of materials. Some limitations of Follet as identified by the respondents were: It cannot perform the copy, cut and paste function when an attempt is made to transfer the data to other computer programs; It cannot come up with statistical data according to their expected library format; and, It cannot load GIF, BMP data or upload GIF, BMP format.

Maelisa was also reported to have programming bugs in some of its modules that

are not fully tested yet, and there are also documentation problems that are difficult to account. Such bugs cause a delay in the relay of information. It was seen that the two major software evaluated in this study have generally similar features.

A model can be designed to meet local needs and requirements by combining the features of the different software existing in the internet and the suggestions of the librarians and system administrators involved in this study.

002

ALBEJARON, Emiliana S. 2000. An Evaluation of the Resource Sharing and Networking Among Member Libraries of the Cagayan de Oro Cooperating Academic Libraries (CCAL). (GT: MLS), 107pp.

This study aimed to assess the status of Cagayan de Oro Cooperating Academic Libraries (CCAL) relative to user-awareness of the existence of the organization, quantity and quality of library materials, delivery of services, and librarians' attitude towards users. It also examined the nature of library transactions under the cooperative scheme, the level of satisfaction of user-respondents, and perceived problems in the operationalization of the project. Structured questionnaire was used to gather detailed information, supplemented by personal interviews with librarians. Respondents were 138 users of and from the six CCAL member libraries: Cagayan Capitol College (CCC), Cagayan de Oro College (COC), Liceo de Cagayan University (LdeCU), Lourdes College (LC), Mindanao Polytechnic State College (MPSC), and Xavier University (XU). Data on awareness was tabulated by percentage distribution; chi-square was used to determine the association between the level of satisfaction of users and the library unit and one-way ANOVA to identify significant differences among the member libraries in terms of future appraisal. Findings revealed, majority was aware of CCAL's existence, requirements needed to avail of the services and policies and regulations. There was a significant relationship between users' level of satisfaction and CCAL libraries' collection and services. There was a significant difference on the level of satisfaction among users on the collection and services of CCAL libraries thus, XU library had adequate library resources and librarians are willing to serve.

003

ABARQUEZ, Adela G. 2005. Budgetary Requirement of an ICT-Based Library. (GT: MLS), 69pp.

This study was conducted to establish a budgetary requirement of a model ICT-based library in Iligan City with the six (6) chief librarians of the selected academic libraries as the respondents of the study. Descriptive survey method was used in data gathering with the self-formulated questionnaire based on the data of the US academic libraries.

A comparative analysis of the profile of the academic libraries in Iligan City and the United States was determined to have a clear visualization of the basic requirement in terms of library services, facilities/equipment, manpower and salaries, and budget allocation/expenditure. Among the respondent academic libraries, MSU-Iligan Institute of Technology, being the springboard, has almost totally taken off leading other libraries in

becoming an ICT-based library.

Further, an average basic budget requirement of a proposed model ICT-based library was realized and should be enforced. Manpower should undergo training to update IT skills. Salaries and wages should upgraded to compensate the skills. Library services should be enhanced and be equipped with state-of-the-art ICT facilities/equipment to meet the demands of an ICT-based library. Thus, to achieve the establishment of a model ICT-based library in Iligan City, the proposed annual budgetary requirement in percentage representation and the proposed 3-year development plan should be implemented to improve these academic libraries towards information and communications technology (ICT).

004

ALEGRIA, Armel Gay A. 2007. Towards Development of School Library Standard: A Case in Selected Secondary Schools in Zamboanga del Norte. (GT: MLS), 177pp.

This study is composed of two parts. The first part is to develop standard for school libraries that will be used as a gauge to evaluate them. The *DECS Minimum Standard for Secondary Schools* serves as the benchmark in the formulation of proposed standard. However, this standard needs improvement and enhancement especially in the facet of information and communication technology. The second part is to use the proposed standard to evaluate selected schools in Zamboanga del Norte. Gaps are identified between the proposed standard and the profiles of the respondent schools. Gaps are addressed in the recommendation portion of this paper.

Eight (8) standards for school libraries abroad were selected and used as bases in formulating the proposed standard. Principles in school librarianship were factored into the proposed standard.

Fourteen (14) public secondary schools and eleven (11) private secondary schools were chosen as respondent schools using stratified sampling technique. Librarians or library-in-charges answered the survey questionnaire that gathered data on the following areas: personnel, facilities, collection, budget, organization and administration and library service.

For the respondents schools having stood below par than the proposed standard, it is recommended that the Department of Education updates the existing standard for the school libraries and uses this proposed standard as the tool for evaluation.

005

ALCANTARA, Adelita L. 2003. Library Awareness and Extent of Usage Among Teachers in the Tertiary Educational Institutions in Bukidnon. (GT: MLS), 77pp.

Four tertiary schools in Bukidnon are assessed for their capability to meet the teacher's information needs for classroom teaching-learning process. Teacher's extent of library awareness and usage, and problems encountered with library services are determined to serve as bases for policy formulation for library development.

A survey instrument was formulated to extract data on teacher's purpose, awareness and extent of library usage.

Respondents declared there is no space allotted for them to do their research in the library. They rated library collection to be inadequate or hardly suitable to their research needs and of older editions. They also disclosed that administrators do not give sustainable financial support for the library operation. Respondents however differ in their perception of library services as their schools of origin vary.

An action plan for an improved library awareness and extent of usage among faculty tertiary schools of Bukidnon to alleviate/remedy the situation is presented in this paper.

006
APUGAN, Elena S. 1982. A Research Library for MSU-Iligan Institute of Technology: A Proposal. (GT: MLS), 120pp.

This study dealt with a plan for a research library for MSU-Iligan Institute of iachnop gy designed toinro tde specialized services and resourÿÿs which would answer the needs of the researchers. It would also provide the Institute administrator with a guide in establishing such a library.

This writer used the descriptive method of this study which involved examining of documents and conducting interviews with proper library authorities and key officials of major research program of MSU-Iligan Institute of Technology by examining documents and conducting informal interviews with the personnel of the Coordination Center for Research and Development and Center for Entrepreneurship Studies and Development. Likewise, she conducted observational visits to some selected research institutions and documentation libraries in order to gather information about prevailing conditions and actual practices in local research libraries. To make the study comprehensive, this writer interviewed the chief librarians of these said institutions and documentation libraries. Then the pieces of information gathered were reviewed, analyzed, and interpreted carefully.

Based of her finding, this writer identified four major problems in specialized research: insufficient resources relevant to the identified areas of research, lack of specialized services, inadequate physical facilities and equipment for research and insufficient number of personnel. The aforementioned problems indicated a need for research library for specialized research. The services called for are characterized by a high degree of interaction between the staff and the user. Emphasis is on active information work through an outreached program designed to serve the patron. Thus, this writer identified the specialized services that would best serve or answer the needs of the users. These services are on current awareness, abstracting, indexing, bibliography preparation, and acquisition of basic research resources and facilities. Specific guidelines and

procedures of each mentioned financial requirement for immediate implementation of the plan.

It is worthwhile to note that the Coordination Center for Research and Development and Center for Entrepreneurship Studies and Development have identified the above needs in their plans programs for the school year 1981-1982. Researchers of both centers believe that a research library be organized in the Institute to sufficiently stimulate them to conduct research and effectively face the challenge of research flow on science and technology.

007
APUGAN, Mary Jane S. 1998. Computer Application in Special Libraries and Attitudes of Library-In-Charge/ Administrators Towards Computerization: A Survey. (GT: MLS), 71pp.

This study surveyed 14 selected special libraries in Iligan City to determine their awareness about computers and the extent of their computer applications, in terms of their actual use, types of hardware and software utilized, library functions/services currently computerized, factors affecting its implementation, and their consultations with computer specialists during its implementation stage. The study also sought to find out the attitudes among the library administrators and library-in-charge with regard to library computerized in their libraries.

The descriptive method was employed using the questionnaire in gathering the needed data, supplemented by existing records of the libraries surveyed, and those of the public library and of other local sources. The results showed that 24 or 92.3% of the 26 respondents are aware about computers and of these, 23 or 88.5% are capable of operating the equipment.

Among the 14 special libraries surveyed, eight (8) are using computers in facilitating their services while the rest are still traditional in their library operations. Most of the computerized libraries use IBM PC type of hardware with LOTUS, WINDOWS, WORDSTAR, WORDPERFECT as the most commonly used softwares. Office forms and communications are already computerized, and those of other library functions/services such as cataloging, indexing, circulation, acquisition, and reference service are underway. At the tie of data gathering, none of these libraries surveyed has been linked to the Internet.

Of the 14 library administrators/owners surveyed 10 envision to modernize their library operations. It is, thus, possible that in the next two years, the number of libraries using computers will double. However, the main impediment foreseen in this eventual computerization is the absence/lack of personnel who are trained for computer application in the library. To address this problem, respondents expressed the need to provide the necessary finding for the equipment and the training for its efficient and effective operation.

008
AYO, Mokiin R. 1995. A Profile of School Libraries in Lanao del Sur and Marawi

City (1988-1989): An Evaluation and Proposal for Library Development in the Area. (GT: MLS), 148pp.

This study aimed to assess the status and prevailing conditions of school libraries in Lanao del Sur and Marawi City in regard to their administrative structure, collection, staffing, services, physical facilities and budgetary allocations hereby updating all previous surveys done in the said areas. A census involving 253 public and private elementary and high schools was taken through a set of questionnaires and actual visits to these schools for data covering one year.

Data from 223 returned questionnaires showed the following results: a) Of the 186 elementary schools seventy three percent (73%) did not have any library; twenty five percent (25%) had libraries that are non- functional; and only two percent (2%) had functional libraries. Of the 37 high schools visited, five percent (5%) did not have any library, eight percent (8%) had existing but non-functional libraries, and eighty seven percent (87%) had functional libraries. B) general library collections in public elementary schools showed deficiencies in the range of 5,000 to 40,000 volumes based on collection standards for Philippine schools; the private elementary schools were more adequate with a deficiency of only 773 volumes. The same trend is observed for both private and public secondary schools; c) library personnel qualifications showed 1.04% with a Bachelor of Science degree in Library Science, 6.25% with a BSE degree major in Library Science. A minority (25.03%) of the library personnel had 6 to 10 years experience, while a majority (74.97%) had 1 to 5 years experience. D) the number of active library staff appeared adequate with a deficiency only in the range of 1 to 3 personnel against standards. E) budget allocations for library purposes were a common problem in all schools. The bulk of collections are sourced from gifts, donations and free distribution in the case of public schools; f) audio-visual materials and equipment were more of the non-projected types such as pictures, charts, maps and flashcards; g) library services were confined to traditional in-house procedures such as book loans and displays although about 50% had some form of collaboration with classroom teachers.

In view of these findings, a plan of action for the improvement of the library system in the affected schools is proposed.

009

BAGUIO, Evangeline M. 1998. User Interaction with Electronic Information Sources (OPAC, CD-ROM, Internet) Available at the Science Library of MSU-Iligan Institute of Technology: An Initial Evaluation. (GT: MLS), 67pp.

This study was conducted to find out how students of the MSU-IIT College of Science and Mathematics interact with the electronic information sources (OPAC, CD-ROM and Internet) available at the Science Library. Respondents of the study were all 61 CSM students who were regular users of the Electronic Information Sources (EIS). Questionnaire instruments explored the student's awareness of the system, usage profile,

common perceptions of the EIS processes and problems encountered. Results indicated 68.9 percent of the respondents were functionally familiar with the basic operation of the computer terminals. However, awareness of the Internet service as greater than of the OPAC and CD-ROM. Majority were aware of the "Subject Headings" as search option in the EIS environment and agreed that book, periodical and article titles are available in either the OPAC, CD-ROM and the Internet services. Generally, EIS users learned to operate the system through information from their friends; perceived the system to be user-friendly and that retrieved data were very helpful in their class requirements. Over-all user evaluation of the system was reasonably satisfactory. The common complaints centered on the limited use of the facilities due to restrictions imposed by the library management.

010
BONALOS, Marichu M. 2004. Underlying Circumstances in Librarianship: A Case Among Librarians in Secondary and Tertiary Schools in Bukidnon SY 2002-2003. (GT: MLS), 104pp.

This is a study on the underlying circumstances that led the librarians of Bukidnon to their present job as librarians. A survey questionnaire was used to determine their personal demographic profile, the possible circumstances that led them to their job as librarians, vocational attitude, service attitude, and job satisfaction. Descriptive statistics was used to present gathered data.

The results show that librarians in Bukidnon are mostly female, married, and within the age bracket of 41 years old and above. Most of them are secondary schoolteachers designated as librarians with general salary level of P5001 and above. Relatively, almost all have permanent status.

Superior's discretion is the most prevailing circumstance that led respondents to work as librarian. Since majority of the respondent librarians are teachers, they only perform the usual task of opening the library and changing/discharging of books when they do not have classes. Other task of rendering higher forms of library services such as reference service, reading guidance and book talks to users have been neglected. Majority are not satisfied with their task and working environment and they feel trapped/forced to work but there is no plan of shifting to other assignments because they are satisfied with their salary as teachers.

011
BUALAT, Sahlee D. 1998. Managerial Role Profile Among Academic Library Directors of Public and Private in Six Selected Cities in Mindanao: An Assessment. (GT: MLS), 67pp.

This study was assessed the managerial roles of academic library directors of public and private schools in six selected cities in Mindanao. Internal and external involvement of thirty(30) responding library directors and chief librarians were explored. It basically followed the ten managerial roles identified by Henry Mintzberg. Questionnaires were distributed to thirty-eight (38) respondents. Choices included (1) least time and effort; (2) little time and effort; results showed that only 27 directors performed the role as Leader (supervision of subordinates' works including placement, training, motivation and

evaluation of employee). External roles spent with "much to most" time and efforts were Figurehead (carrying out duties of a ceremonial nature such a presenting and explaining the library to others) and Liason (maintaining contacts outside the library with college administrators and faculty). While "least to little" time and effort spent as Spokesperson (distributing information to people outside the library and informing outsiders of progress within the system) and Negotiator role (negotiating with organizations as individuals outside the library to secure findings and safeguard interests). Difference in time and effort spent on internal roles was not significant. On the whole, the extent of time and effort spent by library directors on the external role was higher than the internal roles.

012
CABALLERO, Zenaida L. 2004. Status of Secondary School Libraries in Bukidnon. (GT: MLS), 77pp.

The study was conducted among the secondary school libraries in both public and private secondary schools in Bukidnon. It was aimed to determine the status of their libraries in relation to the requirements of the DECS Order No. 6, series of 1998. This study also aimed to highlight the plight of the school libraries by bringing their pathetic situations to the attention of the concerned authorities. Six areas were evaluated using the DECS Standard, namely: administration and management, manpower, collection, services, facilities and equipment and budget in order to formulate proposals for library based on the known deficiencies for immediate implementation. A census of all secondary schools in Bukidnon was conducted. The respondents of the study were their respective principals and percentage and frequencies distribution.

The study revealed that the libraries under from both the Department of Education, Culture and Sports and private schools generally were in a deplorable situation as assessed or viewed in terms of existing standards.

013
CAHANAP, Agnes B. 2004. Alternative Modes of Selection and Acquisition in Private Academic Libraries: A Proposal for Standard Collection Development Policy. (GT: MLS), 74pp.

This study is an investigation of the different alternative modes of selecting and acquiring library collecting adapted by the academic private libraries in the cities of Iligan, Oroquieta and Ozamis.

The descriptive survey method was used to obtain data on the profile of respondent libraries, the alternative modes adapted, and agencies involved. The same method was also used to determine whether respondent libraries have formulated a Collection Development Policy Statement (CDPS) as guide in acquiring library material through alternative mode.

Results show that the three (3) cities covered have similar situation in terms of alternative modes of acquisition. The general absence of CDPS for these modes is prevalent among them.

Paramount among the suggested recommendations is to formulate a standard CDPS for these libraries under study to come up with a library collection that is in accordance to set standards to support the schools' instructional and research needs.

014
CARSKIT, Hermecelia R. 2008. Library Accountability (COA Circular #94-012) : Knowledge, Problems, Experiences and Goals and Aspirations of Library Personnel in Region X. (GT: MLS), 88pp.

The foci of the study are the "awareness of library personnel respondents on COA Memorandum Circular # 94-012, the problems and experiences appurtenant thereto, and the goals and aspirations of library personnel relative to the implementation of COA Memorandum Circular 94-012.

The general findings showed a "Very Much Aware" level of awareness among the library personnel respondents from all college and university libraries under study. There are two major problems most of the library personnel encountered during their stay in the service is "the fear of paying the lost book if it cost more than P10, 000.00" and "the fear of "retirement benefits be withheld due to lost books/materials." The experiences, the respondents share the same experiences of the "Burdensome inventory" and most faculty members ignore this accountability issue for library personnel." One of the major goals and aspirations among the respondent is for them to "retire happy and contented" with what they get out of the service.

It is recommended that library administrators shall undertake a closer look on the COA Memorandum Circular 94 – 012 and review and make suggestions to be endorsed to legislators. For the Legislators to review and revise the said COA Memorandum Circular 94-012 to amore library personnel friendly or humane one.

015
CLARITO, Amelita B. 1998. Users' Perception of the Reference Service of Five Academic Libraries in Cagayan de Oro City. (GT: MLS), 125pp.

This study evaluates the reference services in the five academic libraries in Cagayan de Oro City. Assessment is focused on library users' satisfaction with the various forms of reference services offered. This also determines the users' perception of the attitudes and practices of the reference librarian with regards to library operations.

The results indicated poor references services. Only the most elementary form of service is rendered—that of answering simple directional questions.

Users, however, find the reference librarians attitude very willing to help, very

accommodating, fairly approachable, fairly patient, fairly perceptive, fairly strict, and diligent in their tasks.

In terms of practice, they are perceived as not quick in locating books, not successful in providing needed information, although fairly knowledgeable with regards to reference sources and fairly systematic in searching for reference materials. Generally, the respondents are satisfied wit the reference librarians' services.

016
CORPORAL, Lina L. 1998. Academic Librarianship in Zamboanga del Norte Its Response to Information Technology. (GT: MLS), 90pp.

This descriptive study the profile of fifteen academic libraries in Zamboanga del Norte in terms of management, manpower, money, material and machine, and examined the capabilities of these libraries toward information technology applications in their operations. Measures for these academic libraries to cope with the present-day pattern of information are presented.

In terms of readiness to embrace the latest development in technology, the academic libraries in Zamboanga del Norte are relatively unprepared yet, especially in the area of manpower retraining, and in terms of finances to acquire the needed technology. What are commonly available are photocopy machines and the typewriter, but not the microforms. The capabilities of the computer and the telecommunication technology are not yet tapped in all these libraries.

The absence of computerization in these libraries is attributed to the librarian's inadequate knowledge and training in computerization and to the absence or lack of funds for computerization.

Recommendations include the allocation determined by the school administration for sustainable budget and a skill audit to identify the required skills for computerization.

017
DAGALANGIT, Bedary M. 2002. Job Characteristics – Motivational Factors' Relationship to a Performance Evaluation as Perceived by Some Mindanao State University System Librarians. (GT: MLS), 121pp.

This study primarily aimed to examine and determine motivational factors and job characteristics that influence the performance of MSU librarians. Specifically, it assessed their perceptions of and attitudes toward generally – established factors of motivation and job characteristics and consequently draw a profile of librarian – respondents on what are perceived to be the most important factors that they consider to be critical to the performance of their duties and responsibilities. Data were gathered using motivational factors questionnaires, job characteristics survey, and the MSU performance evaluation system and these were analyzed using mean, standard deviation, t – test, Pearson product moment correlation, and simple and multiple regression analysis.

The study found out that all factors of the extrinsic and intrinsic rewards were usually needed. When ranked in terms of the librarians' motivational factors, first is intrinsic reward and second is extrinsic. All of the librarians' job characteristics were agreed to a certain degree. There is a high level of consistency between the respondents' present job with its job description. The average performance of the librarians is outstanding. On the other hand, none of the extrinsic and intrinsic factors as well as job characteristics had a significant relationship to the librarians' performance based on Pearson and regression results.

018

DOLENDO, Marison Jade S. 2007. Assessment of Selected TESDA Centex Libraries in Mindanao: Towards a Development of Proposed Standard for Centex Libraries. (GT: MLS), 183pp.

This study is an assessment of eleven (11) selected Technical Education and Skills Development Authority (TESDA) Center of Technical Excellence (CenTEx) libraries in Mindanao in terms of library organization and management, manpower, budget, reader's services, resources and facilities in support to the Distinctive Area of Competence (DAC) program of TESDA.

Exhaustive research on the Internet was done to find existing library standards as bases for the formulation of the proposed standards for CenTEx libraries and five were chosen, namely: Standards for Community, Junior and Technical College Learning Resource Program (SCJTCLRP), Standards for Libraries in Higher Education (SLHE), Guidelines for Australian Special Libraries (GASL) and Fund for Assistance for Private Education (FAPE) Library Standard for Private Education and Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP). These standards were thoroughly examined, compared and contrasted to select their best features or good practices which were modified to suit the local settings. Then, the proposed standards were formulated and tested with the eleven (11) CenTEx libraries in Mindanao for their applicability.

These libraries were found to fall short of the most minimum of the proposed standards. It is suggested that the proposed standards be forwarded to the TESDA-OTI for adoption to all CenTEx libraries in the country.

019

EDRES, Zaalica B. 2002. Reactions of Existing Librarians in Different Libraries in the Islamic City of Marawi Towards R.A. 6966 (Philippine Librarianship Law). (GT: MLS), 124pp.

Reactions of Existing Librarians in the Different Libraries of the Islamic City of Marawi toward R.A. 6966 (Philippine Librarianship Law) in terms of their awareness, knowledge and attitude are determined as basis for action plans by concerned institutions/agencies.

Respondents involved are 81 Librarians from the fourteen different libraries in the Islamic City of Marawi. Librarians in this study are all those working in the library occupying a position of a librarian regardless of qualifications. They are professional librarians, para-professionals, and non-professionals.

Data were collected by the use of a questionnaire supplemented by actual interview of librarians and ocular inspection of the libraries covered. The data gathered are presented using simple frequency and averages are tabulated to obtain accurate evidence.

The researcher strongly recommends for a close coordination among the agencies/ institutions concerned – the Library Administrators, the PRC, the Library Associations and Library Science Schools in order to address the problems of the library personnel's' lack of awareness of R.A. 6966 their little knowledge on the provisions of the law; and finding no benefit from the law.

020

EMPEYNADO, Florence Z. 2002. Comparative Managerial Role Profile of Librarians Among Five Types of Librarians in Eight Selected Cities in Mindanao. (GT: MLS), 97pp.

This is an assessment of the profile of the chief librarians of the five types of libraries in eight major cities in Mindanao namely: Iligan, Dipolog, Cagayan de Oro, Ozamis, Zamboanga, Davao, Cotabato, and General Santos. The libraries involved are academic, public, school, special and research.

Using the Mintzberg's model, the following areas are addressed: the managerial roles most often performed by the library directors; the extent of time and effort spent for each role and the reasons for their choice of certain managerial roles.

Regardless of library type, all of the directors perform all ten managerial roles both external and internal, except for those in the academic and special libraries, whose scope of duties and responsibilities constrain them from exercising the other roles. As to the extent of time and effort spent by library directors in their different managerial roles, the ANOVA computation showed a significant difference between and among types of libraries and between and among roles. These differences could be due to the absence of an explicit job description of a manager's position and the consequent lack of proper orientation on the roles of chief librarians and the respective importance of each.

021

FERRER, Imelda L. 2004. Internet Utilization of Selected College Students in Iligan City: A Proposal for Open Internet Services in Academic Library. (GT: MLS), 100pp.

Internet user college students of selected academic schools in Iligan City were surveyed for their mode of Internet utilization. Mode here is used to refer to purpose in using the internet, venue and reasons for preference, kind of information sought for,

frequency and duration of use, method of accessing information, business search engine preferred and familiarity and use of different web site addresses. The respondents' extent of satisfaction obtained from the various Internet services and the problems encountered in using the Internet were also determined.

A self-designed questionnaire was used to gather data supplemented by actual observation and interviews. Results show that respondents prefer to use the Internet in Internet cafes rather than those in their respective libraries. Reasons given include slow internet access, high rental fees, incomplete facilities/hardware accessories (ex. No joystick, no webcam, etc.), prohibitive policies on chatting, emails, and downloading/diskette copying in school libraries. on the other hand, the preference for Internet cafes is partly because of the pornographic scenes that they can view without restriction.

Among the recommendations presented are for the academic libraries to improve/put up internet services as income generating project for the library and for the school at large, for these to have user-friendly policies, lower rental fees, faster Internet access, open Internet services like chatting, email, downloading through diskette and print, and longer business hours, especially on weekdays when students have classes.

022
FLAVIANO, Miguela V. 2002. Relationship of Achievement in Class and Library Usage of Grade VI Pupils in Iligan City Central School SY 2001 – 2002. (GT: MLS), 129pp.

This is a study of the relationship between class achievement and the frequency and purpose of library usage of Grade VI pupils in Iligan City Central School during the SY 2002 – 2002.

One hundred ninety five (195) respondents participated whose fathers and mothers are college and non – college graduates, overseas workers and housekeepers with income brackets ranging from 3,000 – 16,500 monthly. Pupils' intelligence quotient ranges from average to superior. Most of the pupils' achievements are average and high.

Finding show a significant relationship between pupils' achievement and library usage in mental pursuits, spiritual needs, physical development, leisure and spending free time in the library; between pupils' achievement and home, librarian, motivation/life aspiration, study habits, place of study factors; and between pupils' achievement and mother's educational attainment, and their intelligence quotient.

Recommendations for further studies on the spiritual purpose and teacher factor are made to substantiate the findings of this study. The school libraries being the "first – contact – libraries" should be operated based on standards. Parents should complement the

school by providing areas for study at home, by exposing the children to reading materials and by encouraging them to use the library.

023
FORTUNA, Elsa M. 1986. Conflict in Mindanao: An Annotated Bibliography. (GT: MLS), 204pp.

This study was an attempt to compile an annotated bibliography of Mindanao conflict. The main objectives of the study was to produce a bibliography that would contain all the printed materials on the subject that were available in selected libraries of Marawi and Iligan as of December 1984. The data were gathered collections of Mindanao State University Main Library, Mindanao State University-University Research Center, Mindanao State University-Southern Philippine Center for Peace Studies, Mindanao State University-Iligan Institute of Technology and Doctor Peter Gowing Memorial Research Center.

The entries were classified under eight general headings: Bibliography Sources, Theories and Nature of Conflict, Religion, Social Values and Problems, Political Science, Law, Education, and History. Under each heading, entries were arranged alphabetically by author; first word of the title was considered in case an entry had no author.

The 549 titles gathered indicated that the collections of the libraries involves in this study could be a rich potential source for research on the subject, Mindanao conflict. The collections, however were string only in recent sources but quite weak in retrospective literature, the greater bulk of materials having been written after 1971. In addition, there were very few primary sources since articles from periodicals comprised 71 percent of the collection.

On library holdings, Doctor Peter Gowing Memorial Research Center had the richest collection of materials relevant to this study. In this library materials on Muslim Literature were systematically catalogued, indexed, and treated in a separate section.

To enhance the potential for research on the Mindanao conflict, the following recommendations were made:

1. That the libraries involved in this study go into a kind of consortium with the following specific objectives:
    a. to enhance the development and preservation of the resources available in the area.
    b. to established a data bank on the subject which will meet the need of the researchers, and
    c. to augment the meager resources of each library through resource sharing
2. That the consortium engage in the following cooperative activities:
    a. preparing a specialized comprehensive index on the subject,
    b. microfilming the important materials to ensure preservation, and
    c. undertaking a similar bibliography with the inclusion of other important libraries throughout Mindanao
3. The Southern Philippines Center for Peace Studies take the lead in this consortium

since this institution is most concerned with the subject and has the resources to do it.

024

GARCIA, Virginia M. 1998. The Iligan City Public Library and the Iligan City Community as Its Users: An Assessment. (GT: MLS), 84pp.

This is a survey of 462 respondents from the cross-section of the Iligan City community to assess if the Iligan City Public Library (ICPL) id able to level is library services to all sectors of the community. Findings reveal that of 273, 004 total population which is the target users of the city public library, only 8, 397 or 3.08% actually make use of its library services. Out of this, an overwhelming majority or 88.46% are students, followed by the children with 4.74% and the professionals with 3.87% patronage. There has been no patronage from the handicaps and inmates and very least from the out-of-school youth, non-professionals, and senior citizens. Factors affecting this wide gap between the legitimate and the actual users include: awareness in ICPL's existence and the mandate of RA 7743, geographical accessibility, policies of ICPL, library services, and existence of other information centers within the city.

These findings imply that the Iligan City Public Library must plan massive reach-out programs in order o bring the library sources closer to all sectors of its intended users which is the whole of the Iligan City community.

025

GOZO, Bennet G. 1994. Information Needs of the Community of Manticao, Misamis Oriental and Awareness of Its Public Library: Their Implications to Effective Rural Library Services. (GT: MLS), 176pp.

This descriptive study was conducted among the 236 respondents of the Manticao Poblacion, Misamis Oriental. It carries with it the main objectives such as (a) to determine the awareness of the community to its public library services; (b) to know the information needs of the community; (c) to determine whether the actual needs are met by the Manticao Public library; and, (d) to know if discrepancies exist between the Manticao Public Library and the standards set for the public libraries in the Philippines.

Majority of the respondents do not know completely on the Manticao Public Library services and the needed kinds of information are on communication and general information. Discrepancies existed between the Manticao Public Library services and the standards for public libraries in terms of staff, budget, collections, physical facilities and in operations.

Based on the findings, the following recommendations are for the Manticao Public Library: 1) a regular item for a professional qualified librarian must be incorporated in the municipal budget of Manticao to efficiently and effectively operated the library as well as properly implement its programs; 2) priority acquisition of local historical materials in Cebuano should be given consideration to meet the needs of the people. Acquisition of the audio-visual must be considered also; 3) a system of linkages with the following agencies

must be established: Department of Health (DOH); Department of Social Welfare and Development (DSWD); Department of Agriculture (DA); Department of Environment Natural Resources (DENR); Philippine Information Agency (PIA); Department of Education, Culture and Sports (DECS); School of Manticao Poblacion; Radio Stations in Iligan and Cagayan de Oro City; MSU-Institute of Fisheries Research & Development (MSU-IFRD); and, purok presidents of the Poblacion. 4) Television and video showing is another library service deemed necessary to attract users to come to library; 5) a definite and regular budgetary allocation for exclusive utilization of the library is needed; and 6) the Manticao Public Library must be equipped with the following facilities and equipment: atlas and dictionary stands; magazines stands; overhead projector; computers; additional office, readers' tables, and chairs.

026

GUANTERO, Hazel P. 1999. Library Utilization and Academic Performance of Bachelor of Science in Agricultural Education Students at Misamis State College of Agriculture and Technology, First Semester, SY 1998- 1999. (GT: MLS), 91pp.

Relationship between Library Utilization and Academic performance of Bachelor of Science in Agricultural Education students of Misamis Oriental was determined using the descriptive method of research. Library utilization was defined in terms of frequency of visit, purpose of visit and actual use of library materials. Control factors used were gender, year level, and specialization and parents' occupation. Descriptive statistics was used to analyze the data gathered from a questionnaire. A total of 142 student- respondents were selected at random from an official list of registered students from first year to fourth year. The parameters of library utilization were tested against the control factors chi-square test was then applied to determine the possible influence of these factors on academic performance as evidenced by the students' grade point average. Results showed that although the individual control factors exhibited varying frequency values, their overall hypothesized relationship with library utilization was not significant. Consequently, there was insufficient evidence indicating significant effect of library utilization on GPA.

027

HECHANOVA, Sharon Paz C. 2007. Profiling of ICT-Enhanced Libraries: Towards Developing an Instrument to Evaluate ICT Access Services in Academic Libraries. (GT: MLS), 104pp.

The study is aimed to: (1) make a profile of the access services of an ICT-enhanced library; (2) formulate an instrument to identify library services that utilizes ICT in information access, categorize ICT levels of academic libraries, and examine the effectiveness of the ICT library services in supporting the teaching, learning and research mission of the institution; and (3) make the designed instrument as a standard guideline in evaluating ICT access in academic libraries.

Information was gathered from the internet by researching into the ICT-enhanced access services of Ivy League libraries and summing up their practices. All eight libraries of the Ivy League schools – Brown University, Columbia University, Cornell University,

Darmouth College, Harvard University, Princeton University, University of Pennsylvania and Yale University - were examined. ICT specialists and academic librarians from MSU-Iligan Institute of Technology were also given questionnaires and asked for their perceptions of ICT-enhanced library services. A tested tool about ICT applications in academic libraries was also used for benchmarking purposes.

The study resulted in the formulation of two instruments. One instrument is designed for the use of the academic librarians in identifying whether the services offered in the libraries are ICT-enhanced access services and consequently categorize its ICT level. The other instrument is meant for the library users to determine the effectiveness of the ICT library services as support to the teaching, learning and research needs.

Recommendations include: (1) to furnish the Commission on Higher Education and the accrediting agencies results of this study for possible adoption and to serve as a new framework for the enhancement of library services, (2) to validate the instrument to further enhance its design, (3) to conduct a study using the designed instruments to evaluate ICT access in academic libraries, (4) to encourage future researchers who will be using this study's designed instruments to furnish the respondent-libraries results of the study to serve as guide in the planning, policy making and development plans, (5) to formulate another instrument that will evaluate not only one aspect but all functions of an academic library, and (6) to adopt the designed instruments as guidelines for academic libraries planning to integrate ICT in the delivery of services, and as basis for setting standards for ICT library services.

028
INOCANDO, Arlene S. 2004. Assessment of Mindanao-DOST Libraries: Toward an Action Plan for a Standard Special Library Services. (GT: MLS), 108pp.

This study surveyed five regions of DOST Science Libraries in Mindanao to evaluate the manpower, resources, facilities, services and to evaluate the capabilities of Mindanao DOST Libraries in retrieving information. The descriptive method was employed using two sets of questionnaires, in gathering the needed data, one for the library users and the other for the Library-in-Charge in different DOST Mindanao Libraries.

Respondents were exactly 300 library users from the different regions of the department of Science and Technology (DOST) Mindanao Libraries including the five Library-in-Charge. Results showed that the Library-in-Charge had a permanent employment status and a one-man librarian in the agency. Library collections were predominantly Science and Technology. Librarians claimed that they have the capability to operate a digital library. Sixty percent (60%) agreed that it can readily provide materials to its clients.

The usual problems encountered in the library were, lack of manpower, purchase of reference materials mostly denied, limited space to cater to the increasing number of clients, and Internet subscription has slow connection.

It is obvious that some DOST science Libraries are still in the process of developing their library system that includes purchase of latest model of computer/software

and accessories. Library users believe that DOST Science Libraries have relevance in the future.

029

LAMANERO, Eleanor L. 1986. Iligan City Ordinances: A Checklist with a Classified Subject Index. (GT: MLS), 655pp.

The study was an attempt to codify ordinances passed by the Council of Iligan City from June 16, 1950 to December 1985. The main objective was to produce a systematic checklist that would embody all the past and present local laws.

The gathering of data was conducted at the Iligan City Hall, particularly in the Office of the Sangguniang Panlungsod and Special Services. Data were gathered with a use of a Data Work Sheet (DWS) devised for the purpose. The following information were taken down: the Year Enacted Series and Ordinance Number; Date of Approval, Ordinance Title, Subject Classification, and Status.

The checklist consists of three columns: a) Year Enacted Series and Ordinance Number; b) Ordinance Title, Date of Approval and Subject; and c) Status. At the end of the text, four indices are provided, namely: Classified Subject Index, General Subject Index, Status Index and Availability By Year Index.

For the period of 35 years (1950-1985), findings about the ordinances are given as follows:

1. There was no systematic recording and indexing of the ordinances.
2. Most of the ordinances were passed from 1965-1975.
3. The yearly average output of ordinances was fifty-five the biggest output being in 1974 and the least in 1962.
4. Almost 50 percent of the ordinances were passed during the period of Martial Law
5. Majority of the ordinances (75%) are still in the original.
6. Ninety percent of the ordinances are available.
7. Majority of the ordinances are on Appropriations.
8. In order of their rank, subject areas with the most enactments are: 1) Appropriations, 2) City Departments and Offices, 3) Public Officials/Employees, 4) Public Works, and 5) Education and Culture.
9. The subject areas with the least number of ordinances are: 1) Public Morals/Decency, 2) Peace and Order/Public Safety, and 3) Barangay Affairs.

Based on the findings and conclusions, the following recommendations were made:

1. The city Administration should give more attention the areas of morality, decency, public safety and peace and order considering the present problems in the society.
2. A system of recording the ordinances passed should be adopted, the utilization of the Document Record Card, Document Series Card and Document Subject Card, the main purpose of which is for record control and to facilitate information retrieval is recommended.

3. For effectiveness organization, the ordinances should be permanently bound, labeled by year series and arranged on the shelves chronologically. The microfilming of these documents is further recommended for preservation and reduction in binding cost and for saving space.
4. There should be an ordinance designating the Iligan City Public Library and MSU-Iligan Institute of Technology Library as depository centers of all legislative documents. This would ensure the preservation of the documents and enhance accessibility to researchers.
5. An annual checklist supplement with a 5-year commulative volume should be made for updating purposes.

The final recommendation is addressed to the Mindanao State University- Iligan Institute of Technology Administration to endorse this completed project to the Honorable City Mayor for his perusal.

030
LANTO, Baimona B. 1997. Determinants of Student-Librarian Interaction at the Mindanao State University. (GT: MLS), 111pp.

This study I a study of the interaction of the students of the six selected colleges of the Mindanao State University with the librarians of the MSU Library. The data for the study were supplied by 307 students representing 10 percent of the total student population of the six colleges during the second semester, 1995-1996. The questionnaire based on the statement of the problem was divided into four headings: a) Previous Contact, Purpose, Frequency and Style of Library Use, b) Characteristics of Students, c) Student Perception of the Librarian, and d) Other factors. The study also aims to identify the interaction of student characteristics and their perception of the librarian and determine other factors that affect their interaction.

The result showed that to of the three independent variables are found to have a significant relationship with the dependent variables. Previous contact with the librarian is found to have a significant relationship with the style of library use and whether the student's perception of the librarian has a significant relationship with the frequency of visit to the library and quality of interaction as perceived by the students. On the other hand, four out of the six intervening variables are found to have a significant relationship with the dependent variables. Variables such as sex, religious affiliation, college/course and student traits (open-minded/ demanding) the library, style of library use, whether the student consult or not the librarian, and quality of interaction as perceived by the students.

The three hypotheses were tested and subjected to loglinear model. Hypothesis two is not included in the loglinear because it is found out that there is no significant relationship between two variables. This means that no two variables are significant when tested with the Chi-square. Hypothesis one is found to have a 3-way interaction which means that the librarian and style of library varies with the student traits (open-minded/ demanding) and year level of the students. Hypothesis three shows no 3 way interaction which means that the significant relationship between the students' perception of the librarian and frequency of visit to the library do no varies with age, sex, and student traits of the respondents.

031

LUMBO, Cristita A. 1983. A Compilation of Abstract Theses, Dissertations and other Researches Submitted to Graduate Schools in the Cities of Region XII and Cagayan de Oro City. (GT: MLS), 253pp.

This study is a comprehensive listing of abstracts of theses, dissertations, and other researches submitted to eight (8) graduate school located in the cities of Cotabato, Iligan, Marawi, and Cagayan de Oro. The schools included in this study are; Notre Dame University, Philippine Harvardian College, St. Michael's College, St. Peter's College, MSU-Iligan Institute of Technology, Mindanao State University, Don Mariano Marcos Memorial Polytechnic State College of Northern Mindanao, and Xavier University.

The objective of this study is to provide researchers an exhaustive reference tool in order to avoid duplication of work and to facilitate review of related literature. The period covered dates back from 1950 when the oldest graduate school had its first graduate with 1982 as cut off primary consideration was accessibility to user. The writer believes that materials covered should be within the reach of the researchers and scholars of Lanao, her place of residence. Secondly, it is a fact that centers of higher education are concentrated in major urban areas such as the places mentioned above. Lastly, time, financial constraints and practicality are considered.

An actual survey and ocular inspection of the materials were done in the gathering of data. Proper permission was sought from different school heads, MECS officials and library authorities. ….

To count, there are four dissertations, three hundred twenty-two theses, and ninety-one other researched which include special problems, seminars papers, special projects, practicum, and action research projects giving a total of 417 researches. The bulk of researches focused on education. This could be due to the MAT and MA (education) programs commonly offered by the graduate schools.

032

LUZANA, Adoracion C. 1987. Dr. Antonio S. Isidro: A Bio-Bibliography. (GT: MLS), 207pp.

This study is an annotated compilation of all the published and unpublished books, periodical articles, speeches, editorials, theses, reports and reviews written by and about Dr. Isidro. The materials in this study were taken from the libraries of the University of the Philippines, University of the East, Roosevelt College, Ministry of Education, Jose Rizal College, National Library, FAPE Library, Philippine Normal College, National Teachers College, Xavier University, Mindanao State University, and Iligan Institute of Technology. Personal data of Dr. Isidro were gathered through personal interview and from his tape recorded file history.

Part A of this study is the biography of Dr. Isidro organized in the order of his professional career.

Part B is the bibliography proper grouped into two major categories: works written by Dr. Isidro, and works written about Dr. Isidro. These works are further subdivided into two subdivisions, namely: the published and unpublished works.

The various positions held by Dr. Isidro at the University of the Philippines, University of the East, Mindanao State University and Roosevelt College are also cited. Added to this list is his membership in government boards and committees, and the positions he holds at present.

The study reveals that a total of 304 annotations was written by and about Dr. Isidro from 1928 to 1979. Of this number, 35 are books, 143 periodical articles, 76 editorials, 8 reports, 2 theses, 7 speeches, 31 reviews and dissertations. Majority of these writings focuses on education. This is because Dr. Isidro is an educator himself.

The writer envisions that this work will give honor and recognition to this man who spent a great portion of his life in the attainment of educational goals. It is hoped that this work which showcases Dr. Isidro's glorious past activities will serve as an inspiration to the youth of this generation and the future generations. Furthermore, the information about him will strengthen the students' quest for honorable deeds which will benefit them, their community, and the Philippines.

033
MADRAZO, Erlinda C. 1985. A Compilation of Abstracts of Theses, Dissertations and Other Researches Submitted to the Graduate Schools in Region X. (GT: MLS), 875pp.

This study was designed to provide researchers, scholars, and students with a basic reference tool for the review of literature. It is a compilation of three hundred seventy (370) abstracts of theses, dissertations, and other researches submitted to ten (10) graduate institutions of Region X, namely: Agusan Colleges, Bukidnon State College, Cagayan de Oro College, Central Mindanao University, Don Mariano Marcos Memorial Polytechnic State College in Northern Mindanao, Immaculate Conception College, Misamis University, San Nicolas College, Urios College, and Xavier University. The study focused on the Theses, dissertations, and other researches submitted from 1963 to 1983.

In the gathering of data, abstract were photoduplicated. In cases where no abstract was available, the researcher made an annotation. Full bibliographical data of the research work were taken down in 4" x 6" paper slips.

The compilation was arranged alphabetically by author's surname and entries were numbered consecutively from one to three hundred seventy (370) for location purposes. For the convenience of the user, five indices are provided, namely; subject, author, degree, chronological and institutional.

The result showed that there were ten (10) institutions offering graduate programs in Region X and a total of three hundred seventy (370) researches has been submitted to

these schools as of December 1983. The earliest thesis was submitted to Immaculate Conception College, Osamis City in 1963. Bukidnon State College has produced one hundred seventy (170) researches, highest among the schools. On the other hand, Cagayan de Oro College had the least output, with only three (3) completed researches.

An analysis by type of research revealed that there were three hundred thirty-one (331) theses, three (3) dissertations, and thirty-six (36) other researches produced I the region. Other researches included special problems, seminar papers and practicum. The subject area largely covered by the researches was on General Education and only one research was on technology.

Based on the results and findings, the following recommendations were made: 1) a similar study should be undertaken for Region IX and XI which would complete the bibliographic control for the entire Mindanao region; 2) the compilation for Region XII should be updated to include institutions not only those covered by Lumbo's work but also those that were excluded; 3) an exchange of research abstracts among Graduate Schools be made so that each school can update its compilation continuously; 4) each graduate school should have a committee to evaluate/dissertations for publication purposes; 5) a regional clearinghouse must be established to gather these valuable materials in one place for storage, preservation, dissertation, and retrieval purposes; 6) to ensure easier accessibility to these, dissertations and similar researches the following projects are suggested: a) an index should be developed for these researches using the KWIC (Keyboard-In-Context); b) there should be content analysis of the abstract itself; c) an index should be developed for research methods; and d) citation indexes should be developed which would show how often dissertations, theses and similar researches are cited in a certain field of study.

034
MAGBANUA, Jerry P. 2003. Information Competence Among Colleges and NDEA Member Schools in Region 11 and 12. (GT: MLS), 121pp.

The freshmen students of the six Notre Dame Education Association (NDEA) tertiary schools were surveyed in terms of their ability to define the information need, access information, evaluate the accessed information and use the accessed and evaluated information. This study also aims to know if there is a significant difference in the competence level of the respondents and the factors affecting their level of information competence.

It made use of two sets of survey questionnaire: one for librarians for the library profile and the other for the students which utilized both fixed alternative and open-ended questions using the three-point Likert scale in determining the information competence level of the respondents.

The findings of the study reveal that the respondents manifest a high level of competence and there is a significant difference in the competence level of the respondents in terms of their ability to define, access evaluate and use information. The library profile does not significantly affect the students' competence level. The gender and course of the students emerge to have a significant effect on their level of competence but not their age. However, this only delves on the basic level of information competence which forms the

basis for the advanced/research level literacy.

035

MAGHUYOP, Corazon H. 1985. A Thesaurus on the Board of Regents' Resolutions of the Mindanao State University System. (GT: MLS), 284pp.

This project was undertaken to develop a thesaurus of the resolutions approved by the Board of Regents o the Mindanao State University. The purpose was to produce a controlled vocabulary that would serve as an authority list of descriptors in indexing the resolutions with the ultimate goal of improving the storage it aimed to: (1) provide descriptors or keywords selected from the BOR resolutions which would constitute the basic vocabulary; (2) determine the equivalence, hierarchical and associative relationships of the term selected; (3) organize the terms into dictionary form in one alphabetical order.

The sources of data were the 3,951 resolutions approved by the Board of Regents from 1961 to 1983. Using the Data Worksheet (DWS) the following data were taken: the title of the resolution, its number, date of approval and pages. From the data obtained keywords or standard Thesaurus Construction Form (TCF) for the term analysis. Terms were analyzed through the identification of their equivalence, hierarchical and associative relationships. The final step in the thesaurus construction was the arrangement of the selected descriptors in an alphabetical order word by word. Under each descriptor term interrelationships were indicated by such abbreviations as BT (broader term), NT (narrower term), RT (related term) and UF (used for) for cross-reference. A scope note (SN) was employed for terms that needed clarification.

This project study is divided into two parts. The first part discusses the rationale and the setting of the study, review of related literature, methodology, summary, conclusion and recommendations. The second part is the thesaurus which consists of three sections: (1) the main vocabulary containing 458 descriptors, (2) list of Non-Descriptors, and (3) Index to thesaurus.

A commendation was made that the BOR resolutions should be provided with a subject index for speedy and effective information retrieval. To achieve consistency and uniformity in indexing, it was recommended that this Thesaurus be adopted as the standard indexing tool in MSU system. Since the thesaurus is to be introduced in the system for the first time it was suggested that a training workshop be conducted on its used for the staff who are handling the documents.

It was further proposed that a feasibility study for a computerized storage and retrieval system for BOR resolutions be conducted.

036

MERCED, Briccio Jr. M. 2005. Networking Among Eleven Academic Libraries in Davao City. (GT: MLS), 159pp.

The study determines the ingredients necessary for networking academic libraries in Davao City. Covering 11 colleges and universities, it aims to establish a baseline data,

identify the gaps between the profile of the academic libraries and the defined ingredients for networking, and identify the willingness of the 11 libraries to address the gaps through a self-constructed instrument that underwent both pre and post tests.

With the head librarians and head of institutions as respondents, the ingredients are identified as follows: collections to be shared, forms of services, the establishment of a network center, standards in library work, administrative support, attitude of librarians, infrastructure facilities, and the budget for each of the ingredients. Focused groups discussions were also done.

Results reveal existing gaps between the 9 ingredients for networking to the profile of libraries. Both the head librarians and head of institutions are willing to address these gaps within their institution's individual financial capacity. The study recommends filling-in the gaps to ensure equal access and the allocation of a yearly budget for the network. It also recommends the appropriate topology and protocol, hardware configuration, network operating system, web portal with a proprietary logo, quick search page, bibliographic display format, an interactive counter, and the hiring of qualified information specialist and technologists.

037
NACAYTUNA, Juliet S. 1998. Legislation on Philippine Libraries and Librarianship from the Spanish Era (1750-1898) to the Contemporary Period (1995): Their Implementation and Effects on the Present Status of Philippine Libraries and Librarianship. (GT: MLS), 337pp.

This is an analysis of the various legislations related to the existence and development of libraries and librarianship from the Spanish era (750-1898) to the contemporary period (1995). The results showed that only one hundred twenty-eight (128) library laws were enacted within the years covered. This number indicated that there is little support for the development of libraries and librarianship in this country. Furthermore, this shows a general lack awareness, in all branches of government, of the importance of libraries vis-avis national development. The present status of libraries in this country is generally poor, compared to that of other Southeast Asian countries.

The factors that account for the actual effects of these legislations on libraries and librarianship were also determined. The descriptive method as used in analyzing the documents and other available literature that comprised the data of this study.

038
NARIO, Marilyn J. 1998. BOR Resolutions at the Mindanao State University System: A Proposal for an On-line Management Information System (MIS)-Based Decision-Making. (GT: MLS), 93pp.

This study was a development of an on-line Management Information System (MIS) of Board Regents' (BOR) resolutions for the Mindanao State University, the BOR approved and passed resolutions that became the policies of the university and served as bases for the implementation of its programs. The primary purpose of the MIS was to

provide a quickly retrievable BOR data bank using the Micro CDS/ISIS software. This data bank contained the designed *Integrated Index of MSUS BOR Resolutions*. This retrieval tool handles the routine queries of researchers with ensured efficiency.

Survey figures which served as bases for the designed Integrated Index revealed that all the seven campuses adopted manual or non-mechanical method in storing and retrieving BOR resolutions. This manual recording could not produce information in packaged formats like indexes, abstracts, SDI notifications, content analysis, bibliographies, etc. There was no standard and uniform classification scheme used to allow intercampus cooperative information processing. Files were either lost, scattered, or haphazardly filed rendering difficulty in retrieving information when needed. Most often, files were never retrieved.

The designed MSUS BOR Resolutions On-line Management Information System addressed these problems of record storage, retrieval and servicing.

039
NAVARRO, Idamarie G. 1998. A Profile of Management Practices Among Public Secondary School Libraries in Misamis Oriental. (GT: MLS), 99pp.

This study determined the extent to which high school libraries in the province of Misamis Oriental fulfill the basic requirement of DECS Order # 6, series of 1998. The management practices employed by the libraries were evaluated in terms of the performance of basic management functions, namely: planning, organizing, staffing, directing, controlling, reporting, and budgeting. Similarly, the problems in the over-all management of these school libraries as perceived by the librarians, principals and teachers were identified.

It was found out that 28 of the existing schools of Misamis Oriental have a library of their own. However, these libraries are considered sub-standard because DECS Order #6, s. of 1998 are not adequately met. Majority of the schools identified the problems of inadequate library space, collection of a clear definition of budget allocation for the library's immediate needs.

040
NAZARENO, Vilma R. 2005. A Model for an ICT-Based Library with Concentration in the Readers' Services. (GT: MLS), 100pp.

The study was aimed at establishing a Model ICT-based Library in Ozamis City with concentration in the Readers' services. The subjects of the study were the Misamis University, Immaculate Conception College – La Salle, Misamis Institute of Technology, and the Medina College. The respondents were the 24 librarians of these academic institutions under survey.

The bases for the establishment of a Model ICT-Based Library: Readers' Service Unit in Ozamis City were the existing practices of both foreign and local ICT-Based

Libraries. The ICT practices of these libraries were compared with the status of the libraries under survey. The foreign libraries that were surfed in the Internet were the Ivy League Schools, European University, and the Ohio Link Libraries. For local libraries, the following ICT-Based Libraries were considered models in this study: Ateneo de Manila University, De La Salle University, and Xavier University.

The findings of the study identified the gaps and deficiencies of Ozamis City Libraries against the existing ICT-Based practices of the model libraries. One important deficiency of Ozamis City Libraries is the felt need for training among librarians towards ICT. It is therefore recommended that Librarians must be trained along ICT and Library automation.

041
NOVELA, Dalmacio C. 1983. A Union Catalog of Filipiniana Materials Selected Academic and Research Libraries in the Lanao Provinces as of December 1980. (GT: MLS), 384pp.

This undertaking is a compilation of available Filipiniana holdings in five selected academic and two research libraries in Lanao province as of December, 1980. The five academic libraries are Mindanao State University (MSU) Libraries, MSU-Iligan Institute of Technology Library, St. Michael's College Library, St. Peter's College Library and Iligan Capitol College Library and two research libraries are the University Research Center Library and the Dansalan Research Center Library.

The primary objective of this study is to provide a ready reference tool on Filipiniana resources for scholars and researchers in the area. In arriving at the data used in this study, the researcher made a survey of all libraries covered. Pertinent records such as card catalog, accession records, ready-made checklists, if available in the libraries concerned have been examined and analyzed in order to yield accurate results. Listings were done on a 3" x 5" processing slip. Furthermore, interviews were conducted of all librarians taking charge of all libraries involved to authenticate data gathering in the survey.

The chapter of bibliography is mainly divided into four sections, namely: A. Books and Monographs, B. Theses and Dissertations, C. Serials and Dansalan Research Center Library collection…

As a result of this study, the following recommendations are sought to achieve the aims and objectives of this undertaking: 1) Librarians should try to beef-up their Filipiniana collections not only thru purchase but also by making use of others means such as donation and exchange, and 2) for libraries which do not maintain a file of their serial collection, they must start to build up such a collection considering the importance that are certain in them.

To keep track continually of the ever-increasing materials of there libraries, especially the Dansalan Research Center Library, it is hereby suggested that a similar study be conducted, so as to update the listing on the subsequent acquisitions of these libraries.

042
NUNAG, Erlinda R. 1998. Republic Act 411/7743: The Extent of Its Implementation in the Province of Zamboanga del Norte. (GT: MLS), 148pp.

Republic Act 411 is known as the Municipal Libraries Law of 1949, while Republic Act 7743 provided for the establishment of congressional, city, municipal libraries and barangay reading centers throughout the Philippines; the latter being actually a reinforcement of the former. This study evaluates the extent of the implementation of R.A. 411/7743 in the three (3) congressional districts, two (2) cities, twenty five (25) municipalities and six hundred ninety (690) barangays of the entire province of Zamboanga del Norte in terms of the 5 M's (Management, Manpower, Materials, Money and Machines) against the Minimum Standards for Public Libraries in the Philippines.

In general, the implementation of R.A. 411/7743 in the province is still at 3.4%, while only about 60% in the Municipal level and only about 1.3% at the Barangay level. This indicates that the law has yet to be fully implemented in the province.

Its partial implementation is caused by several factors; lack of support from the concerned local government administration; distance of the locality from Dipolog City where the Provincial Library is; population size, since sparsely populated localities are last in the priority of the establishment of these local libraries; road terrain; and the lack of qualified manpower to manage the library operation.

Recommendations as to how the problem can be addressed are included.

043
OCEÑA, Samuela P. 2004. RA 6966 Implementation: Its Effect on Pagadian City Librarians. (GT: MLS), 73pp.

This study dealt with the investigation on the RA 6996 implementation and its effects on the Pagadian City librarians. The implementation of RA 6966 is found to be slow pace. It was revealed that no sanctions and penalties were imposed to administrators and librarians for not complying with the law.

The effects of RA 6966 on the librarians are twofold. To the licensed librarians who were the most affected, the effect of non-implementation of the law is negative. Inspite of the enactment of RA 6966, librarians without license enjoyed the same privileges with those who are licensed. In this situation, he licensed librarians demand for the hiring of licenses librarians, promotion in their ranks, and full-implementation of the law. They disagreed on the use of "librarian" as a position title by the librarians without license. On the other hand, the librarians without license were happy and contented of their present status of employment. Although there are some who feared losing their job if and when RA 6966 be implemented strictly, the other few librarians without license are contented because they are allowed to practice the library profession despite the absence of a certificate of registration.

044

OCHIA, Josephine J. 2005. The Status of Compliance to CHED Requirement B Private College Libraries in Cotabato City. (GT: MLS), 114pp.

Libraries are sources of knowledge and so they are indispensable to the attainment of quality education the Commission on Higher Education have issued memorandums to enable the tertiary schools to implement what have been prescribed in relation to library facilities. This study describes the status of compliance to CHED requirements by the private college libraries in Cotabato City.

A survey was conducted with the respondent librarians and administrators to get their perception on whether their schools have complied or not. Interviews were done with administrators and librarians to get detailed responses, and document analysis was used to examine the licenses of the librarians and the papers on the collection compared to what are required by CHED. An ocular inspection was also conducted b the researcher to validate the data on physical facilities.

It was found out that three schools have complied with the requirement for human resource; no school has sufficient basic collection, four have complied on specialized collection and to have come up with the standard on recency. Only two complied in relation to seating capacity, prescribed size of reading area and good lighting and proper ventilation.

The researcher has designed a development plan that would enable the schools to comply with the CHED requirement on human resource, collection and physical facilities. The plan includes specific activities, spread in five years in consideration to the financial conditions of all the schools involved.

045

PACAÑA, Charlinda R. 1998. Perception of Some MSU-IIT College Students on Librarianship. (GT: MLS), 53pp.

A survey of360 college students from five colleges of the Mindanao State University-Iligan Institute of Technology (MSU-IIT) was conducted during the First Semester of School Year 1997-1988 in order to determine their perceptions of librarianship as a profession. Respondents were randomly selected from a register of 5, 802 with p value of 0.50, maximum error (d) of 0.50 and confidence level of 95%. Questionnaire instruments explored prospects, effectiveness, efficiency and attitudes of a profession, economic prospects, effectiveness, efficiency and attitudes of librarians toward service. Results showed that (1) the respondents' demographic characteristics as to college affiliation was significantly related to their perception of the profession, while academic year level & gender were an insignificant variables; (2) 74.1 percent of the respondents were aware of librarianship as a profession; (3) while 47.7 percent did not find librarianship as a lucrative profession at present, 42 percent agreed that will be in demand at a future time; (4) 34.7 percent agreed that the profession of librarianship is predominated by women; (5) respondents generally agreed that the basic attributes of the profession are observable and that librarians have pleasing personality and right attitude toward service.

046

PALABON, Lorena N. 1998. Librarianship as a Career Preference Among High School Senior Students in Six Selected Schools in Iligan City. (GT: MLS), 40pp.

Contributing factors that would make Library Science as a career alternative for graduating high school students were examined.

The study revealed that Library Science as a career is the least preferred among high school senior students of six selected schools in Iligan City. This is due to the fact that students had very little exposures to Library Science as a profession and as a career. Majority of the respondents did not know that Library Science as a career exist. The other influential factors include financial opportunity and prestige, which the respondents did not find in the Library science program.

047

PANGCATAN, Leilannie M. 2002. Parents' and Students' Perceptions of the Library and Information Science as a Profession. (GT: MLS), 113pp.

This study finds out the Parents' and Students' Perceptions of the Library and Information Science as a profession.

The respondents were fourth year students of some schools offering Library Science or Library and Information Science in Mindanao during the school year 2002 – 2003. Other respondents of this study were parents, not necessarily parents of the student respondents. The main research instrument was a questionnaire designed to elicit appropriate information from the students and the parents.

Majority of the respondents, both students and parents were aware of the library and its importance. They were also aware of the Library and Information Science profession but were not aware of the profession's significance. Majority o the student respondents have known about the profession through their teachers, while most of the parent respondents have learned about it through their friends. Both students and parents respondents believed that this profession is a noble one. Contrary to the parents' willingness to let their children take up this course, most of the students were hesitant to take u this course. Most of the students chose Bachelor of Science in Nursing as their most preferred course while most of the parents preferred Bachelor of Science in Education. There was a minimal number of students and parents who preferred Library and Information Science.

Findings generally imply that this profession has a low profile. Parents perceived this as a profession that offers limited job opportunities for their children. Students respondents perceived it to be boring, not interesting, less challenging, not popular and it does not offer good employment opportunities after graduation.

Hence, this profession needs a lot of publicity, promotion an information and

dissemination drive.

048

RAMOS, Maruja A. 1998. Indicators of Perceived Organizational Commitment and Organizational Effectiveness Among Licensed and Non-Licensed Academic Librarians of Lanao. (GT: MLS), 96pp.

This complete enumeration study conducted among 111 respondents of the 20 academic libraries of the two Lanao Provinces, including Iligan City and Marawi City, investigates the organizational commitment and organizational effectiveness of licensed and non-licensed academic libraries. The ANOVA did find independent variables length of service and number of dependents to have significant influence with organizational commitment. Only length of service was significantly related to organizational effectiveness.

Indicators which best affected organizational commitment included the components of belief and acceptance of organizational goals and vales while leadership role, participation in decision-making, creativity at work and encouragement/ motivation for self-development and professional growth were best indicators for organizational effectiveness. Recommendations included 1) the observance of Professional Regulations Commission (PRC) related rules and guidelines for selection, recruitment and promotion of library personnel; 2) creation of intra-library board committee to discuss work related problems of employees and management; 3) need for continuing staff development program; and 4) professional orientation regarding Code of Ethics for Librarians and R.A. 6966, and lastly, 5) redirection of Filipino values for productivity and effectiveness.

049

TORRES, Felicitas A. 2002. Information and Communication Technology in Selected Academic Graduate Libraries in the Cities of Iligan and Cagayan de Oro: Its Status and Benefits. (GT: MLS), 115pp.

The research aimed at evaluating the status, level of awareness, extent of utilization and benefits derived from ICT implementation among the academic libraries in Cagayan de Oro and Iligan cities offering graduate degree programs. A structured questionnaire and personal interviews were used in gathering of data conducted among library administrators/librarians, graduate faculty members and students. The study reveals that all eight (8) libraries have installed and used different ICT Software. All library administrators/librarian respondents are using ICT software for library processes and procedures. Likewise, majority of the graduate faculty and students of these academic institutions are aware of the existence of the ICT system in library. The extent of non – utilization is due to the following: need to be oriented with computers; not library goers; having computers of their own; and computer illiteracy. On the other hand, there are varied benefits identified by the library administrators/librarians, graduate faculty and students gained from ICT utilization. Majority revealed that using computers is time and labor saving. It can be seen that librarians are the most benefited with ICT implementation. Two factors seen as common barriers of ICT application are the insufficient funds to acquire the desired number of computer units; and rapid changes in library software that they become

obsolete before they can be fully implemented. Suggested action plans include common software for all libraries involving network activities.

050
UMPA, Amina D. 1999. The Information Needs of the Graduate Students at the Mindanao State University Library, Marawi City. (GT: MLS), 76pp.

This study explores various areas of concern relating to the Mindanao University Library such as its response to the mandates of the Graduate School Programs; the graduate students' level of awareness of library materials and services; their specific information needs and motivations; and their evaluation of the Library materials and services.

Majority of the respondents affirmed that the current library materials and services help achieved the mandate and requirements of the Graduate School Programs to some extent. Serials, Selective Dissemination of Information, Current Awareness, On-line Literature Searching and INTERNET were regarded as some of the Library information sources and services although most are not currently available. General Reference Books, Thesis and Dissertations, Research Results were perceived as extremely useful in the research/work activities. Forty two point five percent (42.5%) of the respondents were aware of the existing library materials and services of the Unit Library while 39.8% wee familiar with the existing collection and operation of the University Main Library. Respondents' information needs spring from their research wok; to develop competence in one's areas o specialization and to work on their Thesis or Dissertations. The Library Materials were perceived as "adequate" while Library Personnel Staff Services were viewed perceived as "satisfactory".

051
UNDAR, Mike M. 2004. Mode of Accessing Information Employed by Some High School Student in Cotabato City and Its Implications to School Library Services. (GT: MLS), 88pp.

This study aims to identify the mode of accessing information employed by some high school students in Cotabato City. The manpower, collection and services rendered by the libraries of the respondent schools were evaluated using DECS standard (1998). The gaps between the mode and the actual features of such libraries were also identified.

The researcher selected (11) public ad private schools from among the twenty-two (22) secondary schools in Cotabato City. Of these eleven schools, four (4) are public, three (3) are private sectarian schools, and four (4) are private non-sectarian schools. The stratified sampling technique was used to determine the respondents of the study. The subjects were the librarians and fourth year high school students. the study was conducted using the survey questionnaires.

It was found out that there is no difference in the mode of accessing information of the respondent students of selected public schools and those of the selected private schools. Both groups prefer a librarian who would assist and guide them in their researches. They want the opening hours of the library be extended after class hours in the afternoon.

Many of them want to have audiovisuals and computers in the library. They desire to have soft music played inside the library and a space or a room for group discussion.

In terms of the minimum standard that the libraries are required to maintain, the level of satisfaction of students is average. They have a low level of satisfaction on the following: audio-visual materials, photocopying services, ventilation, computer units and equipment.

Majority of the schools did not meet the DECS requirement (1998) in terms of the qualification of the librarians since none of them is licensed. The libraries of the respondent school have inadequate collections especially on audio-visual materials. The services they render to their clients are the routinary ones only.

052

VILOAN, Irene M. 2006. Utilization of Library Resources, Facilities and Services by Faculty and Students of Notre Dame High Schools of Greater Midsayap Area. (GT: MLS) 76pp.

The foci of this study were the inventory of the existing library resources of books, periodicals, journals, facilities and services of the six Notre Dame High Schools of the Greater Midsayap Area and the frequency of their use by faculty and students.

The results of the inventory was made as baseline data to determine their deficiencies against the established DECS Standards of 1998. the deficiencies were made as basis to formulate action plan for the improvement of the six Notre Dame High Schools of GMA. In like manner, the result of the frequency of the use of their library resources, facilities and services was made as guide in the formulation of recommendations to improve the Notre Dame High School Libraries of GMA in accordance with the present trend of Philippine Librarianship.

053

WAGAS, Leonora C. 1998. Administrators' Response to Training Needs of School Librarianship of the Notre Dame Educational Association. (GT: MLS), 72pp.

The Notre dame Educational Association (NDEA) secondary and grade are surveyed in terms of their administrators' concern for the training needs of their librarians. Training is assessed in terms of the five areas namely, technical skills, computer literacy, basic administrative skills, management skills and communication skills. Responses of the administrators to the training needs of their librarians are measured in terms of programs for human resource development and in terms of programs for human resource development and in terms of funding support.

While the NDEA librarians need training in the basics of librarianship and in the emerging need for basic computer skills, generally their administrators do not have for these training needs.

054

ZAMAN, Monira B. 2002. Preliminary Assessment of Madrasah School Libraries in Marawi City, Lanao del Sur: Basis for the Formulation of a National Standard. (GT: MLS), 157pp.

This study assesses the eight Madaris schools in Lanao del Sur composed of high school libraries and college libraries' collection, manpower and services, physical facilities and funding. Assessment data are extracted from the schools' faculty, librarians and students through a set of questionnaire supplemented by personal ocular inspection and interviews. Data collection yielded the following results: respondents generally affirmed that library collection is insufficient; library personnel in – charge needed further study or training to equip themselves with minimum standard requirement and needed skills; the need for a separate library building and furniture and need for a sustainable funding support. Recommendations include, among other, the formulation of a standard appropriate for Madrasah schools for national implementation.

Doctor in Sustainable Development Studies (Di SDS)

001

ZABALA, Dwight F. 2008. Environmental Health Status of the Open Dump in Barangay Santiago, Iligan City. (GT: Di SDS), 179pp.

This study aims to determine the environmental health status of the open dump in Barangay Santiago, Iligan City.

The study was conducted among 90 residents of the barangays of Santiago, Hinaplanon, Sto. Rosario, and Del Carmen, Iligan City represented by 30 from Barangay Santiago, 30 from Barangays Hinaplanon and Sto. Rosario, and another 30 from Barangay Del Carmen. The latter two groups serve as control areas. In addition to individual interviews with respondents, interviews with 22 key informants were conducted to enrich the data.

The research design used was the case study with control sites using a triangulation of quantitative and qualitative methods in data gathering and analysis. Individual interview guides, key informant interview guide, observation checklist, archival checklist, and photo documentation were utilized in gathering data. Frequency, percentage, mean, content analysis of secondary data, non-participant observations as well as responses to open-ended questions, pollution tests, *Kruskal-Wallis* analysis of variance test, and *Mann-Whitney U* test, were employed in the data analysis.

The results show that after Cabili Village (now Barangay Santiago) was designated by Iligan City as its dumpsite in 1973, the open dump has been generating land, air and water pollution. This was confirmed by tests made by the city government as well as by the results of the study that was conducted with the assistance of the Mindanao State University-Iligan Institute of Technology. Parameters indicating levels of pollution include cadmium, lead, pH, coliform, dissolved oxygen, biological oxygen demand, pathogenic

bacteria, fungi, and particulates. Results show that these can cause various diseases like cough, fever, colds, headache, allergy/skin diseases, LBM/diarrhea, headaches, asthma, flu, vomiting, stomach ache, urinary tract infection, and meningitis.

The results likewise show that the respondents perceived pollution levels in the three sampling sites as follows: Barangay Santiago is the most polluted, Barangays Hinaplanon/Sto. Rosario are less polluted while Barangay Del Carmen is least polluted. There is no significant difference in the incidences of the diseases/common health problems contracted by respondents' families across three groups before and after their transfer of residences. But the respondents' families from Santiago are more predisposed to diseases than those from the two other groups.

There is no significant difference in the frequencies of the perceived causes of the diseases contracted by the respondents' families of the three groups before and after their transfer of residences in each of the three groups. But almost all the 30 respondents from Barangay Santiago believe that the land, air and water pollution that the open dump generates has brought about detrimental effects on the health of the residents nearby. This was supported by 21 of the 22 key informants and the results of the pollution tests. The sorts of diseases mentioned are also the main common health problems that confront the families of the respondents. Another detrimental effect of pollution is degradation of the natural ecosystems especially the mangrove area, river and bay.

Most of the respondents and key informants recommended that the open dump be closed, rehabilitated and converted into a useful place such as a nature park or housing project. Meanwhile, they recommend measures to lessen the odor, leachate and other bad effects of the open dump while the government is constructing its City Material Recovery and Composting Facility. However, the government needs to act fast to prevent the further deterioration of the environmental health of the open dump.

Master in Development Studies (Mi SDS)

001
BASCUG, Josefino S. 2007. Rainwater as an Alternative Source for Non-Potable Water Demand of La Salle Academy-Iligan. (SP: Mi SDS), 80pp.

A rainwater harvesting system design for utilizing rainwater as an alternative non-potable water resource in La Salle Academy-Iligan is developed to augment the increasing demand for water. The catchment area of 1,514 square meters on the specifically-designed rooftop is sufficient to fill a two- 300,000 liter-cistern (80,000 US gallons) on given days of the rainy season to be located at the southern side of the new school building.

The physical components of the new building's rain water system consist of the cistern and elevated retention tank used for rainwater storage, the conveyance and plumbing system which will channel the water to the toilets and channel contaminated water to sanitary sewers, a connection to the sanitary sewer system to remove the waste or sewage from the system, a storm sewer connection in case of overflow in the retention tank and 6-liter flush toilets. Connections for garden irrigation system and general cleaning purposes are included in the system. The design was subjected to evaluation by experts in water resource management and civil engineering.

Creating a breakthrough for a sustainable green building design in this part of the country, with the primary purpose of economic and environmental conservation of our water resource and energy consumption, pilot run of the system is also proposed as soon as the construction of the building is completed.

002
DELA MANCE, Gerva Riena S. 2008. On the Waste Management Practices of Two Primary Health Care Establishment in Iligan City. (SP: Mi SDS), 106pp.

A comparative study on the waste management practices of two primary health care establishments in Iligan City was conducted between January-February, 2008. The two major hospitals involved in the study are Gregorio T. LLuch Memorial Hospital (GTLMH) and Mindanao Sanitarium Hospital (MSH). In terms of the type of wastes generated, both establishments produced the same. Moreover, both have shown incongruence to the WHO/DOH Standard on waste management practice. The crucial factors influencing waste management practices coming from internal source are the budget and attitude of workers while on the external source is the implementing laws and guidelines on health care waste management. The waste management practices of the MSH particularly in providing orientation on segregation of waste to patients and watchers and not allowing waste to accumulate at the point of production enhanced the aesthetic quality of their surrounding environment while the waste management practices of the GTLMH contribute to poor aesthetic quality. On the other hand, the GTLMH shows potential income generation on the newly established partnership with a junkshop owner. This kind of partnership was not observed in MSH. Both GTLMH and MSH must adhere to the standard practices of WHO/DOH and international recommendations on waste management in line with Agenda 21 which promote sustainable development.

003
FELINA, Rodante B. 2006. Environmental and Socio-Economic Implications of Small Scale Gold Mining in Gango, Libona, Bukidnon. (SP: Mi SDS), 38pp.

The small scale gold mining site also known as Gango Gold Rush Area is located at Sitio Manlauyan, Barangay Gango, Municipality of Libona, Province of Bukidnon about 15 kilometers from Cagayan de Oro City. Gango Gold Rush Area covers approximately fifty eight (58) hectares of land which is made up of twenty-eight (28) underground workings such as shafts, adits and tunnels; thirty-six (36) grinding mills and thirteen (13) CIP(Carbon-In-Pulp) plants.

Gango Gold Rush Area is beset with problems inherent in a typical gold rush area, thus, there is a need to assess the environmental, social and economic problems associated to the small-scale gold mining activity. This study aims to assess these problems and come up with a number of appropriate measures that would somehow address these problems for better management of small-scale gold mining in this particular area.

The study used both secondary and primary data. The secondary sources of data were the existing research literatures on small-scale mining and field reports from the Mines and Geosciences Bureau Regional Office No. 10. The sources of primary data were the key informants such as the Purok President, the Purok Secretary, and the small-scale gold miners and mill processors. Additional secondary data were sourced from the data gathered by MGB Region 10 technical staff during their previous field activities conducted in the area for the past two years. Key informants were asked some questions and the author made actual observations during a series of monitoring and inspections conducted last year.

There are 810 small-scale miners who are potentially exposed to mercury poisoning. As of to date, there are no reported incidents of mercury poisoning yet. However, should there be a mishandling of mercury by the miners that would result to significant mercury spill on the ground and drained into Bigaan River, a mercury pollution takes place. Most miners claimed that siltation and loss of fishery resources have occurred in downstream areas since mining activities began. The influx of miners and their families resulted to the denudation of forestlands for habitation space and other human activities. The loss of biodiversity in the area due to small-scale mining is a direct aftermath of deforestation and water pollution

The Gango Gold Rush Area is situated within the Integrated Forest Management Agreement (IFMA) of a certain Mr. Pelaez. This situation has created a conflict between the IFMA Holder and the small-scale miners. Worsening social stability due to vices like alcoholism and gambling is not a remote possibility. The supply of basic services such as those relating to health and transportation is also limited.

Small-scale miners sell their gold to the tunnel owners, processors or to other traders instead of selling directly to the Central Bank. Under pricing of gold often occurs in these marketing channels and this contributes to the poor economic conditions of the miners. Because small-scale miners sell their gold not to the Central Bank but to various buyers, the national government loses great amounts of gold to the detriment of the entire economy.

It has been established that there are environmental, social and economic consequences being brought about by small-scale mining in Gango Gold Rush Area. Despite the seriousness of the problem, small-scale mining is an occupation of last resort to the small-scale gold miners because of economic necessity. Just like in other gold rush areas in the country, the problem of mercury pollution in Gango Gold Rush Area demands that the government at both the national and local levels exert stronger monitoring and enforcement efforts. Legalizing the activity by licensing miners (by way also of declaring the area as "Minahang Bayan" pursuant to R.A 7076) will help improve environmental management.

The future development of the small-scale gold mining in Gango Gold Rush Area also hinges on the finding an effective solutions to various other problems it is facing. With the cooperation of the private sector and the citizenry in the mining community, a more proactive government that mediates conflicts, provides tangible assistance and exerts moral leadership can reduce these problems and lead the industry into better times.

004

GALUA, Rey D. 2007. Nature Park Development: A Case of a Sustainable Approach to Development and Progress in the Municipality of Buenavista, Agusan del Norte. (SP: Mi SDS), 131pp.

A benchmark nature park development has been designed in this study incorporating the elements of good architecture and sustainable development. In the architectural design concept, issues recommended in sustainable architectural practices have been considered in the initial design. The main objective of the study is to create a nature park under the rural setting of the municipality of Buenavista, Agusan del Norte. In order to incorporate the sustainability issue, the local environmental, social and economic issues as applicable to the site of the project have been identified and assessed. Based on the assessment and evaluation, the overall architectural designed concept as applied to the local setting are conceptualized.

With the sustainable architectural design in place, an analysis of the economic, social and environmental impacts of the projects have been presented and evaluated. The economic analysis indicates that while the project could incur huge financial investment, resulting economic projections done conservatively, have shown that the investment indeed can be recovered in a practical period of time. The projects have promising prospects of improving the social and environmental condition of the locality. Overall, there is great promise for the nature park development and eco-tourism projects to be not just profitable but also sustainable. The cost-benefit analysis of the project has also shown economic sustainability of the project. With the tangible benefits to the society, the projects may have the huge potential economic impact to both local and national economies. Even without the intangible benefits included in the calculation, the projects still be able to gain revenue and is making profit. Attractiveness to the investment is still a subjective issue as 6% can be a small return compared to prevailing commercial rate in the bank. However, there is strong opportunity that borrowing rates of money may reduce in the long term, coupled with the conservative estimates of the project, it may attract the investors far more than these numbers suggest.

It is hoped that this study can help potential investment in eco-tourism to improve and thus bring not just the economic development but also investments that improve the environment and community it serves.

005

MARTINEZ, Maria Pia C. 2006. Potentials of Barangay Bonbonon, Iligan City for a Community-based AGRO-Ecotourism Development: An Assessment.. (SP: Mi SDS), 96pp.

This special project assesses the agro-ecotourism potentials of Barangay Bonbonon by examining some of its environmental elements, agro-elements, market viability and community people's skills, capability and cooperation. Environmental elements include physical landscape, existence of natural resources like caves, waterfalls, agro-forestry and indigenous farm products. Farm to market road, potential market of agro-ecotourism products and services are also determined. Skills and capability of community residents are also assessed for self management of an agro-ecotourism development of their own barangay. The unique feature of this assessment compared to existing ecotourism projects is its concern on developing endemic natural resource by the local people themselves without any import of products, structures and skills from the outside. Sample activities are presented to enhance the natural endemic potentials of Barangay Bonbonon for an agro-ecotourism development.

006

RAAGAS, Susan Daisy A. 2007. The Effects of Engineering Structures on Inundation of Water of Bitan-Ag Creek in Cagayan de Oro City: An Assessment. (SP: Mi SDS), 353pp.

The study is an assessment of the effects of engineering works on inundation of water of Bitan-ag Creek in Cagayan de Oro City. The engineering works are limited to the construction of the man-made creek, installation of the bridge-box culverts along major roads of the city, specifically at the national highway, Gaabucayan Road, and Agora Road.

The research methods applied in this study are exploratory, descriptive, and evaluative. The exploratory design is intended to determine the actual condition of the creek through unstructured observations. The descriptive method is used to determine the perceptions of key informants, barangay officials and residents of barangays 26 and 35 on the level of compliance and level of awareness, respectively. The evaluative method is used to determine the consistency with which engineering works have complied with the standing government policies and guidelines and its effects on inundation.

Based on the contention that engineering works have their effects on inundation of water of the creek, the results and findings of the study duly confirmed them. Thus, the following recommendations, categorized into three aspects include the; (a) policy implication, (b) program implementation, and (c) areas for future research.

007

ROM, Pacifico Jr. R. 2006. The Implication of Sand and Gravel Extraction Rate/Frequency to the Physical Characteristics of Mandulog River. (SP: Mi SDS), 65pp.

This study aims to gather data specifically for the processes that contribute to the changes on the physical characteristics of the river altered by the anthropogenic process particularly the sand and gravel extraction along Mandulog River. The effects of the quarrying of sand and gravel to the river system includes widening of the channel, riverbank erosion, channel incision, channel shifting, decreased sediment transport to

downstream reaches, and increased siltation. Observation shows that all the aforecited effects are visible and the need to put in place a development plan for the Mandulog River management is necessary.

The research method used is a descriptive type. A qualitative and quantitative collection of data to analyze the river processes and other parameters of the river system that influence the replenishment rate along the sand and gravel extraction sites are also used.

Formulation of an appropriate policy in the extraction of sand and gravel from streambeds is necessary to protect and conserve the environment. All stakeholders involved in the industry had its respective role in the proper management and conservation of the resource. Iligan City has regulated the disturbance of taking streambed materials just lately. The granting of volume to the applicants and the renewal of permit undergoes an evaluation of the area. It includes depth determination of the channel and the volume allowed is based on the standard depth required of the channel.

008
SAMSON, Jeanette J. 2007. Status of Mangroves in Naawan, Misamis Oriental and the Prospect for Vegetation Expansion. (SP: Mi SDS), 60pp.

The mangroves of Naawan was surveyed in May 2006 using a transect plot technique to assess the status in terms of plant community structure in the three barangays, namely: Linangkayan, Poblacion, and Maputi. Results showed that the mangroves of Naawan is, indeed, degraded arising from development-related activities. Yet, highly diverse mangrove vegetation still exists with 22 families and 30 identified species - 11 belonging to the true mangrove species, the others are associates. *Nypa fruticans* (Nipa), *Avicennia rumphiana* (Miyapi) and *Lumnitzera racemosa* (Kulasi) are the dominant species. *N. fruticans* dominates in terms of stem density while *A. rumphiana* mainly contributed to the total basal area (13.7 $m^2 ha^{-1}$) of measured woody plants. The Naawan mangroves lack the regenerative capacity in terms of saplings and seedlings except for *L. racemosa* and *A. rumphiana*, thus, requires planting to rehabilitate most other species. Three sites were identified with potential areas (5.2 ha) for vegetation expansion through reforestation.
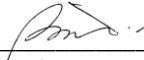
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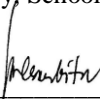Coordinator, Sustainable Development Studies

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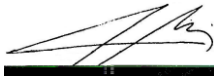Secretary, School of Graduate Studies

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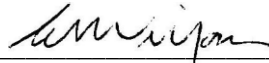Coordinator, College of Business Administration

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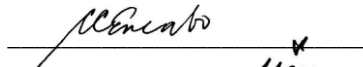Dr. Sulpecia L. Ponce
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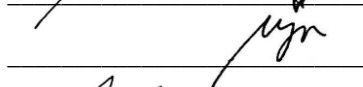Prof. Alquine Roy F. Taculin
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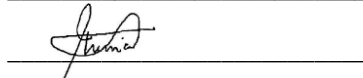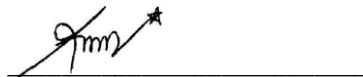Jivv Roy B. Manaloto   _____

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