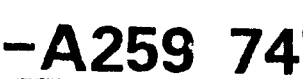

AFIT/GSM/LSY/92S-11

AN ASSESSMENT OF AFIT SYS200, "ACQUISITION PLANNING AND ANALYSIS," AS A BROADENING COURSE UNDER APDP

THESIS

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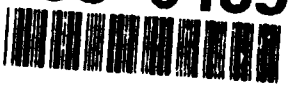

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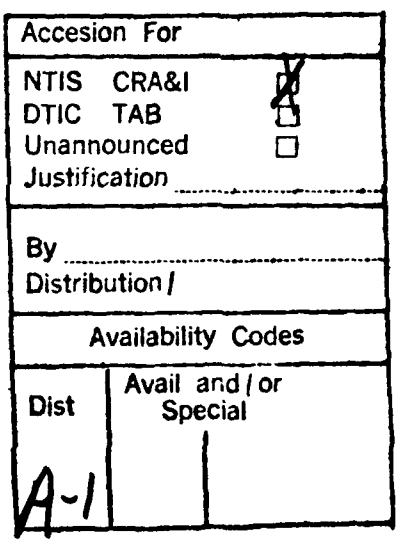

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THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Systems Management

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Daryl Hauck
Charlie Manship

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Abstract

This study assessed AFIT's SYS200 course, "Acquisition Planning and Analysis," to determine whether it serves adequately as a broadening course under the Acquisition Professional Development Program (APDP). APDP certification requires persons in eight acquisition functional disciplines (Acquisition Logistics, Communications/Computers, Financial Management, Systems R&D/Engineering, Manufacturing, Quality Assurance, Program Management, and Test & Evaluation) to complete SYS200, an intermediate-level overview of the acquisition process.

Three complementary measures (assessing knowledge, self-efficacy, and post-course job performance) were used to determine whether SYS200 conveyed its curriculum effectively to members of all functional disciplines. The results showed that SYS200 attendance produced substantial increases in acquisition-related knowledge, self-efficacy, and supervisor assessments for all functional disciplines. In all three measures, no significant differences in increases between functional disciplines were found. These results indicate that SYS200 is functioning well as a broadening course.

This study also identified three areas (Risk Management, Personal/ Leadership Skills, and Sustainment) which could enhance SYS200 course performance relative to APDP goals.

In addition, acquisition experience was found to be a negligible factor in predicting course performance. This supports the conclusion that the APDP certification requirement for completion of SYS200 should not be waived based solely on years of experience.

AN ASSESSMENT OF AFIT SYS200, "ACQUISITION PLANNING AND ANALYSIS," AS A BROADENING COURSE UNDER APDP

I. Introduction

Of all the continually changing disciplines in government and management today, perhaps none is more dynamic than the field of defense systems acquisition management. Spanning the boundaries of technology, finance, national security, and politics, acquisition management is arguably the most challenging management field known today. Recognition of these challenges has prompted several legal and policy initiatives in recent years. These wide-ranging initiatives have been designed (in part) to ensure that:

(1) people involved in acquisition management have adequate education and training to do their jobs properly, and

(2) people selected for senior acquisition management positions have both the requisite knowledge and acquisition-related experience.

In 1991, Congress passed Public Law 101-510, entitled the Defense Acquisition Workforce Improvement Act (DAWIA), which expanded the scope and definition of acquisition management. As a result, DAWIA greatly increased the number of DoD personnel who must have acquisition education in order to meet certification requirements.

The Air Force's Acquisition Professional Development Program (APDP) implements the training, education and certification requirements of DAWIA and corresponding DoD-level implementation guidance contained in DoD 5000.52M, *Career Development Program for Acquisition Personnel.*

General Issue

APDP certification requires persons in eight of the nine acquisition functional disciplines as defined by AFR 36-27 (Acquisition Logistics, Communications/Computers, Comptroller, Developmental Engineering, Manufacturing/Quality Assurance, Program Management, Science & Technology, and Test & Evaluation) to complete an intermediate level course in acquisition management. (Currently, the sole exception to this requirement is the Contracting functional discipline.)

The primary means of fulfilling this intermediate training requirement for APDP certification is completion of SYS200, "Acquisition Planning and Analysis," offered by the Air Force Institute of Technology, Wright-Patterson AFB, OH (AFR 36-27, 1990).

Specific Problem

SYS200, which was originally developed as an intermediate-level overview of the entire acquisition process targeted specifically for acquisition project managers, has not been evaluated to determine how well it is performing its expanded role as a broadening course for all APDP functional disciplines.

Research Question

Is SYS200 course (as currently described in the thirteenth edition of the syllabus) effective as an intermediate-level overview of the acquisition process for all functional disciplines which require it for APDP certification?

Research Objectives

(1) Identify and document the current course content.

(2) Measure the level of increase in attendees' acquisition-related knowledge (pretest/posttest).

(3) Measure the level of increase in attendees' self-efficacy regarding application of course knowledge and techniques in their work setting (pretest/posttest).

(4) Measure supervisor perception of increase in attendee knowledge, self-efficacy, and work performance three months after course attendance.

(5) Identify differences in measures that are attributable to functional discipline.

(6) Identify evidence of broadening for all functional disciplines.

Research Hypotheses

$H1_a$: Differences in competency test scores (course exams) can be attributed to functional discipline of attendees.

$H2_a$: Differences in self-efficacy scores can be attributed to functional discipline of attendees.

$H3_a$: Differences in supervisor assessments can be attributed to functional discipline of attendees.

Scope

This study does not attempt to revalidate APDP educational requirements, nor does it review the curriculum to define adequate functional discipline knowledge. Instead, it assesses the degree to which SYS200 is conveying its course content to its newly expanded audience under

APDP. In analyzing this major objective, other relationships of interest between measurements observed and student demographics are reported.

Summary

This research effort focuses on evaluating the effectiveness of SYS200 as a broadening course under APDP. The differences (or lack thereof) in course and related job performance measures between members of the various functional disciplines are used to gauge this effectiveness.

In the next section, acquisition professional development (and the roles of APDP and SYS200, specifically) will be explored in greater detail through a review of the pertinent literature.

II. Literature Review

Introduction

This literature review traces the evolution of the Acquisition Professional Development Program and summarizes secondary sources of information relevant to this research.

History of Acquisition Professional Development

The concept of acquisition professional development is an outgrowth of numerous trends within government and industry over the past forty years. This concept has evolved in recent years to become the dominant theme in the management of DoD acquisition personnel.

The primary factor which caused the creation and influenced the evolution of acquisition professional development was a multitude of defense acquisition program cost overruns, beginning as far back as the 1950's. These overruns led to widespread criticism of DoD management practices, including the lack of formal training and qualifications for acquisition personnel (Fox, 1988:42-43).

The need for training and education in professional skills and techniques is certainly not unique to defense acquisition. Dr. W. Edwards Deming, the noted expert on management and quality, has commented that

> It is not enough to have good people in your organization. They must be continually acquiring the new knowledge and the new skills that are required to deal with new materials and new methods of production. (Walton, 1986:84)

The first comprehensive DoD acquisition-related policy which addressed the need for increased levels of managerial training and

development was DoD Directive 5000.1, "Acquisition of Major Defense Systems," published by Deputy Secretary of Defense David Packard in May, 1970. In the memorandum which accompanied the directive, Secretary Packard commented that "successful development, production, and deployment of major defense systems are primarily dependent upon *competent people*, rational priorities, and clearly defined responsibilities" [*emphasis added*] (Fox, 1988:44-45).

Acquisition Management Professional Development Program (AMPDP)

In the early to mid-1980's, renewed allegations of exorbitant prices and flagrant waste put the defense acquisition community under intense public scrutiny. At the same time, many experienced acquisition personnel were enticed by higher-paying jobs in the then-expanding defense industrial sector. These factors led to recognition by senior DoD management of a requirement for a career development model for acquisition personnel similar to the "gates" for pilots and other rated flying personnel (Lohmeyer:21-22).

In 1985, General Lawrence Skantze, AFSC Commander, appointed the Acquisition Manager Career Development Task Force under then-Major General Ronald W. Yates. The task force's two objectives were to develop a structured career development model for acquisition managers, and to establish a formal certification process designed to be visible both to service members and the public alike. These two objectives formed the foundation for the Acquisition Management Professional Development Program (AMPDP), which was the first program of its kind in DoD (Lohmeyer:23).

Acquisition Reform Initiatives

The evolution of acquisition professional development has been influenced by several reform initiatives which have been established by policy or legislation.

In 1986, the President's Blue Ribbon Commission on Defense Management (commonly referred to as the Packard Commission after its chairman, former Deputy Secretary of Defense Packard) called for "dramatic improvements in our management of acquisition personnel at all levels within the Department of Defense" (Gansler, 1989:207). The Packard Commission recommendations were echoed in similar initiatives from both the legislative and executive branches.

The Goldwater-Nichols DoD Reorganization Act was passed later that same year. This law, in addition to strengthening the role of the Chairman of the Joint Chiefs of Staff and creating the Vice-Chairman position, also created the position of Under Secretary of Defense for Acquisition (USD/A), and realigned the Office of the Secretary of Defense (OSD) so that all acquisition-related functions reported to this individual instead of the Secretary of Defense or the Deputy Secretary of Defense. The law also directed the military services to functionally realign their headquarters to reflect acquisition management responsibilities (Gansler, 1989:137-138).

At the same time, Goldwater-Nichols sought to redefine the traditional concept of acquisition by expanding the number of functions associated with the acquisition process. While previously limited to "the management of research and development, procurement, contracting, and contract administration," the newly expanded definition included "logistics,

developmental testing, ...quality control, program management, systems engineering, production, and manufacturing" (Fox, 1988:118).

Defense Management Review

In 1989, Secretary of Defense Dick Cheney chartered the Defense Management Review (DMR) with explicit tasking to improve substantially the performance of the defense acquisition system. The DMR reflected the newly expanded definition of the acquisition process, noting that "approximately 580,000 civilian and military personnel in DoD spend all or a substantial part of their workday in the acquisition field" (DMR:12).

On the subject of acquisition professional development, the DMR was explicit:

> Current arrangements reflect a not altogether satisfactory compromise of two valid, but directly competing interests. On the one hand, it is undeniably desirable that those who manage the acquisition system be highly attuned, through personal experience in the operational world, to the needs of military users. On the other hand, if these needs are to be met in the successful development of major systems, it is increasingly imperative that acquisition managers possess a range of technical skills and a breadth of experience largely unavailable in operational assignments. It must be recognized that attainment by a military officer of equal competence for senior field grade and higher assignments in both the operational and acquisition arenas is increasingly difficult, and for many purposes impossible. New means must therefore be found to develop and retain the variety of necessary acquisition skills in the military, while at the same time ensuring that development of weapon systems reflects keen regard for operational realities. (DMR:14)

Current Developments

The most recent legislative initiative is the Defense Acquisition Workforce Improvement Act (DAWIA). DAWIA expands on the basic

concepts found in AMPDP, Goldwater-Nichols, and the DMR, especially in the numbers and functional disciplines of people affected. DAWIA also requires a separate acquisition management structure in each service.

In concert with DAWIA, DoD published DoD 5000.52M, entitled *Career Development Program for Acquisition Personnel* in November 1991. DoD 5000.52M provides for the specialized education and training requirements established by the DMR and DAWIA, as well as combining military and civilian acquisition education requirements into a single volume.

Acquisition Professional Development Program (APDP)

Just prior to the enactment of DAWIA, the Air Force revamped the existing AMPDP program to accommodate the DMR's expanded definition of acquisition and increased certification requirements. As a result, the current Acquisition Professional Development Program (APDP) was established by AFR 36-27 on 26 December 1990. (In order to be consistent with DAWIA and the new DoD 5000.52M, AFR 36-27 is already in the process of being revised, and there is currently interim policy guidance from SAF/AQ in effect).

The multi-faceted role of APDP is reflected in its intended purpose:

> To maximize the professional development and mission capability of the acquisition officer force by setting forth a definitive and viable professional development management plan that produces broad-based managers capable of assuming middle and senior management roles in support of acquisition. While differences may exist in precise routes established for or followed by the acquisition work force, there are minimum education, training, and experience requirements that are important for an individual's successful pursuit of senior responsibilities. APDP also underscores the importance of operational experience acquisition officers need to bring to the acquisition process. (AFR 36-27, 1990:7)

APDP incorporates all of the requirements from the earlier AMPDP, albeit in a slightly different format. There are still a number of levels of certification (four for AMPDP, three for APDP), spaced at roughly even intervals throughout a nominal 20-year career. In addition, the three-pronged approach of "education, training, and experience" as the basis for certification is essentially the same. The biggest difference lies in the fact that AMPDP was mandatory for program managers only, whereas APDP covers the entire spectrum of acquisition activities (AFR 36-27, 1990:6).

There are minor differences between DAWIA, DoD 5000.52M, AFR 36-27, and AFR 40-110 (for Air Force civilian acquisition managers) definitions of the acquisition functional disciplines. Table 1 summarizes the categories used in the various documents.

Table 1. A Comparison of Definitions of Acquisition Functional Disciplines

DAWIA	DoD 5000.52M	AFR 36-27	AFR 40-110
Program Mgmt	Program Mgmt	Program Mgmt	Program Mgmt
Acq Logistics	Acq Logistics	Acq Logistics	Acq Logistics
Systems Planning, R&D, Engineering, and Test	Science and Engineering	Science & Tech	Scientist and Engineer
Procurement	Procurement	Dev Engineering	Contracting and Manufacturing
Quality Assurance	Mfg/Production	Test & Evaluation	Quality Assurance
Business/Fin Mgmt	Quality Assurance	Contracting	Comptroller
Property Mgmt	Business/Fin Mgmt	Mfg/Quality	Comm/Computers
Cost Est/Auditing	Property Mgmt	Comptroller	
Education/Training	Purchasing	Comm/Computers	
Construction			

Despite the variations in categorization, the levels of guidance are fairly consistent. This is because APDP was established while DAWIA was already under consideration by Congress (Gardner, 1992). The current interim policy guidance from SAF/AQ more closely reflects the Congressional and DoD-level

definitions; the changes to AFR 36-27 consist primarily of combining Science & Technology with Engineering, and separating Manufacturing from Quality Assurance (SAF/AQ letter, 1992).

SYS200 Course Syllabus

APDP certification requirements caused changes in the target audience for SYS200. Whereas the focus of the course had been to provide an intermediate-level overview of the entire acquisition process for acquisition project managers, the emphasis shifted to providing a similar overview of the acquisition process to members of all functional disciplines (Hill, 1991).

The course content is reflected in the SYS200 syllabus of instruction, which contains four main parts: course objectives, a course description, evaluation criteria, and administrative information. The information below is quoted from the course syllabus (which can be found in its entirety at Appendix A).

Course Objectives

The purpose of the course is "to prepare acquisition functionals for management level task accomplishment in systems acquisition."

The specific objectives of the course are for each student to:

a) Understand the individual management processes involved in systems acquisition;

b) Understand the concept of an integrated team approach to acquisition; and

c) Develop / Refine skills in planning, analyzing, executing, and controlling acquisition projects.

Course Description

SYS200 is organized according to three main subject areas: planning the program, achieving program objectives, and controlling the program. Twenty-one individual lesson blocks are split among the three subject areas as shown in Table 2.

Table 2. Time Allocation of SYS200 Lesson Blocks

(1) Planning the program:

The Acquisition Process	5.5 hrs
Program Management	2.0 hrs
Acquisition Planning	6.0 hrs
Financial Management	7.0 hrs
Work Breakdown Structure	3.0 hrs
Scheduling	4.0 hrs
Integrative Planning Exercise	13.5 hrs

(2) Achieving program objectives:

Systems Engineering	4.0 hrs
Configuration Management	2.0 hrs
Software Management	2.0 hrs
Test and Evaluation	2.0 hrs
Acquisition Logistics	4.0 hrs
Tech Package Reqts Formulation	6.0 hrs
Contracting	2.0 hrs
Dealing with Contractors	2.0 hrs
Facilities Acquisition Management	1.5 hrs
Manufacturing Management	2.0 hrs

(3) Controlling the program:

Program Control	1.0 hrs
Cost Estimating	5.5 hrs
Performance Measurement	7.0 hrs

[At least one of these lesson blocks is directly applicable to every functional discipline identified in the Acquisition Professional Development

Program. Together, the lessons combine to cover the entire acquisition process.]

Evaluation Criteria

SYS200 student evaluation criteria and grade weights are summarized in Table 3.

Table 3. SYS200 Evaluation Criteria

Evaluation Area	% of Grade
Pretest	N/A
Quiz #1	20
Quiz #2	20
Quiz #3	20
Integrative Exercise	15
Other Exercises	25

[Because the integrative exercise and other exercises were completed as group efforts, and because these teams were not organized by functional discipline, scores on these exercises were not considered in this research.]

Department of Defense Program Management Body of Knowledge (DBOK)

In addition to cross-referencing SYS200 objectives with APDP requirements, SYS200 course content can be compared to the Department of Defense Program Management Body of Knowledge (DBOK) recently proposed by Kobylarz in 1991.

Kobylarz proposed a defense-specific project management body of knowledge intended to be "sufficiently comprehensive to include those project managerial practices which every professional [acquisition] project manager

must know and understand in order to perform effectively" (Kobylarz, 1991:275).

At the highest level, the proposed DBOK contains the following areas:

Software Management
Cost Management
Contract Management
Management Techniques
Defense Program Management
Systems Engineering
Strategy and Planning
Risk Management
Leadership/Personal Skills
Logistics Management
Manufacturing Management
Quality Management
Test and Evaluation

In a qualitative comparison of the second level of detail in the proposed DBOK to the SYS200 individual lesson objectives, there is consistent agreement in almost all areas. Of the thirteen areas identified, the only areas which are not covered in depth by the SYS200 course curriculum are Leadership/Personal Skills and Risk Management. The fact that this agreement exists reflects favorably on the use of SYS200 as a cross-functional broadening course.

Summary

This review has summarized the developments which led to the concept of acquisition professional development, culminating in the establishment of APDP. APDP and other certification requirements led to changes in the target audience and focus of SYS200, as reflected in the

course syllabus. These changes are consistent with current attempts to define acquisition educational objectives.

The next section describes the methodology used to assess the course's effectiveness in providing a broad acquisition perspective to all functional disciplines.

III. Methodology

Introduction

This section discusses research design and describes an explicit methodology for each measure of course effectiveness. Literature pertaining to the methodology is also reviewed.

Research Design

According to Emory and Cooper, the most widely accepted classes of experimental designs are: 1) pre-experimental, 2) true experimental, and 3) quasi-experimental. True experiments are the strongest and typically use equivalent control groups, some form of randomized assignment to groups, and both pretests and posttests to control for threats to internal validity. Quasi-experiments are the next strongest and are typically used when equivalent group design is not possible. Pre-experiments are the weakest of the three and are used in the absence of pretests and/or control groups (Emory and Cooper, 1991:428).

Designs should be fitted to the research problem and environment rather than the other way around. Practical considerations in this study limited the ability to establish equivalent control groups, to select the test group at random, and to use a pretest in one measure. These limitations are discussed further in the section on internal validity.

This study used the following modified pre-experimental design:

O	X	O	Knowledge Test Measure
O	X	O	Self-Efficacy Measure
	X	O	Supervisor Assessment Measure

In this symbology, X represents the treatment (course attendance), and

O represents the observation or data collection (either a pretest or posttest depending in its position relative to course attendance).

Choice of Measures

Measurements which cannot be made directly must rely on observations of some indirect indicator of the variable of interest. For example, while a physicist may accurately measure attributes such as volume, velocity, or amounts of energy, the psychologist is interested in measuring aptitudes, interests and/or achievement. In education, the estimate of achievement can only be observed by measuring its effects (Jones, 1971:337).

Because evaluation of educational effectiveness is by nature an indirect measure, there is room for interpretation and disagreement as to whether these indirect indicators accurately reflect the true measure being sought. In situations such as these, correlation of complementary measures lends strength to inferences being made. For example, in Streitmater's study of Total Quality Management (TQM) training, knowledge test scores and self-efficacy scores were used together to provide a more thorough measure of course effectiveness (Streitmater,1991).

Self-efficacy refers to an individual's belief in his or her capability to perform a specific task (Gist, 1987:472). Accordingly, self-efficacy gauges the amount of knowledge an individual can actually apply in subsequent job performance, and serves as an appropriate measure of course effectiveness.

In addition to knowledge and self-efficacy measures similar to those used by Streitmater, this study surveyed the supervisors of SYS200 attendees to compare their assessments of changes in attendees' acquisition

knowledge, job-related confidence, and job performance. Correlation of the results of the three measures was used to provide a stronger indication of the true measure of course effectiveness.

Construct Validity

The construct in this study is that increases in acquisition-related knowledge, self-efficacy, and subsequent job performance are indicators of SYS200 course effectiveness, and that equivalent increases across functional disciplines indicate effectiveness in a broadening role.

Construct validity refers to the meaningfulness of assessing abstract characteristics with empirical measures. This is a function of the theory involved and the measuring instruments used. Construct validity is "evaluated" rather than "measured" as it is not directly observable (Emory and Cooper, 1991:182). Construct validity may be established "by showing that different measures of the same construct are highly correlated" (Gist and Mitchell, 1992:183).

There is evidence to support the assertion that educational effectiveness and job performance are closely linked. Gregory and Rao cite several studies of both the public and private sectors (including research conducted by the Hudson Institute and the Rand Corporation, among others) which have identified poor training as a major cause of poor performance (Gregory and Rao, 1990:477).

Support also exists for the use of self-efficacy measures as indicators of ability and performance. For example, "Bandura has found that self-efficacy

is strongly related to actual (future) task performance" (Locke *et al.*, 1984:242). Gist also cites seven studies that have reported significant correlations between self-efficacy and subsequent task performance (Gist, 1987:474).

These findings suggest that knowledge, self-efficacy, and actual job performance are closely related and are complementary in their ability to provide a measure of SYS200 effectiveness.

The aspect of the construct which assesses broadening is based on the premise that the SYS200 curriculum does address the entire spectrum of acquisition functional disciplines, as discussed in Chapter II. In evaluating the broadening aspect, an equivalent increase in measures across functional disciplines would not by itself indicate that the course is broadening -- only that each group is learning the course material in an equivalent fashion.

Instead, the research should demonstrate that each functional discipline group learns more about other aspects of acquisition (those more closely associated with the other functional disciplines) than about those with which it is already familiar. Of course, each group might be expected to perform better than the others on material specific to its own area. If the course is effectively broadening, however, each group will be exposed to equivalent levels of both familiar and new material. In this case, equivalent group performance would be expected.

If the course were not effectively broadening, lower overall performance by a functional discipline group would indicate that material they know well is absent from the course and that they are facing new material to a greater degree than the other groups. Conversely, higher

overall performance by a functional discipline group would indicate that they are facing less new material than the other groups.

To gain further support for this construct, an investigation was conducted which compared functional discipline group performance on each lesson block. The analysis compared the functional disciplines' mean differences between pretest and posttest scores on the self-efficacy measure, with the lowest group mean difference indicating that all the other functional disciplines showed a higher increase on that particular lesson block. This analysis was performed for each lesson block that could be considered most relevant to a single functional discipline. The results are shown in Table 4 and demonstrate further support for the construct used in this study.

Table 4. Support For Broadening Construct

Lesson Block	Functional Discipline Achieving Lowest Mean Increase
Financial Management	Financial Management
Configuration Management	S&T/Engineering
Test & Evaluation	Test & Evaluation
Acquisition Logistics	Acquisition Logistics
Contracting	Contracting
Manufacturing Management	Manufacturing/QA
Cost Estimating	Financial Management

The only two functional disciplines that did not show the lowest increase on any single lesson block were the Program Management and Communications/Computer groups. This does not erode support for the construct; rather, it indicates that these two disciplines tend to "span" different functions, and no single lesson block can be considered most relevant to these two disciplines.

The other two measures did not provide similar opportunities to break out results by lesson block to further assess the construct.

Internal Validity

Internal validity refers to the extent to which the study measures what it was intended to measure and that the study results have meaning (Emory and Cooper, 1991:180). Ebel provides essentially the same definition as "intrinsic validity" which "involves the use of experimental techniques other than correlation with a criterion to provide objective, quantitative evidence that the test is measuring what it ought to measure" (Ebel, 1972:437). Internal validity can also be considered a function of design, measurement reliability, measurement content validity, and construct validity (Shane, 1991).

Because the pre-experimental design used is not very strong, a number of effects may have been present, potentially threatening internal validity. Examples of these effects are maturation, testing, instrumentation, selection, and experiment mortality (Emory and Cooper, 1991:425).

Each measure used in this study had different strengths and weaknesses in the face of these effects. Complementary use of multiple measures in this study helped to defend against these effects, thus mitigating the inherent weakness of the design.

Maturation Effects

Maturation refers to changes taking place "within the subject which are a function of the passage of time and are not specific to any particular event" (Emory and Cooper, 1991:425).

Because the time horizon of each SYS200 course was short (three weeks), maturation was discounted as a confound for the results of the knowledge test and self-efficacy measures. The supervisor assessment, however, could have been affected since the time horizon was longer (three months between course completion and administration of supervisor survey). However, the mean of course attendees' acquisition-related experience was found to be 6.9 years, so three additional months of "maturation" would appear to be negligible.

If the mean experience level differed by functional discipline, then maturation effects might also have inappropriately influenced study findings. An analysis of variance (ANOVA) of Experience versus Functional Discipline showed that the null hypothesis of "no difference" would only be rejected at the 44% confidence level. This supports a conclusion that there was no statistical difference in experience level across the functional discipline groups. (This ANOVA and the effects of experience on study findings are discussed in further detail under Assessment of Methodology.)

Use of the three complementary measures (two of which were not susceptible to maturation effects) also helped to minimize maturation effects on study findings.

Testing Effects

Testing effects refer to the fact that "the mere experience of taking the first test can have a learning effect that influences the results on the second test" (Emory and Cooper, 1991:425). This threat applies to the knowledge test and self-efficacy measures. This effect could be mitigated through the

use of control groups; however, practical considerations outweighed the use of a control group for these measures.

The knowledge test measure actually consisted of evaluating performance on a comprehensive pretest and three quizzes staggered through the course. To completely control for testing effects would have required three control groups in addition to the test group. This would have drastically reduced the sample size for testing purposes (137 students across nine functional areas further divided into four groups would leave about four students per group), substantially reducing statistical power of the statistical tests being used. Moreover, all students had to take the quizzes in order to pass the course, making the use of control groups infeasible.

A similar sample size problem would exist for the self-efficacy measure (109 responses across nine functional groups divided into two groups leaves six students per group).

It is reasonable to assume that testing effects would be equivalent across all functional discipline groups. Testing effects make it difficult to detect the absolute magnitude of changes between pretests and posttests that may be attributed to the treatment (attending the course). Since the main thrust of the research was to assess broadening, determining if this change occurs equitably across all functional disciplines took precedence over determining the absolute magnitude of change.

Instrumentation Effects

Instrumentation effects refer to reductions in internal validity that result from changes in the testing environment, changes to the measuring instrument, or changing the observer(s) (Emory and Cooper, 1991:425).

The fact that every supervisor assessment in this study was performed by a different observer is an example of this type of threat. The only control in this case was to assume that extreme differences in "hard" versus "soft" raters balance out. Helmstadter states:

> This type of error [rater bias] need be of no great concern to the careful user of rating scales. Appropriately motivated raters can be helped to overcome such specific biases, and, since they are different for each rater, they tend to cancel out when separately obtained individual ratings are pooled (Helmstadter, 1964:191).

While ratings were pooled in this study, there were not enough ratings in each pool (functional discipline) due to the limited time duration. Rater bias remains a potential threat to the validity of the supervisor survey measure.

Since the self-efficacy measure was "self-reported," it too was subject to similar rater bias in that attendees were rating themselves. In addition, strengths associated with the scale terms used may have different meanings for different individuals. The pools were larger for this measure, but were substantially unbalanced across functional disciplines and still too small in some functional disciplines to conclude that biases would cancel out.

The knowledge test measure was not subject to rater bias. Correlation of the other two measures with the knowledge measure helped to mitigate the threat of rater bias to the validity of the research results.

Other instrumentation effects may also have been present. For example, a change in knowledge test questions would represent such an effect. For the first class measured, the course instructor decided to "throw out" two ambiguous questions on one of the quizzes. Some scores were adjusted by as much as eight points (on a 100 point scale). This caused a significant impact, as an ANOVA of the Knowledge Posttest Score (quiz

average) by Class showed a statistically significant difference between classes at the 99.4% confidence level.

This threat was mitigated in several ways. First, this adjustment occurred for the first group under observation. Subsequently, these questions were reworded for the other classes so that they had a fairer chance of answering correctly (in other words, their scores were also adjusted implicitly). Another mitigating factor was that the adjustment applied to a single quiz; when averaged with the other two quizzes, the greatest impact the adjustment could have had is 2.6 points on the posttest score. Correlation of results with the other two measures (where no adjustment took place) also helped to minimize this potential threat.

Selection Effects

"One of the more important threats to internal validity is the differential selection of subjects to be included in experimental and control groups" (Emory and Cooper, 1991:425).

Control groups were not selected for practical reasons as previously discussed. Moreover, random selection of the class attendees could not occur as they were selected by the existing Air Force education and training assignment process (as defined in AFR 50-5).

There were other problems as well. Partitioning the attendees would have created insufficient sample sizes. Pseudo-randomly assigning an equivalent control group would have required determining the demographics of the test group, then randomly sampling that portion of the acquisition workforce who had not attended the course until the makeup of the group reflected that of the test group. Both of these approaches were infeasible.

These considerations resulted in the pre-experimental design being used. However, as stated previously, this research relied on the use of multiple complementary measures to strengthen findings.

Experiment Mortality

"Experiment mortality occurs when composition of the study groups changes during the test" (Emory and Cooper, 1991:426). This study would also have experienced a similar effect on validity if the course content changed during this research effort.

Some minor changes did occur during the research. If a student dropped out during the course, observations from all measures attributable to that student were dropped. The course content was not changed appreciably during the study, but some lessons were presented by different instructors for some classes. In addition, as previously discussed, there were some changes made to the knowledge test between classes. In the aggregate, however, the course content and associated measures remained essentially the same. Therefore, experiment mortality was not considered to be a significant threat.

Reliability of Measures

Emory defines a measure as reliable "to the extent to which it supplies consistent results." There are three characteristics of reliability: stability, equivalence, and internal consistency (Emory and Cooper, 1991:185).

Stability refers to consistent results between repeated measures of the same person. This study did not repeat measures on individuals, so this characteristic of reliability was not evaluated.

Equivalence refers to consistency between raters. This characteristic applied to the supervisor assessment and self-efficacy measures and could not be measured as previously discussed.

Internal consistency as a measure of reliability is used when the instrument is used only once on each test subject. It was possible to measure internal consistency for two of the three measures as further discussed below.

Internal Consistency of Knowledge Tests

Internal consistency of the knowledge tests was evaluated using the Norm-Referenced Differentiation Index which measures "how well the high scorers on the entire test did on an item compared to how well the low scorers on the entire test did on [that] item" (AFM 50-62, 1984:25-9) .

This index also evaluates a test's ability to detect differences among students. This index is the ratio (H-L)/(N/3); where H equals the number of students in the high 1/3 group who answered the item correctly, L equals the number of students in the low 1/3 group who answered the item correctly, N equals the total number of students who took the test, and 3 equals the number of rank order groups (AFM 50-62, 1984:25-10). The average Differentiation Indices for the knowledge tests are presented in Table 5.

The "Handbook for Air Force Instructors" suggests the following Differentiation Index assessment criteria (AFM 50-62, 1984:25-10):

Unacceptable:	-1.00 to 0.00
Marginally Acceptable:	0.00 to 0.25
Probably Acceptable:	0.25 to 1.00

Table 5. Average Differentiation Indices For Knowledge Tests

January Pretest	.24
January Quiz #1	.21
January Quiz #2	.20
January Quiz #3	.20
March Pretest	.25
March Quiz #1	.20
March Quiz #2	.22
March Quiz #3	.22
April Pretest	.25
April Quiz #1	.21
April Quiz #2	.19
April Quiz #3	.20

Results of this analysis suggest that none of the knowledge tests were unacceptable in internal consistency and their ability to detect differences among students.

Internal Consistency of Self-Efficacy Measure

Cronbach's Coefficient Alpha was used to assess internal consistency of the self-efficacy measure. This coefficient estimates how well scores obtained by testing under a single condition represent absolute scores. This coefficient is a ratio of the variance component for persons to the sum of the variance components for persons and residuals, which results in variance due to condition effects being factored out. In essence, this is a ratio of "signal" to "signal-plus-noise" (Cronbach, 1970:156-161).

Internal consistency for the self-efficacy measure was evaluated for each of the 19 lessons contained in the course syllabus. Results of this analysis are shown in Table 6.

Table 6. Self-Efficacy Measure Reliability by Lesson Block
(Cronbach's Alpha)

Lesson Block	Pretest	Posttest
The Acquisition Process	.848	.910
Program Management	.886	.894
Acquisition Planning	.916	.903
Financial Management	.862	.871
Work Breakdown Structure	.931	.920
Scheduling	.906	.879
Systems Engineering	.863	.882
Configuration Management	.879	.837
Software Acquisition Mgt	.913	.897
Test & Evaluation	.883	.795
Acquisition Logistics	.900	.945
Tech Package/Reqts Formulation	.914	.869
Contracting	.881	.848
Dealing with Contractors	.887	.836
Facilities Acquisition Mgt	.890	.907
Manufacturing Management	.854	.888
Program Control	.713	.760
Cost Estimating	.820	.914
Performance Measurement	.873	.900

Steel suggests the following evaluation criteria (Class notes, 1992):

Alpha greater than .9 - Excellent
Alpha between .8 and .9 - Good
Alpha between .7 and .8 - Fair
Alpha less than .7 - Poor

These results indicate good to excellent internal consistency for the self-efficacy measure.

Internal Consistency of Supervisor Survey

It was not possible to evaluate the internal consistency of the supervisor assessment survey as it contained only six questions, with only a

single question to evaluate each factor. This measure is therefore considered to be the least reliable of the three.

Content Validity of Measures

"Content validity is concerned with the adequacy of sampling of a specified universe of content" (Ebel, 1972:437). Measures are valid in content to the extent that they provide adequate coverage of the topic under study (Emory and Cooper, 1991:180). The term "adequate coverage" implies elements of both depth and breadth. For example, the number of questions relating to a specific block of instruction should be allocated consistent with the time spent covering each lesson block. Additionally, the questions should adequately reflect the lesson objective and the depth of the material covered without being consistently "too easy" or "too hard."

For the self-efficacy measure, the number of questions allocated to each lesson block was determined by the following process:

1) For reliability purposes, each lesson block was allocated at least two questions, and

2) For proportional coverage, one question was added for each hour of instruction in the lesson block.

In most cases, the wording of the tasks to be rated were taken directly from the lesson objectives described in the syllabus. This measure is therefore content valid to the extent that the course instruction was consistent with the syllabus.

For the knowledge test, the number and scope of the questions was determined by the SYS200 faculty, using similar objectives of "adequate coverage" (Hill, 1991).

External Validity

In contrast to internal validity, external validity refers to the extent to which the results of research can be generalized to broader groups, different settings, or across time. Internal validity is a necessary but not sufficient condition for external validity, so internal validity must take precedence (Emory and Cooper, 1991:427-8).

The primary requirement for external validity in this study was the ability to generalize the results to the population of all students who will have completed this version of SYS200 (thirteenth edition of the syllabus). This ability was assessed in terms of sample composition and size.

Sample Composition

In order to assess the degree to which the knowledge measure sample composition was representative of the population of acquisition personnel who require SYS200 for APDP certification, the sample percentages by functional discipline was compared to the corresponding population percentages. Data for the population were taken from AFMC/DPU requirements for APDP certification (Glover, 1992). Results from this comparison are shown in Figure 1.

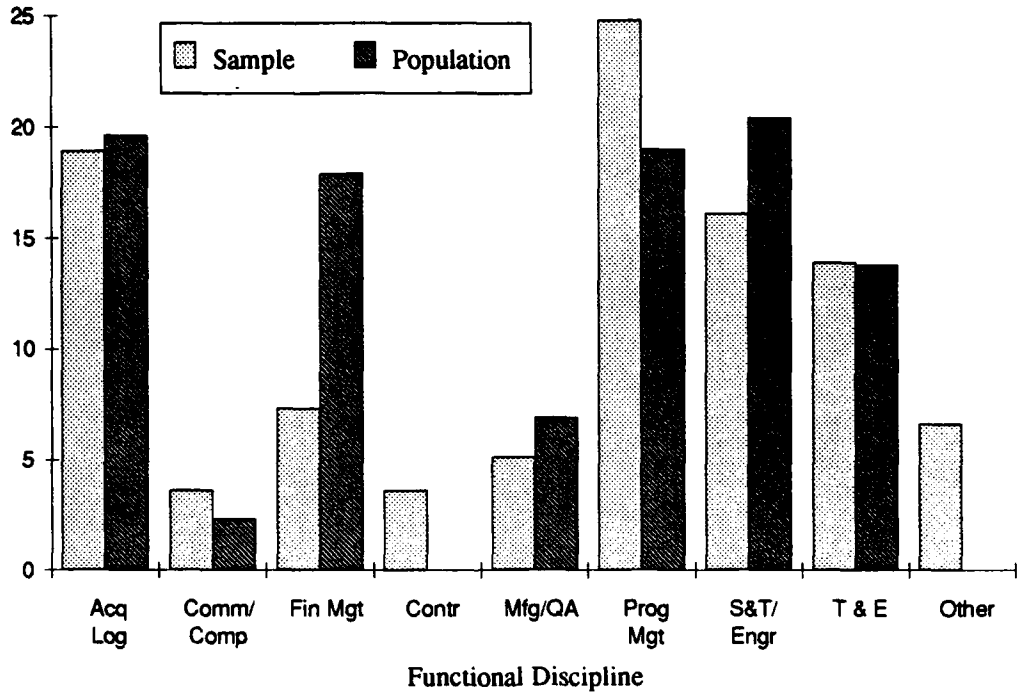


Figure 1. Comparison of SYS200 Sample and Population by Functional Discipline Percentage

The only notable discrepancies are in the Financial Management (Comptroller) and Contracting functional disciplines. The discrepancy in the Contracting Functional Discipline is easily explained as SYS200 is only a "desired" (*i.e.*, not required) course for certification. For Financial Management, SYS200 is not required until Level III certification (which could imply that the majority of potential attendees in that functional discipline, being relatively new to APDP participation, have not yet reached that certification level and, hence, have not attended SYS200); however, this is also true for most of the other functional disciplines as well. Overall, the sample is generally representative of the population.

Sample Size

In the time allotted for this study, SYS200 generated a sample size of 137 students for the knowledge test, 109 for the self-efficacy measure and 34 supervisor assessments. These students were distributed in an unbalanced fashion over nine functional disciplines, further reducing the effective sample size.

The main effect of this small sample size on the analysis is that estimates of group (functional discipline) sample variances tend to be high which masks the ability for the ANOVA technique used to detect small group differences that could be present. Because of this small sample size, care must be exercised in generalizing conclusions to a larger group. (The procedures implemented in this study have been documented for future investigators to continue the analysis with larger sample sizes.)

Knowledge Test Measure Methodology

Population Under Study

For this measure, the population consists of those persons who have attended or will attend the current version of SYS200. The parameters of interest are the population mean score on a defense acquisition knowledge pretest and the population mean of an average of three SYS200 course quizzes (posttests administered on the completion of each week of the course). These population means cannot be observed directly and are therefore estimated by the mean of the sample consisting of those persons attending the course offerings observed in this study.

Restatement of Hypotheses

Scores from this measure were tested for the possibility that the treatment (SYS200) does not equivalently affect persons from different functional disciplines.

The relevant test hypotheses are:

H_0: $\mu_1 = \mu_2 = ... = \mu_9$ (*i.e.*, one population)

H_a: At least one μ_i is different

where μ_i is the estimated population mean score of each functional discipline.

Development of Measure

The existing knowledge pretest and three course quizzes developed by the AFIT SYS200 faculty were used.

Data Collection

There were four SYS200 course offerings during this research effort:

Class 1: 27 January - 14 February 1992;
Class 2: 2 March - 20 March 1992;
Class 3: 4 May - 22 May 1992; and
Class 4: 8 June - 26 June 1992.

The tests were administered by AFIT faculty in a classroom environment, with students placing responses on coded answer sheets for scoring by computer. A different pretest was administered to Class 4; therefore, no knowledge test data from Class 4 was included in the analysis.

Description of Sample

Because the knowledge measure was mandatory for attendees, it provided the largest sample. Out of a possible 150 attendees, pretest scores were available for 123 attendees, and posttest scores were available for 137.

Consequently, analysis was limited to a sample size of 123. Histograms by functional discipline and experience are shown in Figure 2 and Figure 3.

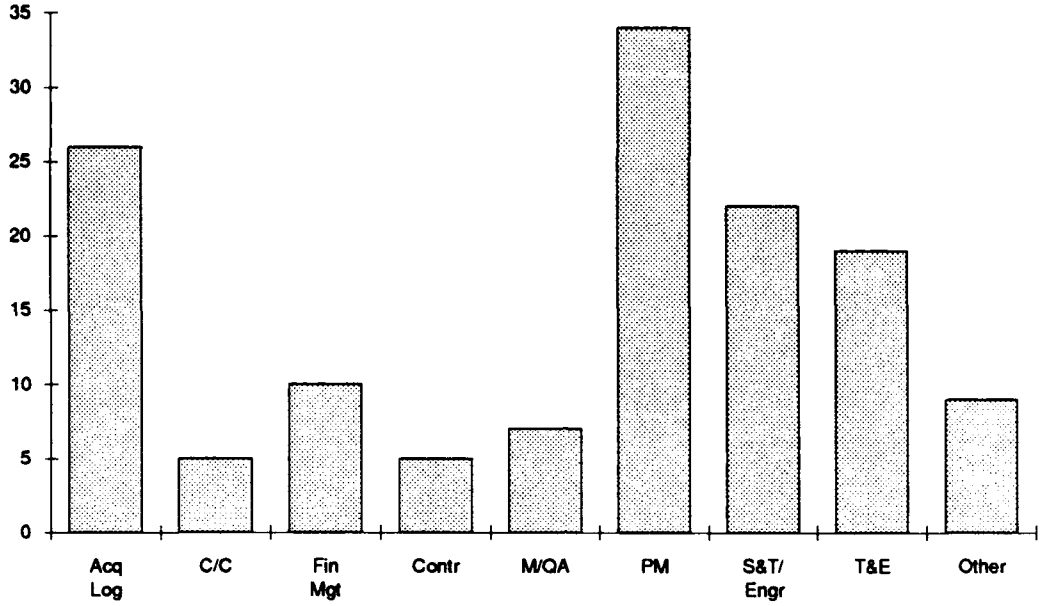


Figure 2. Histogram of Knowledge Test Sample by Functional Discipline

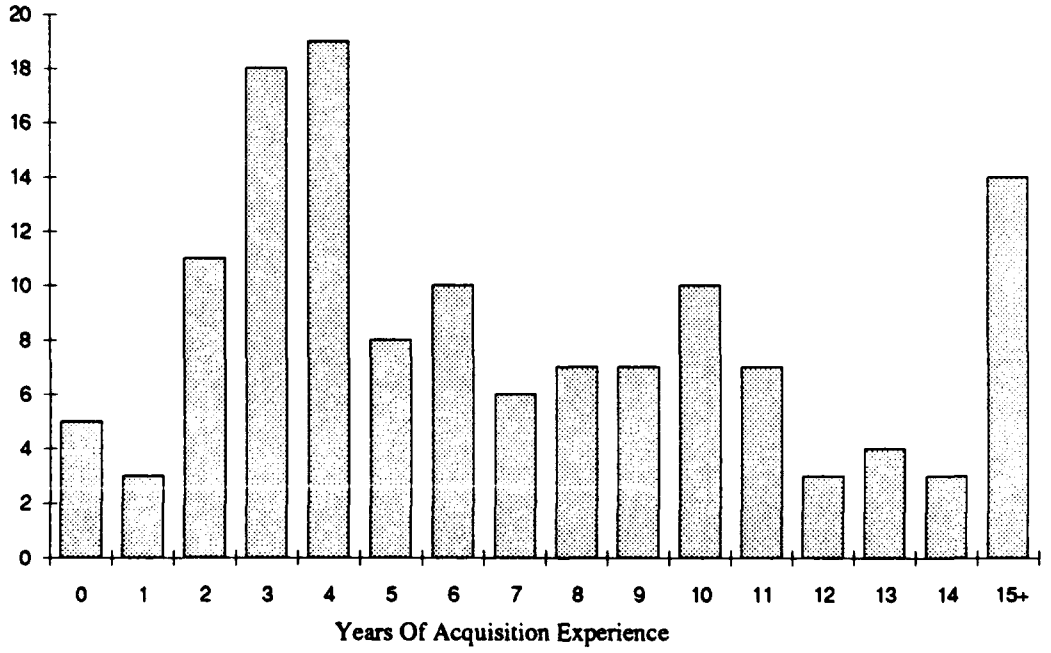


Figure 3. Histogram of Knowledge Test Sample by Years of Acquisition Experience

Data Analysis

Testing of the null hypothesis was performed using a nonparametric analysis of variance technique. This test was performed three times: once on the pretest scores; once on the quiz average (posttest) scores; and once on the difference (quiz average minus pretest scores). The results are presented in Chapter IV.

Analysis of Variance (ANOVA)

Analysis of variance tests the hypothesis that the mean of the dependent variable (in this case, knowledge test score) is the same for each level of the factor in question (in this case, functional discipline) (SAS, 1985:114). This is accomplished by comparing the estimated across-factor variance (estimated variance of test scores across functional discipline) to estimated within-factor variance (test score variance within each functional discipline). If the null hypothesis were known to be true, these two variances would be close to each other and the ratio of these two variances (F-statistic) would be close to one (Devore, 1991:375). The greater this ratio becomes, the stronger the evidence points to rejecting the null hypothesis and concluding that at least one mean was different from the others.

This parametric ANOVA method requires that the the treatment distributions are all normal with the same variance (Devore, 1991:374). These assumptions could not be verified for two of the smaller functional discipline samples; consequently, the use of a "distribution-free" or nonparametric ANOVA technique was required.

NonParametric ANOVA

Nonparametric ANOVAs test hypotheses without making assumptions about the underlying distributions of the data. "Most nonparametric methods are based on taking the ranks of a variable and analyzing these ranks instead of the original values" (SAS:19). In practice, this implies no longer estimating the population mean with a sampling mean, but instead comparing a sampling statistic of rank to the expected value of this sampling statistic, assuming the null hypothesis was true (Devore, 1991:623).

The Kruskal-Wallis nonparametric ANOVA subroutine in the STATISTIX software package was used to perform these tests.

Self-Efficacy Measure Methodology

Population Under Study

For this measure, the population consists of those persons who have attended or will attend the current version of SYS200. The parameter of interest is the theoretical population mean rank of self-efficacy survey scores.

Restatement of Hypotheses

As with the knowledge measure, the results from this measure were tested for the possibility that the treatment (SYS200) does not equivalently affect persons from different functional disciplines.

The relevant test hypotheses are:

H_0: $\mu_1 = \mu_2 = ... = \mu_9$ (*i.e.*, one population)

H_a: At least one μ_i is different

where μ_i is the theoretical population mean rank of survey scores for each functional discipline.

Development of Measure

In meeting the research objective of assessing the effectiveness of SYS200 as a broadening course, the variable of interest for this measure was the students' perceived ability to apply the knowledge gained from the course to various acquisition-related activities in their normal duty assignments.

Instrument Design

The instrument developed for this measure was a questionnaire designed to assess self-efficacy in each of the acquisition management functions addressed in the SYS200 course syllabus. The questionnaire asked students to rate their own abilities to accomplish specific tasks pertaining to the nineteen acquisition functions covered in the SYS200 lesson blocks.

One of the obstacles encountered in actually writing the questionnaire was balancing the requirements for comprehensive content and reasonable length. In general, the number of specific tasks rated for each acquisition function was determined by the relative length and number of major objectives of each lesson block in the syllabus, while the total number of questions was kept as low as possible to avoid "survey fatigue."

In drafting the questions, the tasks to be rated were taken directly from the lesson objectives described in the syllabus. The actual number of questions per lesson block is shown in Table 7.

Table 7. Question Allocation per Lesson Block

	Lesson Block	Number of Questions
1	The Acquisition Process	7
2	Program Management	3
3	Acquisition Planning	5
4	Financial Management	7
5	Work Breakdown Structure	5
6	Scheduling	5
7	Systems Engineering	5
8	Configuration Management	3
9	Software Management	4
10	Test and Evaluation	3
11	Acquisition Logistics	5
12	Tech Package Requirements Formulation	7
13	Contracting	4
14	Dealing with Contractors	4
15	Facilities Acquisition Management	3
16	Manufacturing Management	3
17	Program Control	2
18	Cost Estimating	5
19	Performance Measurement	4
	Total	84

In addition, nine questions pertaining to APDP were included to assess some of the "broadening" aspects of acquisition not directly covered by SYS200 (such as knowledge of roles and responsibilities of other functional disciplines), and six more were added to assess perceptions of the APDP certification process. Student perceptions of the certification process are indirectly tied to the research objectives since they may indicate differences in group perceptions of applicability of the certification process to their functional discipline. Finally, two demographic questions to identify students by functional discipline and years of experience were added, for a total of 101 questions.

The questions pertaining to each lesson block were grouped in order to minimize shifts in subject matter and frame of reference (Emory and Cooper, 1991:372), and the resulting groups were arranged in random order on the pretest survey. To further control for possible testing effects, the question groups on the posttest were placed in reverse order from the pretest arrangement (Babbitt and Nystrom, 1989:95).

Scaling

A five-point Likert scale was used to rate the levels of self-efficacy. The questions were phrased so as to state ability to accomplish various acquisition-related tasks and/or to apply certain acquisition knowledge in a given setting. The students were then asked to assess their agreement with the statements, using the scale as described below:

a. "Do not agree" indicating the lowest level of efficacy,
b. "Agree slightly" indicating the next level,
c. "Agree moderately" indicating the next level,
d. "Agree considerably" indicating the next level, and
e. "Agree completely" indicating the highest level of efficacy.

The first consideration in selection of this particular scale concerned the use of a unipolar scale (as opposed to a bipolar scale in which levels of agreement and disagreement lie on opposite ends, with a neutral midpoint). Efficacy, defined as the ability to accomplish a certain task, can be thought of as complete (maximum efficacy), present in some degree (moderate efficacy), or totally lacking (zero efficacy). Because there is no such thing as "negative efficacy," a unipolar scale was more appropriate for this questionnaire.

The second consideration in scale selection was the choice of modifiers to designate points on the continuum of agreement. The modifying adverbs chosen (Slightly, Moderately, and Considerably) were found to represent the

three points between "none" and "completely" which most closely approximate equal semantic intervals (Babbitt and Nystrom, 1989:142).

Instrument Refinement

For screening purposes, the questionnaire was administered to thirty AFIT graduate students familiar with the SYS200 course material. In addition to identifying eleven potentially problematic questions, their comments regarding clarity, content validity, and ease of administration were invaluable in refining the survey instrument.

Based on the results of the screening, the estimated time for completion of the questionnaire was found to be reasonable (approximately twenty to twenty-five minutes), although the screeners' consensus was that the length of the questionnaire (ten pages) was somewhat imposing. However, part of the required length was actually due to repeating the scale responses at the top of each page, which received favorable comments.

Data Collection

Because of time limitations for survey administration in the SYS200 class schedule, the pretest questionnaires were distributed along with the rest of the class paperwork during the first day. Students were then requested to complete the questionnaire at some time prior to the next class session on the following day, although questionnaires were occasionally received on the third class day as well. The posttest survey was administered similarly; students were requested to complete and return the questionnaires after attending the final lesson block.

A problem encountered during the first data collection was a low response rate, especially during the posttest (approximately thirty percent).

This was attributed primarily a prominent statement of "voluntary participation" on the questionnaire instruction sheet. This problem was resolved during subsequent data collections by de-emphasizing the voluntary nature of the questionnaire. As a result, the response rate improved significantly to approximately seventy percent in later collections. (Both pretest and posttest questionnaires can be found at Appendix B.)

Description of Sample

The self-efficacy measure sample size suffered, partly due to its voluntary nature and also partly due to the requirement for matched pretest and posttest responses. As a result, it provided a sample of 109 out of 200 possible (54.5 percent). Fortunately, this smaller sample contained attendees from all of the functional disciplines. Figures 4 and 5 show the composition of the self-efficacy measure sample by functional discipline and by years of experience, respectively.

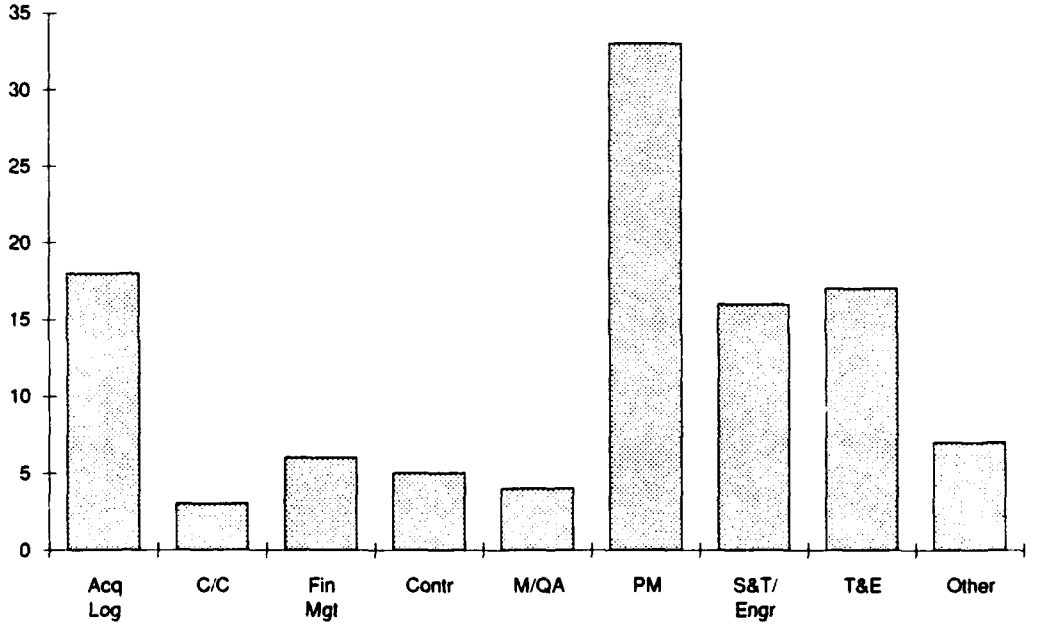


Figure 4. Histogram of Self-Efficacy Sample by Functional Discipline

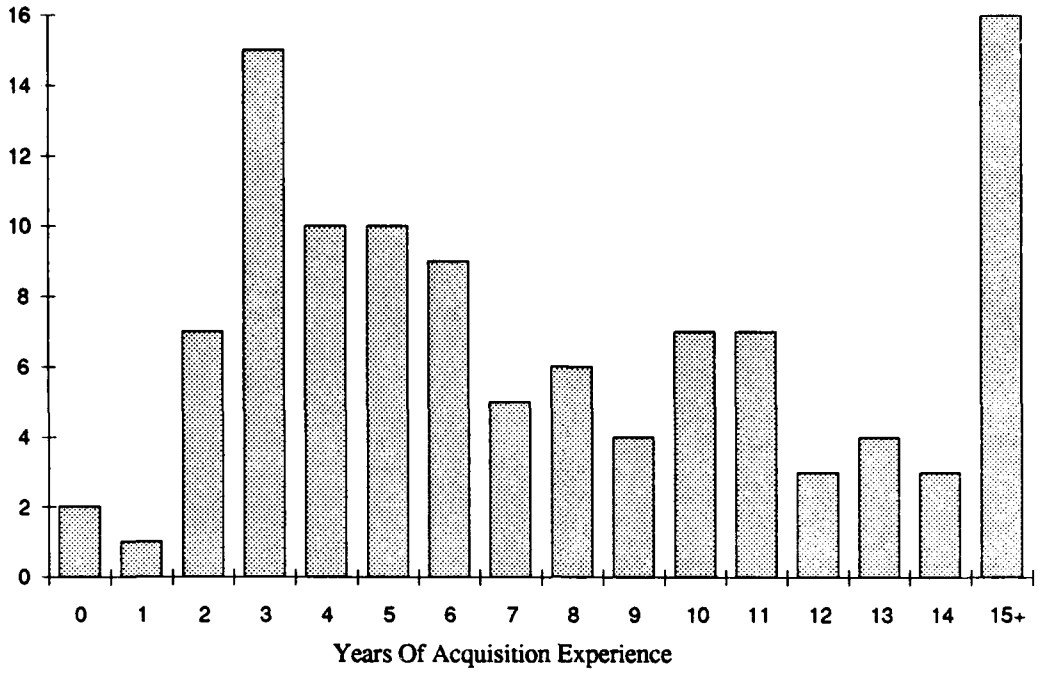


Figure 5. Histogram of Self-Efficacy Sample by Years of Acquisition Experience

Data Analysis

The data associated with this measure is ordinal ("Agree Considerably" is stronger than "Agree Moderately," but the interval between these two is not necessarily equal to an interval between two other adjacent points on the same scale). "When only the rank order of scores is known, means and standard deviations found on the scores themselves are in error to the extent that the successive intervals on the scale are not equal" (Siegel, 1956:26). For this reason, testing of the stated null hypothesis was performed using a nonparametric analysis of variance technique.

Supervisor Assessment Measure Methodology

Population Under Study

For this measure, the population consists of those persons who have attended or will attend the current version of SYS200. The parameter of interest is the theoretical population mean rank of supervisor survey scores.

Restatement of Hypotheses

As with the other measures, the results from this measure will be tested for the possibility that the treatment (SYS200) does not equivalently affect persons from different functional disciplines.

The relevant test hypotheses are:

H_0: $\mu_1 = \mu_2 = ... = \mu_9$ (*i.e.*, one population)

H_a: At least one μ_i is different

where μ_i is the theoretical population mean rank of survey scores for each functional discipline.

Development of Measure

This measure was intended to assess supervisors' perceptions of students' acquisition-related knowledge, efficacy, and performance after completion of SYS200. As in the knowledge and self-efficacy measures, increases in survey scores provide indirect evidence of course effectiveness.

Instrument Design

Based on prior AFIT experience with low response rates for post-course supervisor surveys, the primary considerations in the development of this questionnaire were brevity and ease of use. Consequently, this questionnaire

was limited to one page in length, and concentrated on whether supervisors perceived increases in students' acquisition-related knowledge, efficacy, and performance.

Because of the initial success and promising results from the self-efficacy questionnaire, the same unipolar Likert scale was used. (The supervisor assessment questionnaire can be found at Appendix C.)

Data Collection

The questionnaires were mailed to the supervisors of SYS200 students from the January and March class offerings approximately three months after course completion. This timing was intended to allow for sufficient observation of post-course performance, while keeping the necessary time for collection efforts and subsequent analysis within the constraints of this research effort.

Description of Sample

The supervisor assessment had the smallest sample (60 out of 100 possible), mainly due to data collection time constraints. Figures 6 and 7 show the composition of the sample by functional discipline and by years of experience, respectively.

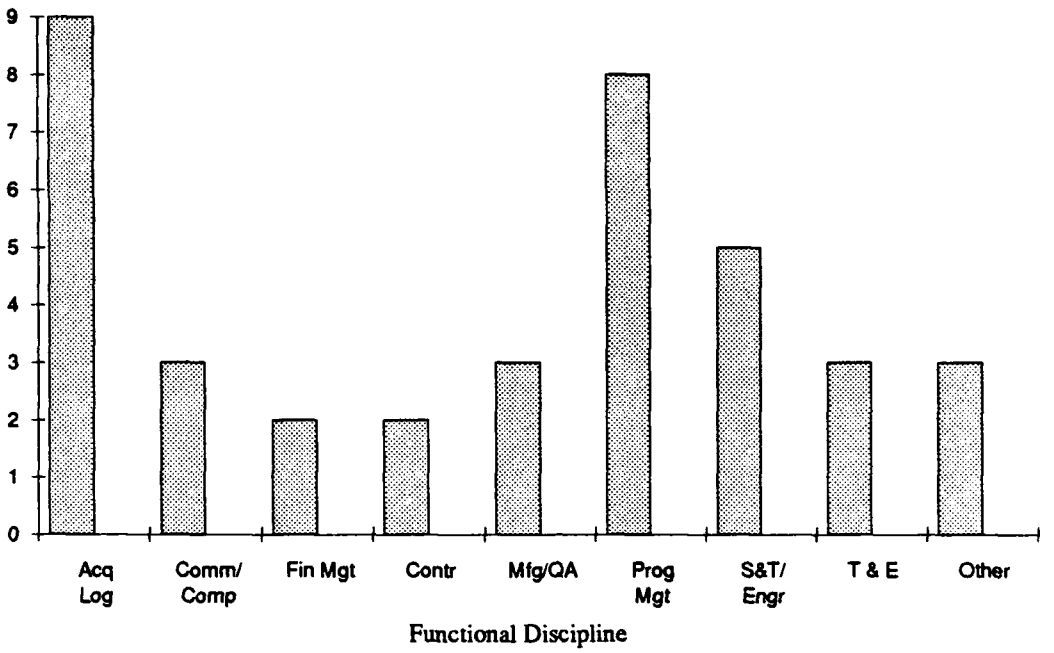


Figure 6. Histogram of Supervisor Assessment Sample by Subordinates' Functional Discipline

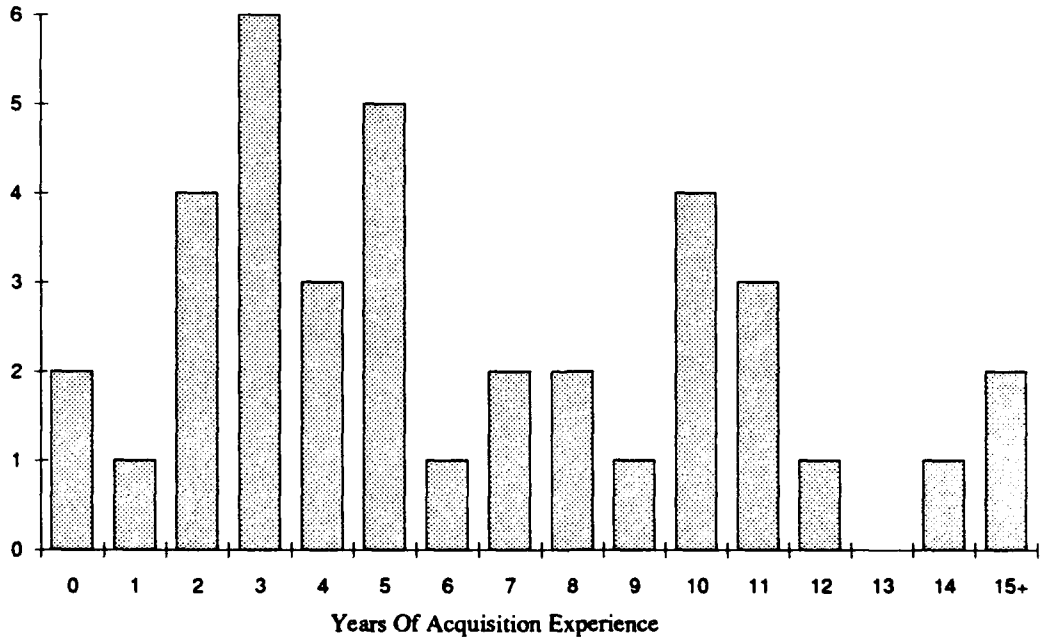


Figure 7. Histogram of Supervisor Assessment Sample by Subordinates' Years of Acquisition Experience

Data Analysis

Testing of the stated null hypothesis was performed using a nonparametric ANOVA. However, because of limitations due to sample size, additional evaluation of survey results was also required, consisting primarily of descriptive statistics and a summary assessment of supervisor comments.

Realignment of Functional Disciplines

As discussed in Chapter 2, SAF/AQ published interim policy guidance in February 1992 which superseded the functional discipline definitions in AFR 36-27 (which was used to categorize the data for all three measures). To accomodate the interim guidance, the Developmental Engineering and Science & Technology groups were combined for analysis purposes on all three measures.

Unfortunately, complying with the other realignment of functional disciplines -- separating Manufacturing from Quality Assurance -- was infeasible for two reasons: in some cases, making a distinction between the two new disciplines was not possible (for example, "Chief, Manufacturing/ Quality Assurance Division"); moreover, division of the already small sample would have resulted in two even smaller samples insufficient in size for ANOVA purposes.

Correlation of Measures

As previously discussed, the three complementary measures were used to hedge against specific threats to validity, with correlation analysis performed on the results of the measures to provide an indication of study

validity. This assessment was based upon: 1) a quantitative measure of the correlation of the rank (based on score) of each functional disipline on one measure compared to the rank of each functional discipline on the other measures; and 2) a qualitative comparison of the consistency of conclusions supported by each measure.

Quantitative Correlation Analysis

The Pearson product moment correlation coefficient is "a summary measure of the linear relationship between the paired values of two random variables" (Kachigan, 1991:130). The method used to arrive at this coefficient is essentially an "average" value of the products of paired standard scores for each variable. The range of this coefficient is from -1 to +1, with -1 indicating a perfect inverse linear relationship between the two variables, 0 indicating no relationship, and +1 indicating a perfect positive linear relationship (Kachigan, 1991:126).

The data in this study were not able to meet all assumptions required in order to use Pearson's methodology. The self-efficacy and supervisor assessment measures were not measured on an interval or ratio scale; they were measured on an ordinal scale for which Pearson's method is not appropriate (Kachigan, 1991:128).

The Spearman rank correlation coefficient is more appropriate for ordinally scaled data. It is calculated in the same fashion as Pearson's product moment, but uses ranked scores instead of the original data (Statistix, 1991:104). The Statistix software package was used to calculate the Spearman Rank Correlation coefficient for each possible pairing of the three measures.

Qualitative Correlation Analysis

This analysis was accomplished simply by observing whether each measure supported the same conclusion and by considering the reliability of each measure. As discussed previously, consistency between measures enhances the validity of the research results.

Assessment of Methodology

As discussed earlier, a combination of knowledge, self-efficacy, and supervisory assessment measures was used to provide a more thorough evaluation of SYS200 course effectiveness than any single measure could have provided alone. Because the three measures consisted of different levels of data, different analysis techniques were considered for each measure. For example, the interval level data from knowledge measure might have been appropriate for parametric analysis (except for the problem of meeting the necessary underlying assumptions), while the ordinal level data from the other two measures were limited to nonparametric analysis techniques.

Because the research question for each measure focused on the single issue of whether any functional discipline performed differently, and due to the limitations discussed above, nonparametric single factor ("one-way") ANOVA was selected as the most appropriate form of analysis for all three measures. Use of these ANOVAs offered the advantage of consistency of analysis, which allowed for more uniform comparisons of results, as well as providing for construct validation through correlation of measures.

Experience as a Potential Factor

In comparing the various functional disciplines' performances through single factor ANOVA, the most obvious and logical potential "second factor" lay in variance due to different levels of acquisition experience. An initial assessment of the available data revealed that Analysis of Covariance would be ill-advised because of insufficient sample composition (*i.e.*, too many empty cells in the matrix of functional disciplines and years of experience).

Subsequent investigation revealed that the effect of experience on the variables of interest (*i.e.*, increases in acquisition knowledge, self-efficacy, and job performance) was actually negligible; therefore, "one-way" ANOVAs by functional discipline would not be adversely affected by discounting the effect of experience as a potential second factor.

The effect of experience was investigated by means of two separate analyses. The first consisted of comparing the experience levels of the various functional disciplines through an ANOVA. The resulting p-value of .5561 implies that there was no significant difference in experience levels by functional discipline, and shows support for the proposition that all groups were essentially equivalent in levels of experience. The range of experience by functional discipline is shown in Figure 8.

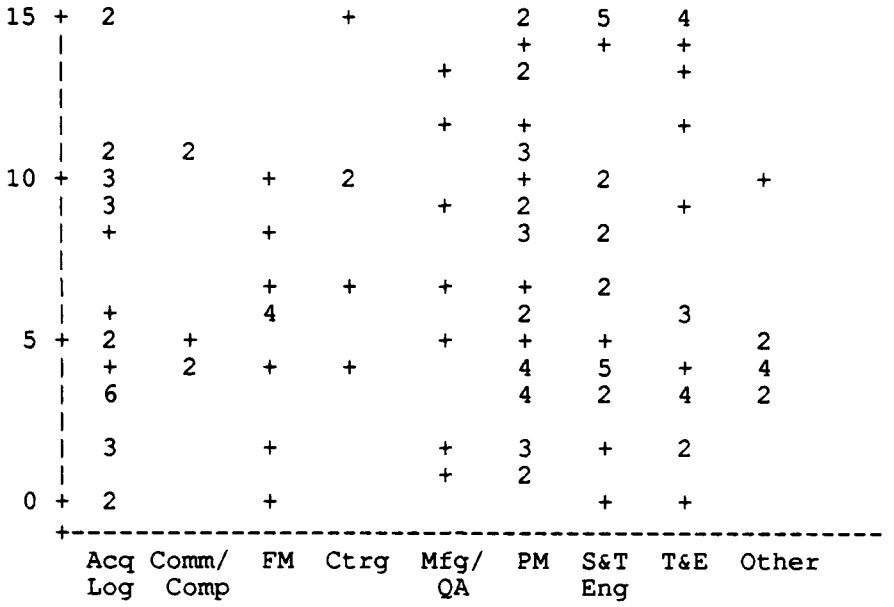


Figure 8. Scatterplot of Years of Acquisition Experience by Functional Discipline

As shown, the distributions of experience for each functional discipline overlap and cannot be considered statistically different.

The second analysis was a linear regression of knowledge pretest and posttest scores to determine whether experience was a significant factor. The results showed that for the pretest, experience was in fact a statistically significant factor, but its coefficient in the regression equation (indicating the slope of the regression line) was relatively small at .87, with a corresponding r^2 of .1127. These figures imply that while experience was a discernable factor, its actual effect on differences in scores was low (*i.e.*, less than one point per each additional year of experience); moreover, only 11 percent of the variance in scores was "explained" or accounted for by the variance in experience. On the posttest, the regression showed that experience was even less of a factor, with a coefficient of .24 and a r^2 of .0181.

Because the results of the regression suggested that experience was a negligible factor in determining differences in knowledge scores, single-factor ANOVAs were deemed sufficient for data analysis. Any lingering doubt concerning levels of experience as a potentially complicating factor was ultimately removed by the absence of ambiguity in the research findings: all of the research hypotheses were either strongly rejected or strongly supported.

Summary

The methodology used in this research incorporated three complementary measures to obtain an indirect measurement of the variable of interest (SYS200 course effectiveness). The research design was somewhat limited by environmental and practical considerations, but is representative of similar research efforts. As discussed, each measure has its own strengths and weaknesses in the face of threats to internal validity. Use of multiple measures provides a defense against undesired effects and lends strength to the research findings. While the results are considered valid for the sample taken, the small sample size limits generalizing results to the larger population of interest.

In the next chapter, the results of the study and subsequent data analysis are presented and discussed.

IV. Analysis and Findings

Introduction

This chapter discusses the application of the methodology described in Chapter III and presents results from the three measures and their associated data analysis procedures.

Knowledge Measure Analysis

Analysis of Pretest and Posttest

Figure 9 and Figure 10 show histograms of knowledge pretest and posttest scores, respectively. These figures show that course attendance generated a substantial increase in knowledge test scores: the overall mean for the pretest was 41.9 on a scale of 0 to 100, and the overall mean for the posttest was 82.9 on the same scale.

In addition, the variability of scores was lower on the posttest, as indicated by the tighter grouping of scores around the mean; pretest scores ranged from a low of 14 to a high of 66, while posttest scores varied from a low of 50 to a high of 98.

Figures 11 and 12 show the spread of pretest and posttest scores by functional discipline. (Although some differences in range can be seen, it cannot be determined from the scatterplots alone whether these differences between functional disciplines are statistically significant.)

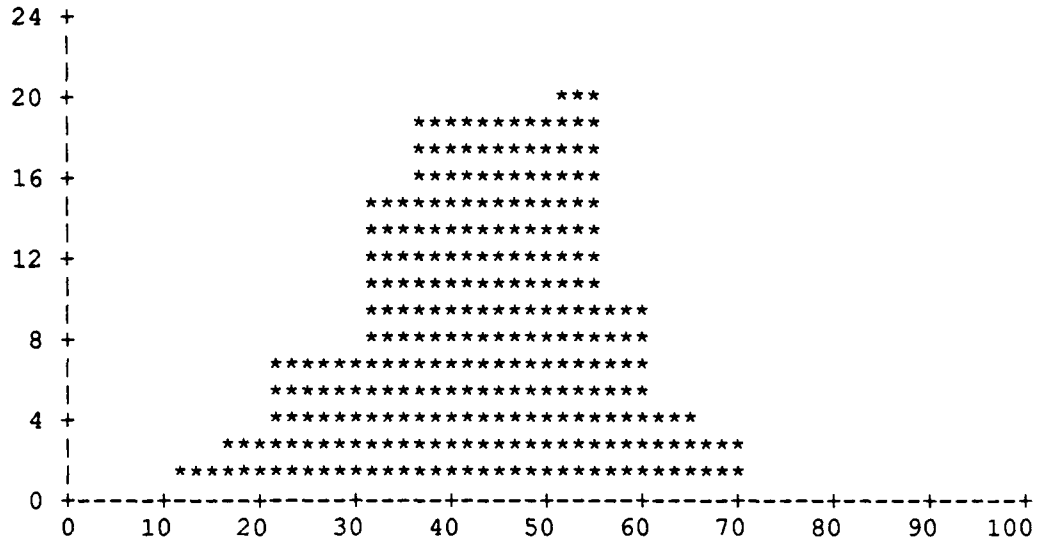


Figure 9. Histogram of Knowledge Pretest Scores

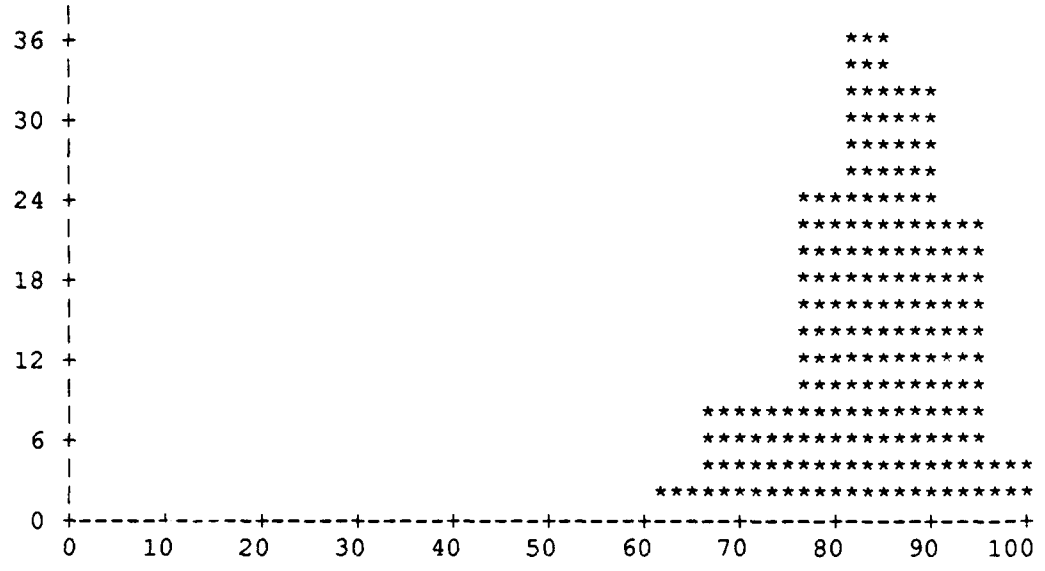


Figure 10. Histogram of Knowledge Posttest (Quiz Average) Scores

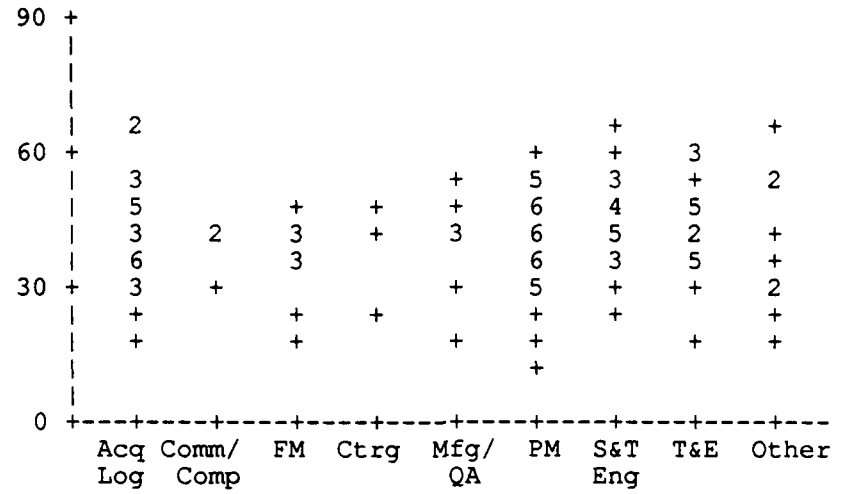


Figure 11. Scatterplot of Knowledge Pretest Scores by Functional Discipline

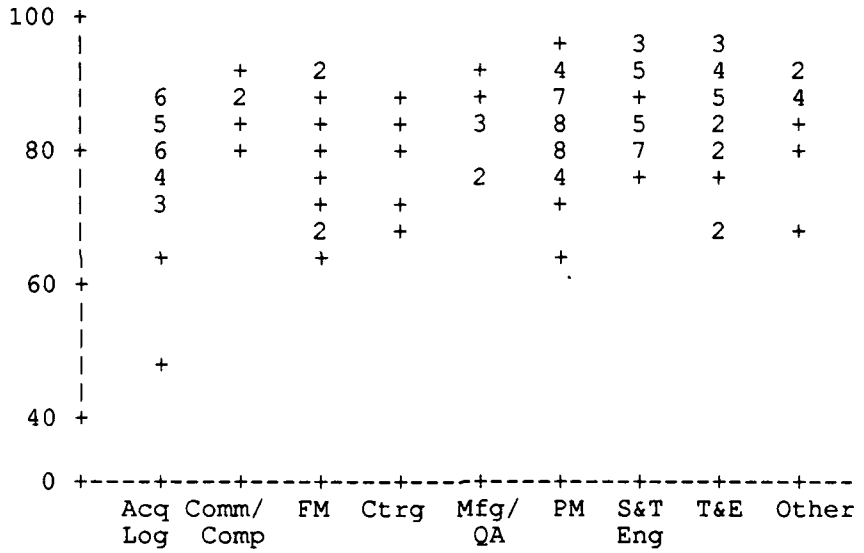


Figure 12. Scatterplot of Knowledge Posttest Scores by Functional Discipline

The nonparametric Kruskal-Wallis ANOVA test for the knowledge pretest versus functional discipline returned a p-value of .6305. The p-value represents the smallest possible amount of type I error (rejecting the null hypothesis when it was true). In this case, .6305 represents a high probability of falsely rejecting the null hypothesis that the means are equal,

which implies that the differences between functional discipline group scores were not statistically significant. This lends support to the proposition that performance on the pretest was essentially equivalent across all functional disciplines. (The complete ANOVA tables are located at Appendix D.)

The Kruskal-Wallis ANOVA test for the knowledge posttest scores versus functional discipline returned a p-value of .0272. This represents a very small probability of falsely rejecting the null hypothesis (implying that the differences between functional discipline group scores were statistically significant), and lends strong support to the proposition that performance on the course quizzes was not equivalent across all groups.

Investigation of Group Mean Differences

Further investigation was required to determine which groups were significantly different. Table 8 summarizes performance by functional discipline groups.

Table 8. Mean Ranks and Mean Scores of Knowledge Posttest by Functional Discipline

Functional Discipline	MEAN RANK	MEAN SCORE	SAMPLE SIZE
Comm/Computers	87.3	86.47	5
Test & Evaluation	85.8	85.95	19
S&T/Engineering	81.8	85.77	22
Other	81.3	84.70	9
Manufacturing/QA	70.1	83.48	7
Program Mgt	68.2	83.08	34
Financial Mgt	51.0	78.63	10
Acq Logistics	50.5	79.12	26
Contracting	44.2	78.13	5
Overall	69.0	82.90	137

As discussed in Chapter III, the reason for using "distribution-free" nonparametric methods in this study was that some group scores could not be considered normally distributed, or were ordinal measures for which parametric methods would be inappropriate. Analysis of the knowledge posttest, however, was an instance in which the necessary assumptions for using parametric methods could be met; using parametric ANOVA offered the advantage of being able to identify those functional disciplines for which the difference between the group mean and the overall mean was significant.

The use of parametric ANOVA requires the assumption that the knowledge scores for each functional discipline group are normally distributed. Wilk-Shapiro statistics assessing the normality of the sample for each group are shown in Table 9.

Table 9. Wilk-Shapiro Statistics by Functional Discipline

Acquisition Logistics	.8168
Comm/Computers	.9876
Financial Management	.9511
Contracting	.9930
Manufacturing/QA	.9324
Program Management	.9708
S&T/Engineering	.9297
Test & Evaluation	.9423

Wilk-Shapiro statistics may be considered good if higher than .8, and excellent if higher than .9 (Reynolds,1991). Therefore, these statistics reasonably support the assumption that the group scores are normally distributed for this measure (although the lower figure for Acquisition Logistics may indicate a sample with a weaker central tendency, which is discussed in greater detail below).

Having fulfilled the requirement for meeting the assumption of normality, Tukey's Procedure for multiple pairwise comparisons of means was used to provide an indication of which groups performed differently on the knowledge posttest. The results showed that the Acquisition Logistics group was statistically different from both the Science & Technology/ Engineering group and the Test & Evaluation group; all other pairwise comparisons of groups were considered homogenous. (The complete Tukey's Procedure output from Statistix is contained in Appendix D.)

One possible explanation for this difference is the fact that the Acquisition Logistics group was actually comprised of two different groups: those performing sustainment-oriented functions at Air Logistics Centers, and those performing systems acquisition logistics functions at Product Centers. Because the two groups perform different functions, they were reassigned to separate functional discipline groups for retest.

Results of this retest showed that the sustainment-oriented Logistics group was statistically different, while the group comprised of only those in acquisition logistics functions at Product Centers was statistically indistinguishable from the rest of the functional disciplines. Possible explanations for this finding are discussed in Chapter V.

Difference Between Pretest and Posttest

The principal construct in this study is that improvements in knowledge, self-efficacy, and performance indirectly measure SYS200 effectiveness; and that equivalent improvements across functional disciplines represent effectiveness in a broadening role. Therefore, the ANOVAs on observed changes represent the most important tests performed in this study.

Figure 13 shows the histogram of increases in knowledge test performance (essentially, the shift that was shown in Figures 9 and 10), and Figure 14 shows the spread of increases by functional discipline.

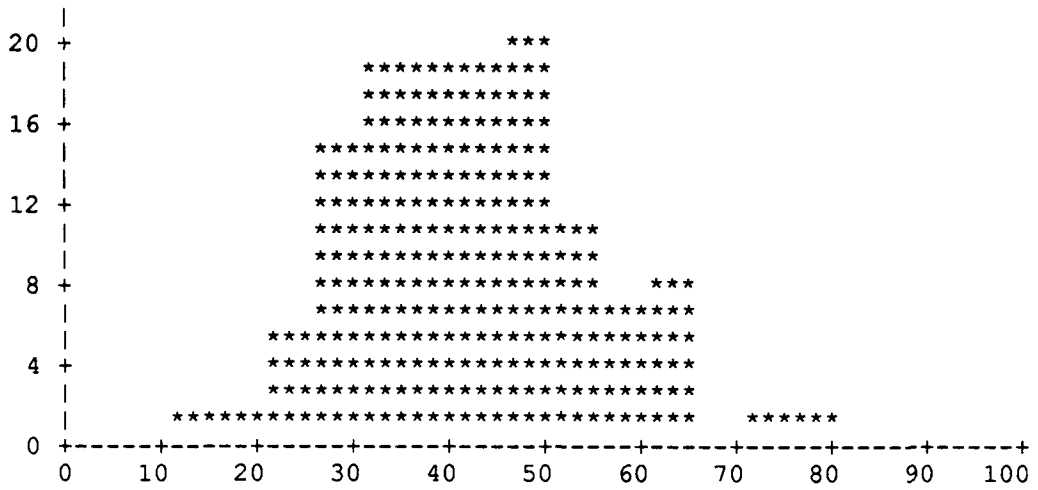


Figure 13. Histogram of Acquisition Knowledge Score Increases (Posttest minus Pretest)

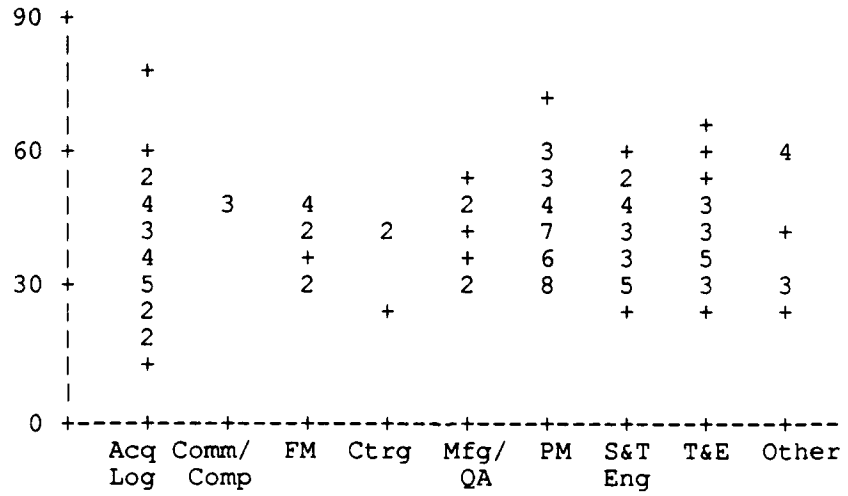


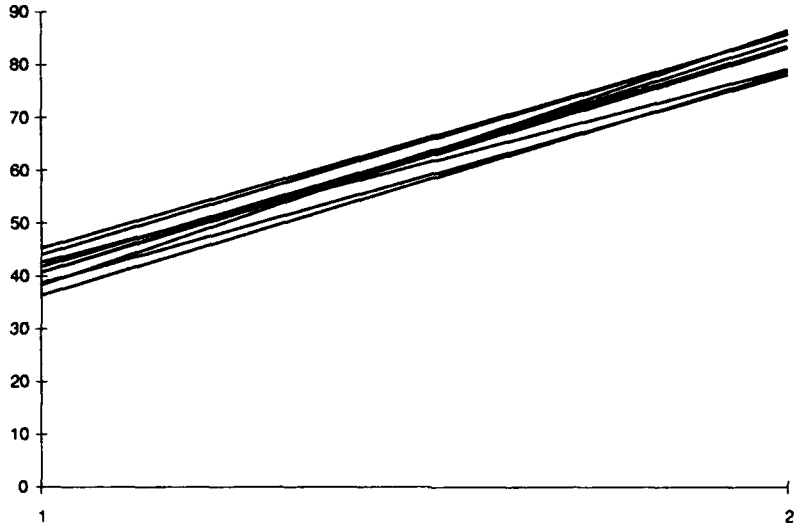
Figure 14. Scatterplot of Acquisition Knowledge Score Increases by Functional Discipline

The ANOVA test for the difference between knowledge pretest and posttest scores returned a p-value of .5159. This represents a moderately high probability of falsely rejecting the null hypothesis (implying that the

differences were not statistically significant), and supports the proposition that increases in knowledge were essentially equivalent across groups.

Explanation of ANOVA Results

An investigation was conducted to determine how the p-values from the three ANOVAs (pretest, posttest, and increase) could report that there was a significant difference for the posttest scores, but not for the pretest scores or the resulting increases. Figure 15 depicts the results.



Pretest	Posttest
S&T/Eng	Comm/Computers
T&E	T&E
Acq Logistics	S&T/Eng
Mfg/QA	Mfg/QA
Program Mgt	Program Mgt
Contracting	Acq Logistics
Comm/Computers	Financial Mgt
Financial Mgt	Contracting
Logistics	Logistics

Figure 15. Graph of Mean Knowledge Score Increase from Pretest to Posttest by Functional Discipline

As shown in Figure 15, the "clustering" of posttest scores into two distinct groups was responsible for the significant p-value reported; however, the range of posttest scores (difference between minimum and maximum) was almost exactly the same as the same differential for the pretest scores. In addition, the slopes of the lines connecting the pretest and posttest group means (representing the increase) were all essentially equivalent, which explains the insignificant p-value reported by the ANOVA on the increase.

Self-Efficacy Measure Analysis

Analysis of Pretest and Posttest

Figures 16 and 17 show histograms of self-efficacy pretest and posttest scores, respectively. In contrast to the knowledge test score scale of 0 to 100, the scale of self-efficacy scores was 0 to 336 (84 questions using a zero to four scale). These histograms show that course attendance generated a substantial increase in self-efficacy scores: the overall mean of pretest scores was 136 out of 336 (40.5%), while the overall mean of posttest scores was 235 out of 336 (70%).

The range of pretest scores went from a low of 17 to a high of 309; on the posttest, the low was 64, and the high was 333.

Figure 16. Histogram of Self-Efficacy Pretest Scores

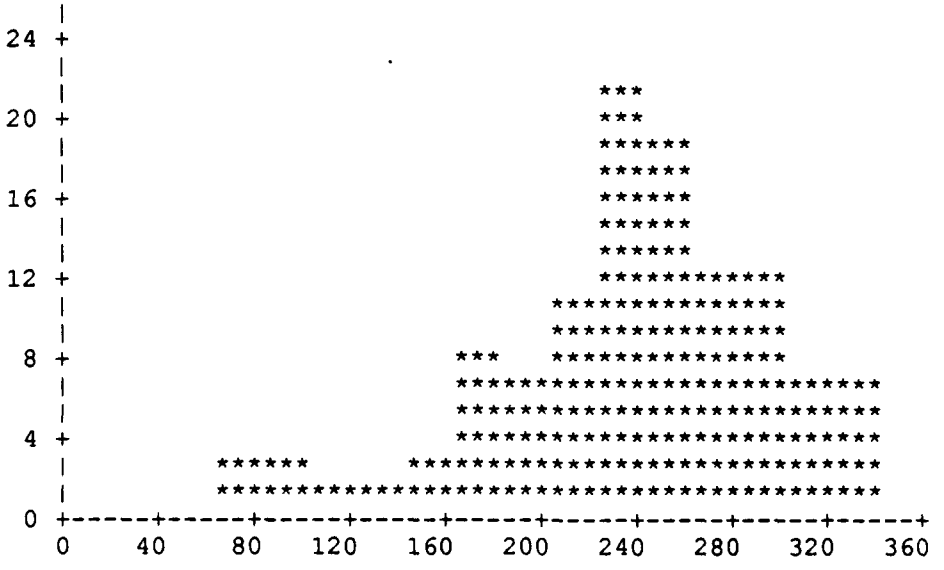


Figure 17. Histogram of Self-Efficacy Posttest Scores

Figures 18 and 19 show the spread of scores by functional discipline. It is not obvious from these scatterplots alone whether any differences between functional disciplines scores are significant.

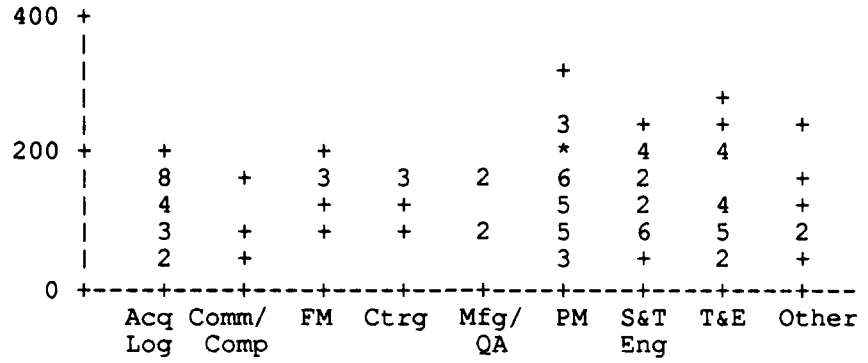


Figure 18. Scatterplot of Self-Efficacy Pretest Scores by Functional Discipline

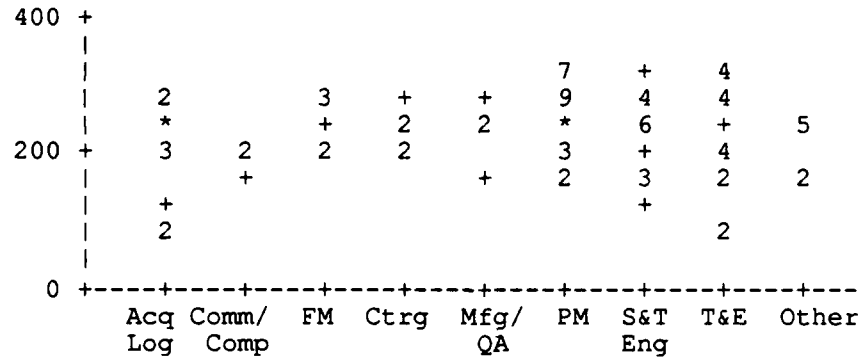


Figure 19. Scatterplot of Self-Efficacy Posttest Scores by Functional Discipline

The nonparametric Kruskal-Wallis ANOVA test of the self-efficacy pretest versus functional discipline returned a p-value of .4682. This represents a fairly large probability of falsely rejecting the null hypothesis and supports the proposition that pre-course self-efficacy relative to performing acquisition-related tasks was equivalent for all functional disciplines.

The nonparametric Kruskal-Wallis ANOVA test performed on the self-efficacy posttest score versus functional discipline returned a p-value of .0334. This represents a very small probability of falsely rejecting the null hypothesis and strongly supports the proposition that post-course self-efficacy relative to performing acquisition related tasks was in fact different among functional disciplines.

Based on the differentiation seen in the Acquisition Logistics group on the knowledge measure, a similar breakout was performed for retest. The results showed that, as before, the sustainment-oriented Logistics group scored lower than the remainder of the Acquisition Logistics functional discipline; in this measure, however, the difference between the sustainment-oriented Logistics group rank and the overall mean rank was not statistically significant.

Difference Between Pretest and Posttest

Again, the principal construct of this study is that improvements in knowledge, self-efficacy, and performance indirectly measure SYS200 effectiveness, and that equivalent improvements across functional discipline represent effectiveness in a broadening role. As before, the ANOVAs for observed changes represent the most important tests performed in this study.

In general, the increases in self-efficacy scores mirror those seen in the knowledge measure (although there was one notable exception, discussed in greater detail under Correlation of Measures). Figure 20 shows the histogram of self-efficacy increases, while Figure 21 depicts the range of increases by functional discipline.

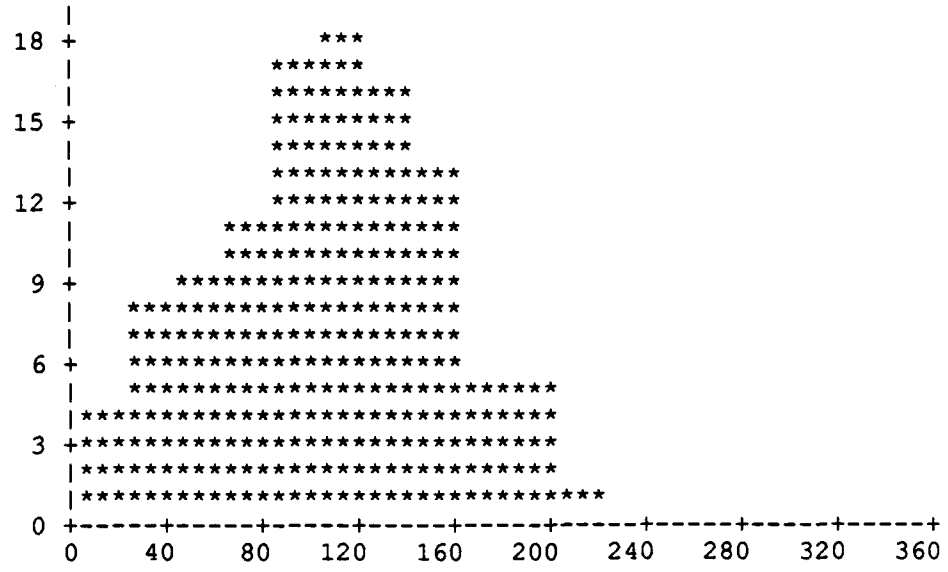


Figure 20. Histogram of Increases in Self-Efficacy Scores

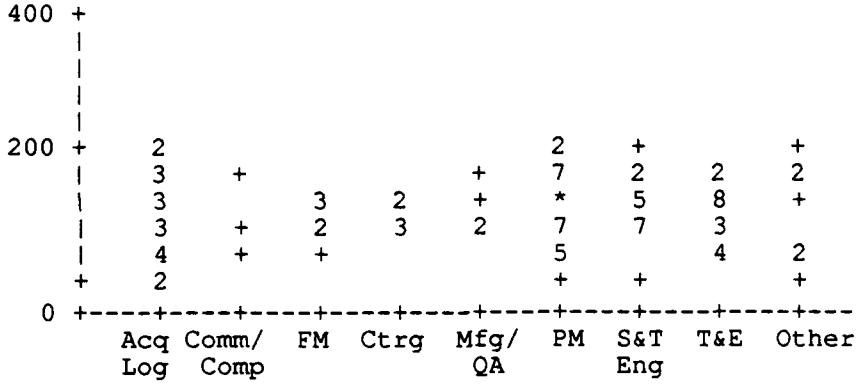
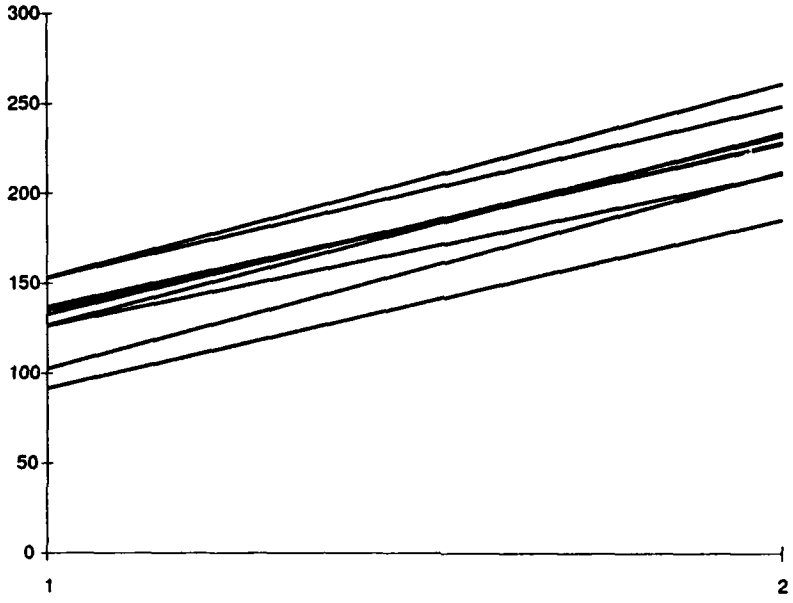


Figure 21. Scatterplot of Increase in Self-Efficacy Scores by Functional Discipline

The nonparametric Kruskal-Wallis ANOVA test for difference in posttest scores minus pretest scores returned a p-value of .9626. This represents an extremely high probability of falsely rejecting the null hypothesis and strongly supports the proposition that increases in acquisition-related self-efficacy were essentially equivalent across groups.

Explanation of ANOVA Results

As was done for the knowledge measure, an investigation was conducted to determine how the p-value for the posttest ANOVA could be reported as significant, while the p-values for the pretest and increase were not significant. Figure 22 illustrates the results.



Pretest	Posttest
Program Mgt	Program Mgt
Financial Mgt	Financial Mgt
Contracting	Mfg/QA
T&E	S&T/Eng
S&T/Eng	T&E
Logistics	Contracting
Mfg/QA	Acq Logistics
Acq Logistics	Logistics
Comm/Computers	Comm/Computers

Figure 22. Graph of Mean Self-Efficacy Score Increase from Pretest to Posttest by Functional Discipline

As shown in Figure 22, there was some "clustering" of posttest scores, which caused the significant p-value to be reported; however, as was also

seen in the knowledge measure, the range of posttest scores (difference between minimum and maximum) was essentially the same as the differential for the pretest scores. In addition, the slopes of the lines connecting the pretest and posttest group means (representing the increases in self-efficacy) were again essentially equivalent, which explains the insignificant p-value reported by the ANOVA on the increase.

Supervisor Survey Measure Analysis

As described in Chapter III, this measure consisted of questionnaires which accompanied the traditional AFIT course critiques mailed out after course completion. Supervisors were asked to assess the strength of any improvement in knowledge, job task-related confidence (efficacy), and job performance.

In general, the small functional discipline sample sizes were not conducive to ANOVA procedures. Consequently, the majority of the analysis and evaluation for this measure was done subjectively, consisting primarily of descriptive statistics and a summary assessment of supervisor comments. The results were then used to provide affirmation of the findings of the other two measures.

Description of Survey Results

Because the survey was designed to gauge improvement since SYS200 attendance, Question 1 was used to assess the validity of the supervisor's assessment by confirming that the subordinate had in fact worked for the same supervisor both before and after course attendance. Those surveys responding negatively to Question 1 were not included in subsequent analysis.

Question 2 was analogous to the pretest in the knowledge measure. The histogram of responses is shown in Figure 23.

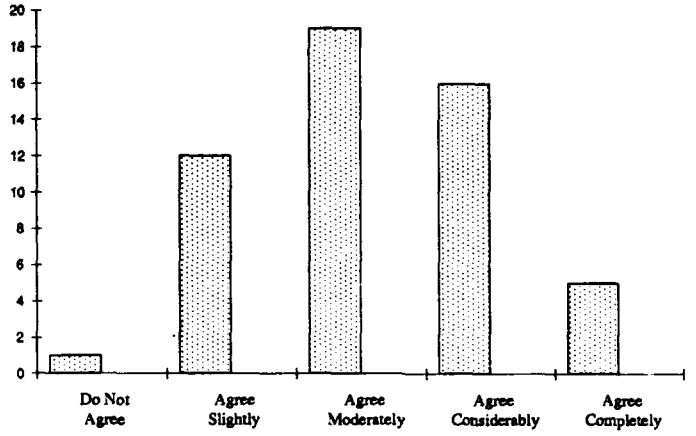


Figure 23. Histogram of responses to "Before Attending SYS200, My Subordinate's Knowledge Of Acquisition Management Was Satisfactory."

Question 3 was analogous to the difference between pretest and posttest on the knowledge measure. Figure 24 shows the responses.

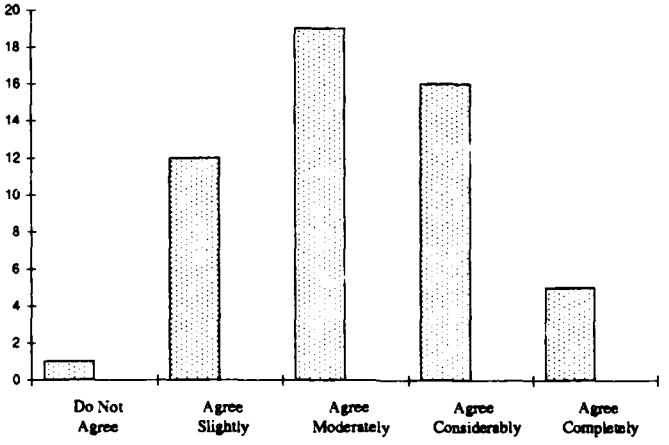


Figure 24. Histogram of responses to "Since Attending SYS200, My Subordinate's Knowledge Of Acquisition Management Has Improved."

In general, these responses are consistent with the results of the knowledge measure.

Question 4 was analogous to the increase observed in the self-efficacy measure. Figure 25 shows the responses.

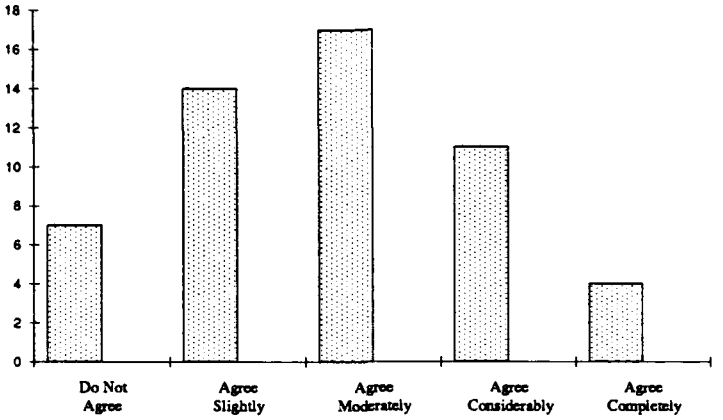


Figure 25. Histogram of responses to "Since Attending SYS200, My Subordinate's Job-Related Confidence Has Improved."

These responses echo the results of the self-efficacy measure in similar fashion to the parallels between the previous question and the knowledge measure.

Figure 26 shows the responses to Question 5, which assessed improvement in job performance since SYS200 attendance.

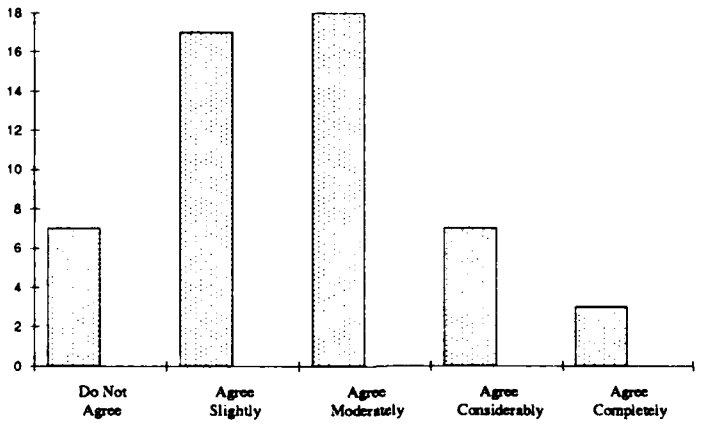


Figure 26. Histogram of responses to the question "Since Attending SYS200, My Subordinate's Current Job Performance Has Improved."

Figure 27 shows the responses to Question 6, which assessed course relevance to attendee's current duties.

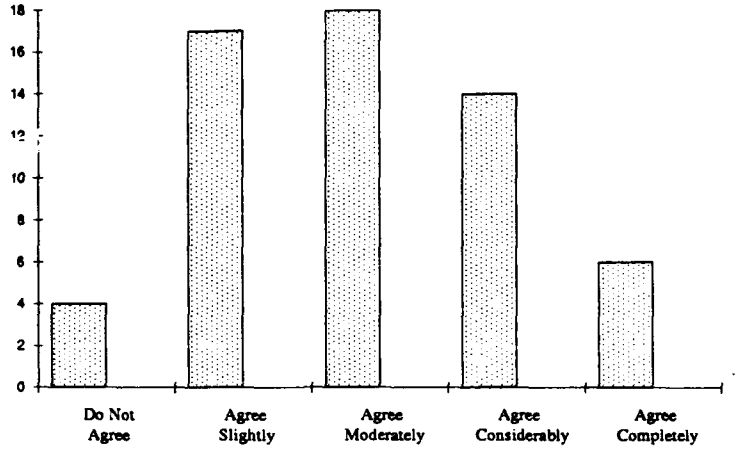


Figure 27. Histogram of responses to "Since Attending SYS200, My Subordinate Has Been Able To Use The Information Presented In The Course."

In general, the supervisor survey responses show moderate support for the research construct, as well as consistency with the other two measures.

Summary of Supervisor Comments

Supervisors were also asked to provide comments or suggestions to assist in course improvement. Of the 60 surveys returned, 21 included comments (contained in Appendix E). Table 10 provides a summary.

Table 10. Categorization of Supervisor Comments

Category	Frequency
Experience Waiver	7
Curriculum	5
Too Soon to Comment	3
Faculty/Facilities	2
Course Length	2
Class Size	1
Course Availability	1

For the comments categorized under "Experience Waiver," three directly stated that experienced persons should not be required to take the course; two stated the course was a "square filler"; and two said the course was beneficial even though their subordinate had substantial experience.

For the comments relating to curriculum breadth, one was favorable across the board; two asked for enhancements to areas specific to their subordinate's functional discipline (one engineering and one logistics); and two stated that the course material was not directly applicable to their subordinates' daily activities (one a program element monitor, and one a test and evaluation engineer).

Three supervisors thought that the span of two to three months was too soon to assess the course's effect on their subordinates, but two expressed the view that the course would eventually have a positive effect.

In the faculty/facilities category, one comment was unfavorable to a single instructor in a single lesson block, and one comment stated that the satellite video link was distracting and hindered student participation. Both comments relative to course length stated that the course was too long for their subordinates to be away from their main duties.

A supervisor whose subordinate was in the Financial Management functional discipline asked that the course be made more available. This comment is consistent with the Chapter III analysis of course composition, where it was shown that the sample contained a percentage of students from Financial Management which was significantly less than the population of those who require SYS200.

Correlation Of Measures

Figure 28 shows that the sample for all three measures are similar in composition, which mitigates the concern that uneven composition could affect the degree to which measures support each other.

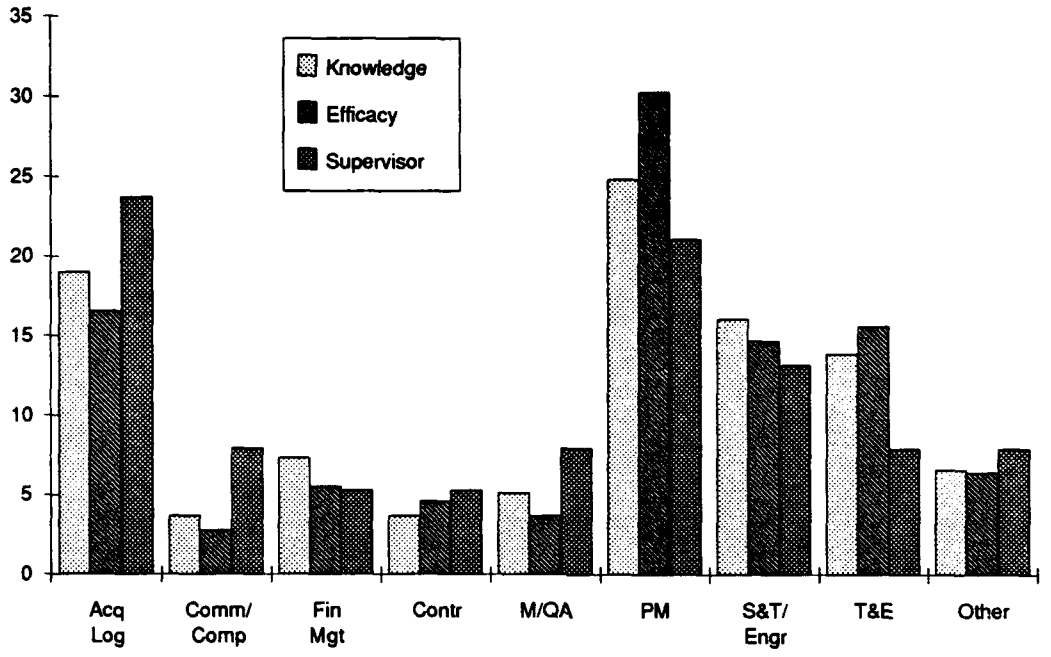


Figure 28. Comparison of Sample Composition

As already shown, the results from the three measures paralleled each other fairly well. This was particularly true for the knowledge and self-efficacy measures, which had sufficient sample size to run ANOVAs. The ANOVAs were highly consistent in terms of significance of results, as well as rank ordering of functional disciplines. This consistency was further investigated both by subjective analysis and by the Spearman rank correlation procedure.

As previously seen in Figure 15 and Figure 22 (which illustrated the mean increases in knowledge and self-efficacy by functional discipline), the

overall results of the two measures were very similar in nature. Table 11 compares the rank orders of functional disciplines on the pretests and posttests.

Table 11. Rank Orders of Functional Disciplines

Rank	Knowledge Pretest	Knowledge Posttest
1	S&T/Eng	Comm/Computers
2	T&E	T&E
3	Acq Logistics	S&T/Eng
4	Mfg/QA	Other
5	Other	Mfg/QA
6	Program Mgt	Program Mgt
7	Contracting	Acq Logistics
8	Comm/Computers	Financial Mgt
9	Financial Mgt	Contracting
10	Logistics	Logistics

Rank	Self-Efficacy Pretest	Self-Efficacy Posttest
1	Program Mgt	Program Mgt
2	Financial Mgt	Financial Mgt
3	Contracting	Mfg/QA
4	T&E	S&T/Eng
5	S&T/Eng	T&E
6	Logistics	Contracting
7	Mfg/QA	Acq Logistics
8	Acq Logistics	Other
9	Other	Logistics
10	Comm/Computers	Comm/Computers

As shown, the posttest ranks are generally consistent with their corresponding pretest ranks for both measures. In addition, the ranks from each measure are fairly consistent with each other. However, as mentioned previously, there is at least one notable exception: the Comm/Computers functional discipline turned in the highest mean knowledge score, while consistently scoring at the bottom in the self-efficacy measure. (It is also

interesting to note that Program Management and Financial Management were ranked the highest in mean self-efficacy, but were in the middle of the pack in mean knowledge scores.) One possible explanation for the Comm/Computers discrepancy is discussed in Chapter V.

The mean scores were then analyzed using the Spearman rank correlation procedure. Table 12 lists the scores used in this analysis.

Table 12. Mean Scores by Functional Discipline

Functional Discipline	Pretests		Posttests		Increase	
	Know	S-E	Know	S-E	Know	S-E
Acq Log	43.53	124.8	81.56	212.5	38.10	87.7
C/C	38.33	91.3	86.47	185.7	48.44	94.3
Fin Mgt	36.33	152.8	78.63	248.8	42.15	96.0
Contr	38.67	137.0	78.13	227.8	36.11	90.8
Mfg/QA	41.71	126.5	83.48	233.8	41.76	107.3
Pgm Mgt	40.66	153.4	83.08	261.3	42.44	107.9
S&T/Eng	45.26	132.8	85.77	232.6	40.47	99.8
T&E	44.00	135.3	85.95	228.7	41.67	93.4
Other	40.67	102.6	84.70	212.3	44.04	109.7
Logistics	35.50	129.0	73.63	208.8	38.13	79.8

Because the focus of the research was on comparing the increases in acquisition knowledge, self-efficacy, and job performance by functional disciplines, correlations were calculated for the increases shown above. The Spearman procedure returned a correlation coefficient of .70 for the results of the knowledge and self-efficacy measures.

For criteria in assessing correlation, "a reasonable rule of thumb is to say that the correlation is weak if $0<|r|<.5$, strong if $.8<|r|<1$, and moderate otherwise" (Devore, 1991:489). Therefore, the two measures are moderately correlated, showing good support for study validity.

Although the supervisor survey measure did not produce meaningful ANOVA ranks to compare to the other two measures, an average score from the three questions assessing increases in knowledge, confidence, and job performance was calculated and correlated with the knowledge measure using the same Spearman ranking procedure. The results showed a correlation coefficient of .62 for the knowledge increase and the supervisors' survey composite increase, again showing moderate correlation between the two measures.

A sensitivity analysis was performed to assess the change in correlation from the omission of the Comm/Computers functional discipline (which had been the obvious outlier in the previous comparison by ranks). The new Spearman rank correlation coefficient for the knowledge and self-efficacy measures was found to be .85, which would indicate high correlation of the two measures (allowing for the Comm/Computers exception).

Histograms of Additional APDP-Related Questions

As discussed in Chapter III, additional APDP-related questions were added to the self-efficacy questionnaire, in part to assess attendees' knowledge and opinions of APDP and also to supplement the assessment of SYS200's broadening role. The first group of questions assessed the degree to which an individual understands the roles and responsibilities of other functional disciplines. For these questions, a shift to the right in strength of response would be expected (for those individuals who attended the course). Histograms of the pretest and posttest responses to these questions are presented below and show the expected shift.

Functional Discipline Broadening Questions

Figure 29 depicts the responses to the question regarding the Acquisition Logistics functional discipline.

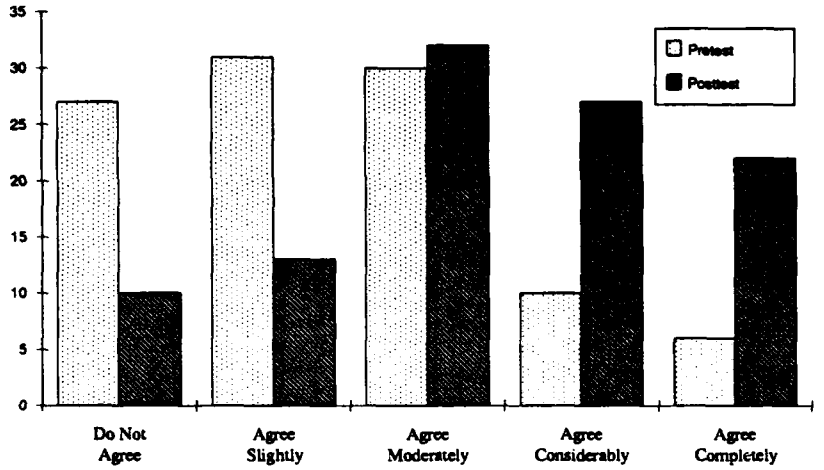


Figure 29. Histogram of responses to "I Can Describe The Roles & Responsibilities of the Acquisition Logistics Functional Discipline."

Figure 30 depicts the responses to the question regarding the Communications/Computers functional discipline.

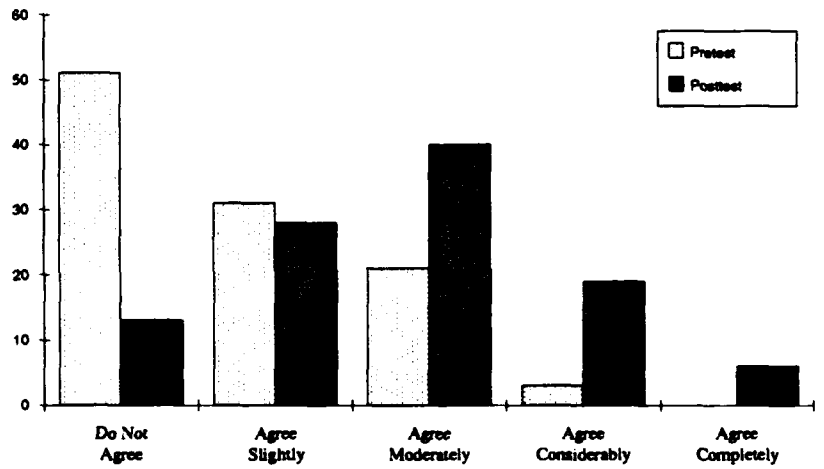


Figure 30. Histogram of responses to "I Can Describe The Acquisition Roles And Responsibilities Of The Communications/Computers Functional Discipline."

Figure 31 depicts the responses to the question regarding the Comptroller (Financial Management) functional discipline.

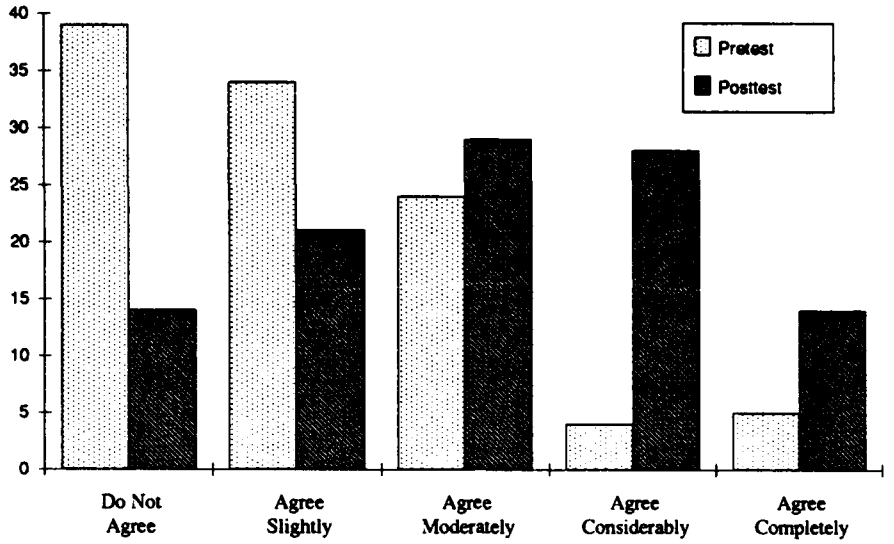


Figure 31. Histogram of responses to "I Can Describe The Acquisition Roles And Responsibilities Of The Comptroller Functional Discipline."

Figure 32 depicts the responses to the question regarding the Contracting functional discipline.

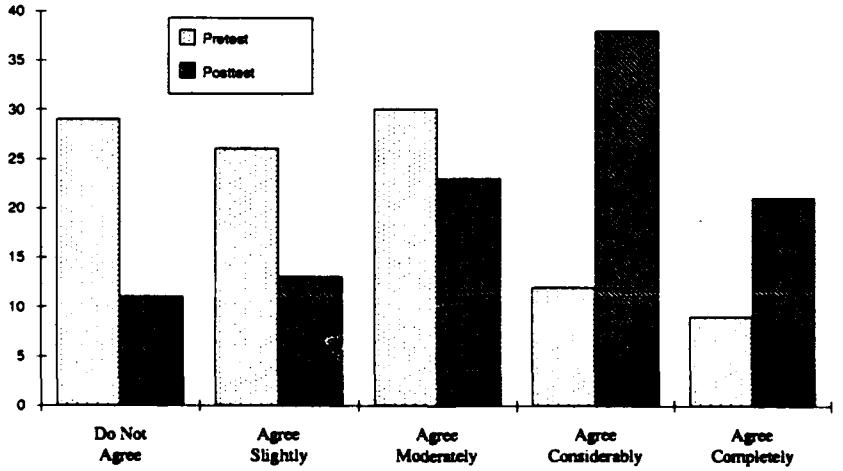


Figure 32. Histogram of responses to "I Can Describe The Acquisition Roles And Responsibilities Of The Contracting Functional Discipline."

Figure 33 depicts the responses to the question regarding the Developmental Engineering functional discipline.

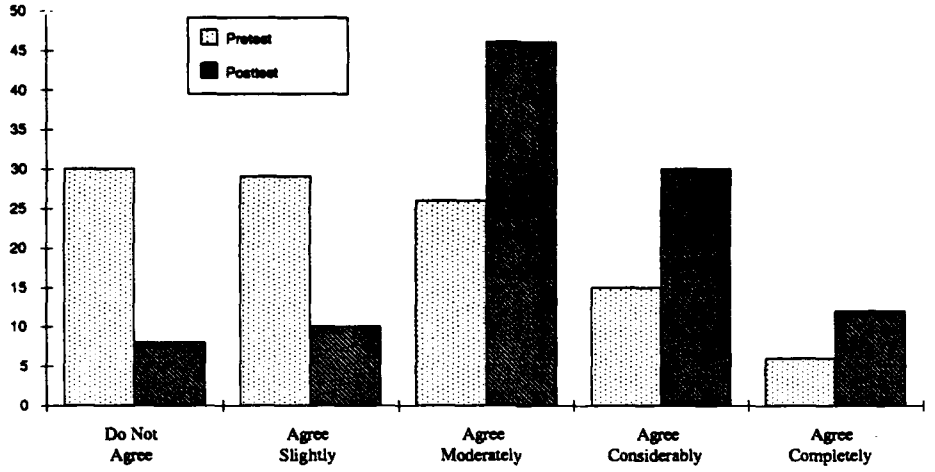


Figure 33. Histogram of responses to "I Can Describe The Acquisition Roles And Responsibilities Of The Developmental Engineering Functional Discipline."

Figure 34 depicts the responses to the question regarding the Manufacturing/Quality Assurance functional discipline.

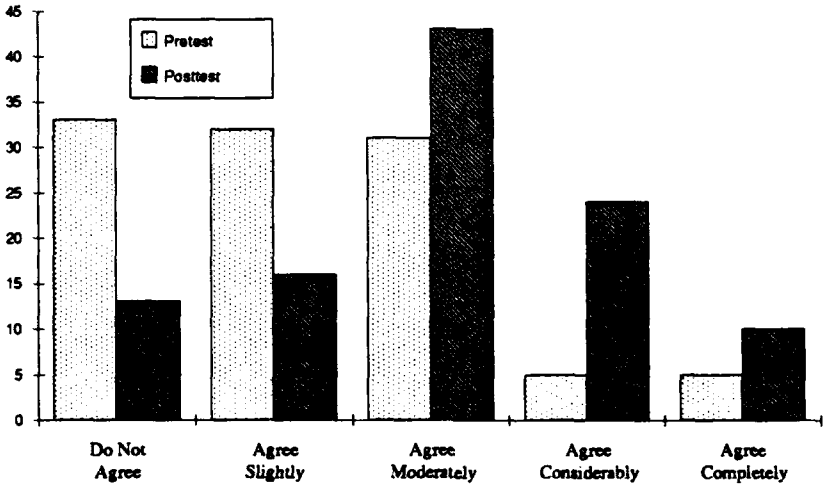


Figure 34. Histogram of responses to "I Can Describe The Acquisition Roles And Responsibilities Of The Manufacturing/Quality Assurance Functional Discipline."

Figure 35 depicts the responses to the question regarding the Program Management functional discipline.

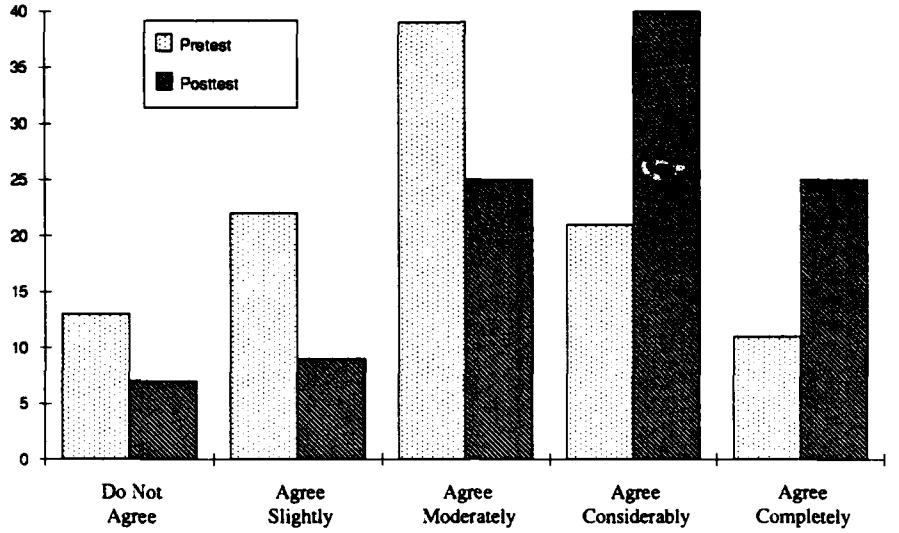


Figure 35. Histogram of responses to "I Can Describe The Acquisition Roles And Responsibilities Of The Program Management Functional Discipline."

Figure 36 depicts the responses to the question regarding the Science & Technology functional discipline.

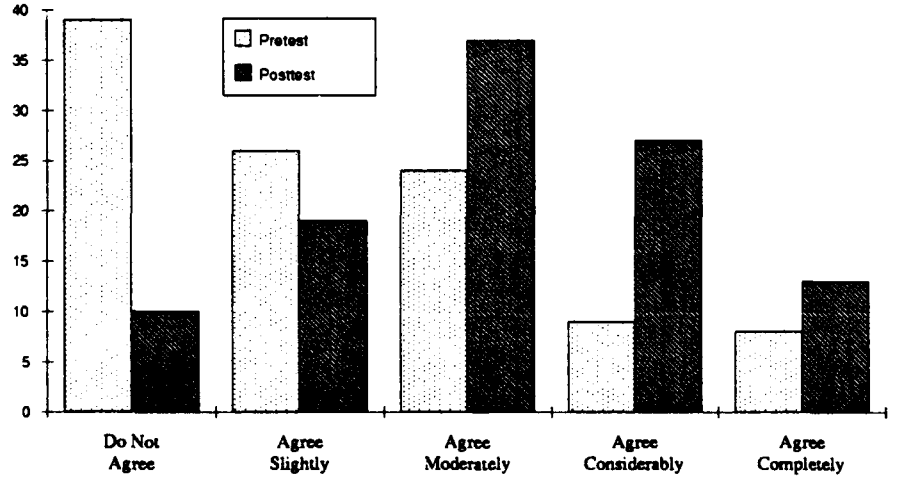


Figure 36. Histogram of responses to "I Can Describe The Acquisition Roles And Responsibilities Of The Science & Technology Functional Discipline."

Figure 37 depicts the responses to the question regarding the Test & Evaluation functional discipline.

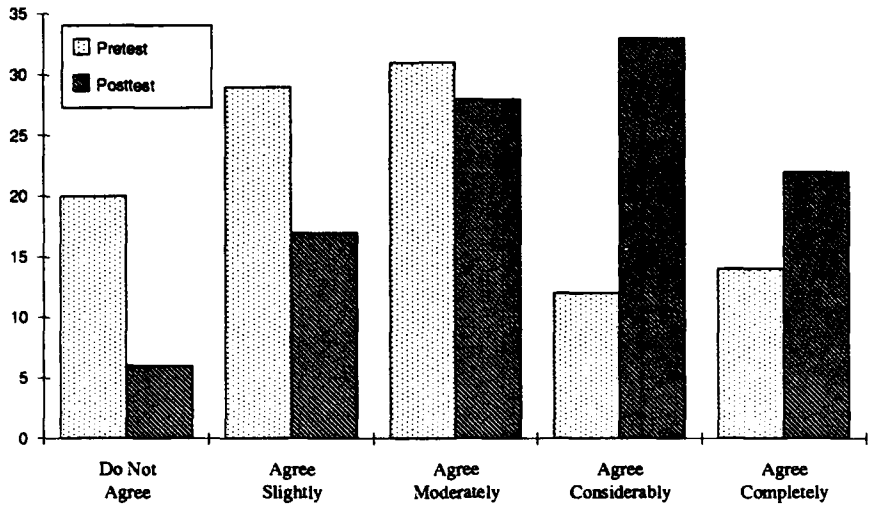


Figure 37. Histogram of responses to "I Can Describe The Acquisition Roles And Responsibilities Of The Test & Evaluation Functional Discipline."

ANOVAs revealed no significant differences by functional discipline which would indicate that the overall shift for any particular group was consistently low. As was found in the self-efficacy measure, however, the Communications/Computers group was ranked lowest on both pre-course and post-course surveys, although the differences were not statistically significant.

In general, all functional disciplines showed a noticeable increase in awareness of other groups' acquisition roles and responsibilities. Table 13 summarizes the results shown in Figures 29 through 37.

Table 13. Shift in Median Response to Questions Regarding Acquisition Roles & Responsibilities from Pretest to Posttest

Functional Discipline	Pretest Median Response	Posttest Median Response
Acq Logistics	1	2
Comm/Computers	0	2
Comptroller	1	2
Contracting	1	3
Engineering	1	2
Mfg/QA	1	2
Program Mgt	2	3
S&T	1	2
T&E	1	2

While these results show that awareness increased across the board, the differences shown between functional roles are partly due to the sample composition (for example, Program Management had the most attendees, and Comm/Computers had the least, which affected the median response to the questions pertaining to those functional disciplines). Nevertheless, these figures still indicate that, in the aggregate, knowledge of other functional disciplines is increasing, providing additional evidence that SYS200 is effective in a broadening role.

Questions Regarding Perceptions of APDP

Other questions were related to attendees' perceptions of their opportunity and ability to meet certification requirements for their functional discipline under the APDP program. Since these were not specifically addressed in the course, changes in response between pretest and posttest were expected to be less pronounced and less meaningful. Of more interest is

the location of the streng n of response to these questions. Histograms of pretest and posttest responses to these questions are presented below.

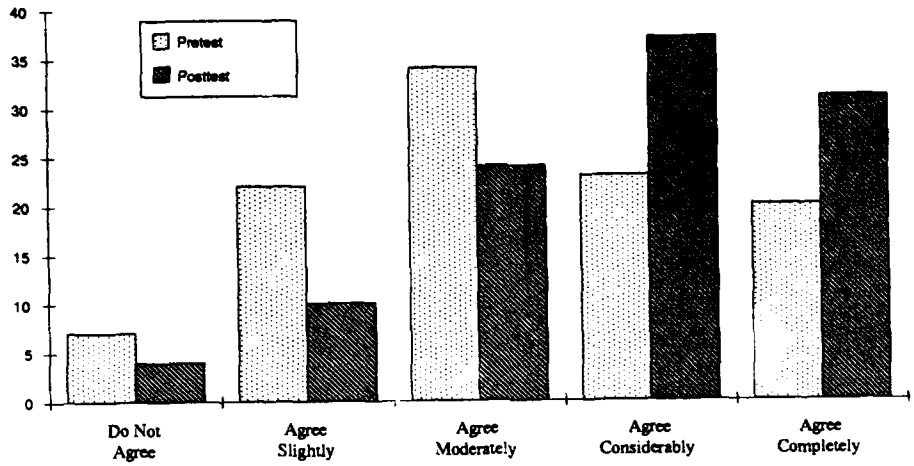


Figure 38. Histogram of responses "I Can Describe The Purpose Of The Acquisition Professional Development Program."

These responses imply that SYS200 attendees are being exposed to APDP and its intended purpose.

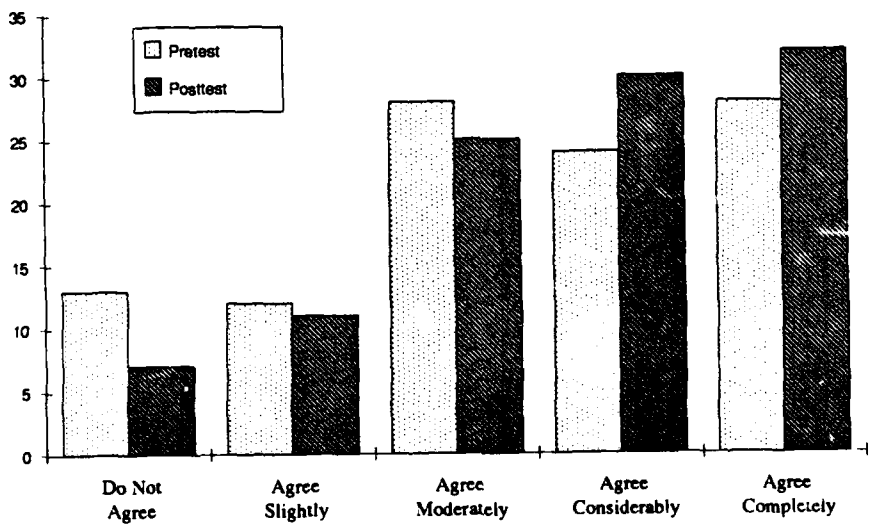


Figure 39. Histogram of Responses to "I Could List My Functional Discipline Certification Requirements Under APDP."

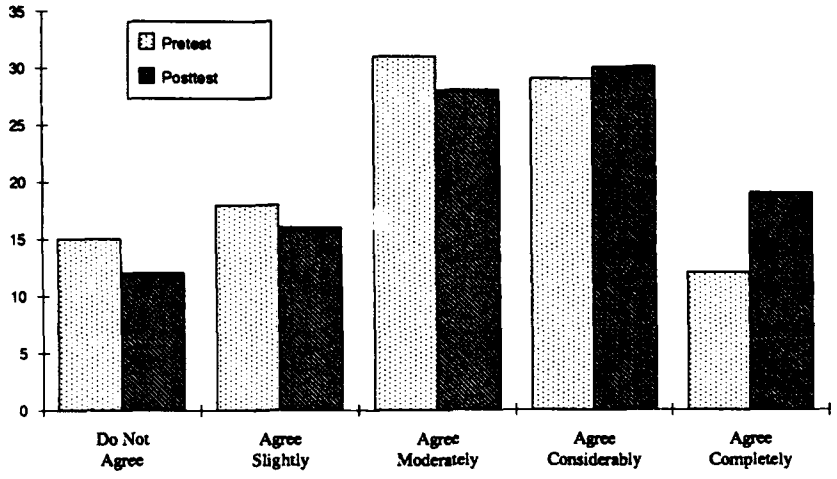


Figure 40. Histogram of responses to "I Believe These Certification Requirements Are Appropriate For Acquisition Managers in My Functional Discipline."

These responses show that in general, SYS200 attendees are gaining a slight increase in specific knowledge of APDP certification requirements, and that most believe these requirements are appropriate.

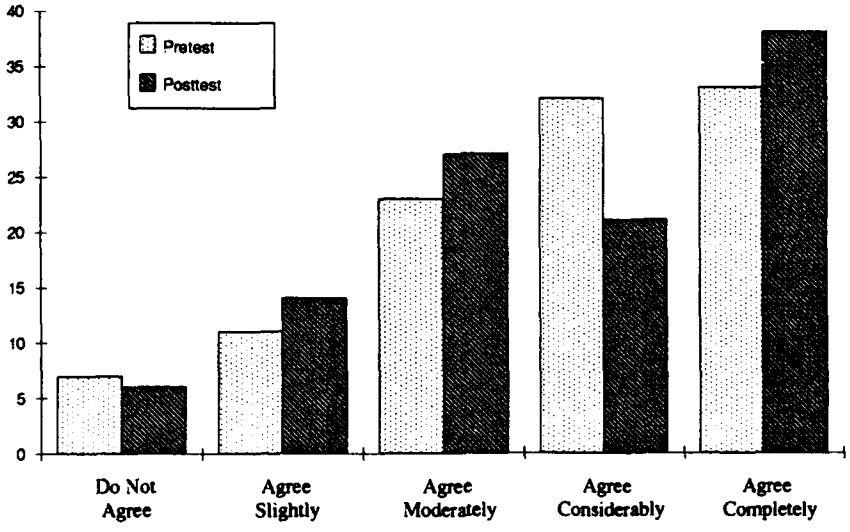


Figure 41. Histogram of responses to "I Believe These Certification Requirements Are Achievable."

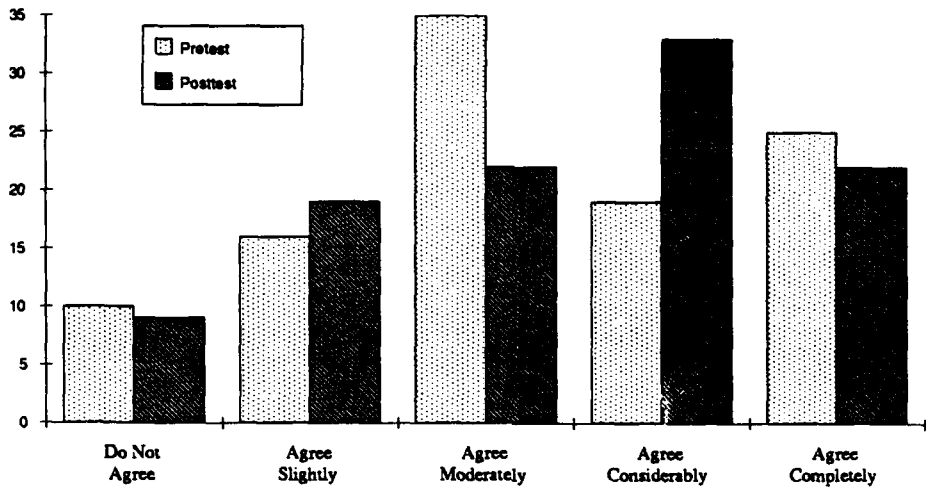


Figure 42. Histogram of responses to "I Believe I Will Have Adequate Opportunities For Achieving These Certification Requirements."

These responses show a general consensus that APDP certification requirements are achievable, and that opportunities for meeting these requirements will be available.

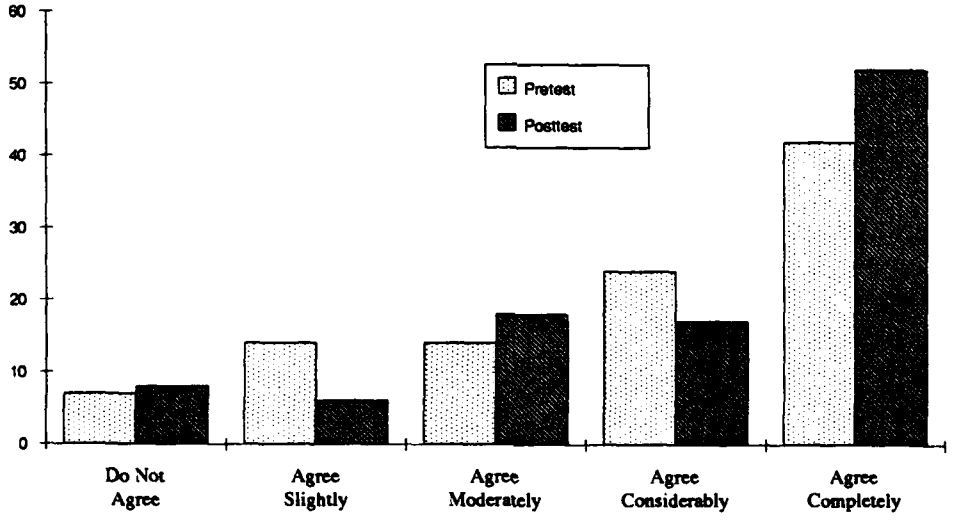


Figure 43. Histogram of responses to "SYS200 Should Be A Required Course For Acquisition Managers In My Functional Discipline."

These responses show that most attendees believe that SYS200 attendance is valuable to their functional discipline.

Summary

The three measures provided consistent support for the construct, as well as showing consistent research results. In all three analyses, no significant differences in increases were found among functional discipline groups.

Indications of increases in acquisition-related knowledge, efficacy, and performance were found, in addition to evidence of broadening for all functional disciplines. The additional survey data regarding perceptions of APDP revealed a broad awareness of the program, as well as general support for its goals and requirements.

Conclusions drawn from these results are discussed in Chapter V.

V. Conclusions and Recommendations

Introduction

The knowledge, self-efficacy and supervisor assessment measures (along with a qualitative comparison of the SYS200 syllabus to Kobylarz's proposed DoD Program Management Body of Knowledge) provided a comprehensive assessment of SYS200's performance in a broadening role. This chapter discusses the results presented in Chapter IV, beginning with accomplishment of research objectives. Other conclusions are also presented for consideration, along with recommendations concerning curriculum breadth, experience waivers and future study.

Meeting Research Objectives

The first research objective was to identify and document the SYS200 course content. The content (as defined in the course syllabus) was then compared to the DoD Program Management Body of Knowledge (DBOK) proposed by Kobylarz. This comparison found that the SYS200 curriculum parallels the proposed DBOK in all but two areas (Risk Management and Leadership/Personal Skills), which demonstrated support for the use of SYS200 as a cross-functional broadening course.

The second objective was to measure the level of increase in course attendees' acquisition-related knowledge by means of a pretest and a series of three quizzes, with the average quiz score serving as the posttest. The results showed that the overall mean increase from pretest to posttest was substantial (41 points, from 41.9 to 82.9). In addition, the posttest scores reflected a smaller variance than did the pretest scores, indicating that the

range of student performance upon course completion was less widely spread than before attendance.

The third objective was to measure the level of increase in course attendees' self-efficacy regarding application of course knowledge and techniques in their work setting, which was accomplished by means of a pre-course survey and a post-course survey. The results of this measure also showed substantial increases from pretest to posttest (overall, from 40.5 to 70 percent), as well as less variability in the post-course survey scores.

The fourth objective was to measure supervisors' perceptions of the level of increase in their subordinates' level of acquisition-related knowledge, efficacy, and performance. This assessment was conducted by means of a post-course survey mailed to supervisors three months after their subordinates completed SYS200. The overall results of this measure indicated moderate improvement in all three categories, which also served to reinforce the findings of the other two measures.

The fifth objective was to identify differences in the results of the three measures which could be attributed to differences by functional discipline, as stated in the research hypotheses. These hypotheses were tested primarily by means of nonparametric single-factor ANOVAs. The results showed that, within the levels of confidence indicated by the reported p-values, none of the differences in scores were attributable to functional discipline; the single exception to this finding was in the knowledge posttest, in which members of the Acquisition Logistics group whose duties were sustainment-oriented scored significantly lower. Despite this difference, the amount of increase in acquisition-related knowledge for all functional disciplines (*including* Acquisition Logistics) was essentially equivalent.

There were also some differences in the self-efficacy survey scores by functional discipline, but in this measure, the differences were found to be insignificant. The amount of increase in self-efficacy for all functional disciplines was again essentially equivalent.

The results of the three measures compared favorably with each other, both qualitatively (in terms of similarity of findings) and quantitatively (by means of correlation of measures). The consistency of results demonstrated good support, not only for the findings or the measures themselves, but also for the research construct.

The final objective was to identify other evidence of SYS200 broadening effectiveness. The study found evidence that functional discipline groups did better on subject matter specific to their discipline, but that no particular functional discipline did significantly better at the aggregate level. In addition, there were overall increases in awareness of the acquisition roles and responsibilities of all functional disciplines.

General Conclusions

The goal of this study was to determine if SYS200 was effective as a broadening course for all functional disciplines. The construct for evaluating the course's effectiveness by means of three complementary measures was based on the premise that the SYS200 curriculum was sufficiently broad, as shown in the comparison to the DoD Program Management Body of Knowledge (DBOK).

The results of the research demonstrated that SYS200 is performing well as an overview of the acquisition process for all functional disciplines. Furthermore, equivalent group increases in knowledge and self-efficacy, as

well as overall increases in awareness of all functional disciplines' acquisition roles and responsibilities, suggest that SYS200 is functioning effectively as a broadening course.

Curriculum Breadth

While the study results indicated that, in general, the course is achieving its intended objectives, the research also found that some aspects of acquisition management (specifically, Risk Management and Leadership/ Personal Skills) were not addressed in detail in the SYS200 course content. In addition, the low scores posted by the Acquisition Logistics group suggest that the lack of subject material relative to sustainment-oriented activities may be negatively affecting the performance of some members of that functional discipline. In general, though, the course content is representative of the overall acquisition process as currently defined.

Significance of Experience

Acquisition experience was found to be a negligible factor in determining knowledge and self-efficacy measure scores. On the knowledge pretest, this was especially true for attendees who had at least four years of experience, for whom each additional year of experience would only account for an increase of two-tenths of a point. On the posttests, experience became even less of a factor. These results suggest that having several years of acquisition-related experience, while somewhat helpful, does not necessarily ensure a broad base of acquisition knowledge or capabilities.

Recommendations

Curriculum Breadth

As described in Chapter I, the field of acquisition management is both diverse and dynamic, and is certainly one of the most challenging areas in management today. In light of these challenges and study findings, the SYS200 faculty should consider subject material relative to Risk Management, Leadership/Personal Skills, and sustainment-oriented Logistics for incorporation into the course curriculum.

The comparison of the SYS200 curriculum with the proposed DBOK suggests that Risk Management and Leadership/Personal Skills should be part of a comprehensive overview of acquisition management.

Study findings of significant differences attributed to the sustainment-oriented portion of the Acquisition Logistics group suggest that some recent Air Force developments are not yet reflected in the course content. The merger of Air Force Logistics Command and Air Force Systems Command into Air Force Materiel Command (AFMC) brings acquisition and sustainment activities closer together -- as does implementation of AFMC's Integrated Weapons System Management (IWSM) concept, in which the ultimate goal is a single organization responsible for the "cradle-to-grave" acquisition *and* support of weapon systems. In light of these developments, SYS200 should be updated to reflect this philosophy.

Experience Waivers

Acquisition experience was shown not to be a significant factor in study measures. In light of this finding, blanket experience waivers for the

APDP certification requirement for completion of SYS200 should not be granted. The results of this study which argue against granting blanket experience waivers are appropriately reflected by the following comment from the supervisor survey:

> This student has 14 years experience with 7 of those in a [system program office]. He has a master's from AFIT in Logistics, took this course to fill the square, and yet still got something out of the course.

Alternatively, some other measure (besides years of experience) which could assess the breadth of an individual's acquisition-related knowledge and capabilities would be appropriate for purposes of waiving certification requirements.

Further Study

Continuation of this study has two potential advantages: 1) additional observations would lead to greater statistical power and would allow multivariate analysis as a more complete matrix of functional discipline versus years of experience becomes available; and 2) additional changes made to the course could be compared to the "baseline" established in this study as a means of assessing improvement of the educational process. Expanding this study to satellite locations would further add to sample size and would allow for consideration of potential differences in quality by location.

Adapting a similar methodology for evaluating other courses mandated by the APDP program could provide an assessment of the effectiveness of each course relative to its APDP objective and a comprehensive measure of the effectiveness of the APDP program.

Class Composition

Each functional discipline has a different number of people who will ultimately require SYS200 for APDP certification. Functional discipline representation at the AFIT in-residence course was shown to be generally consistent with the overall requirements. The two exceptions found were the Financial Management and Contracting functional disciplines. The Contracting discrepancy is easily explained, as SYS200 is "desired" but not "required" for certification in that functional discipline.

The Financial Management functional discipline was not proportionately represented, perhaps because its members do not require SYS200 completion until the highest APDP certification level. However, since this is also true for many other functional disciplines, it is not clear why fewer persons from Financial Management are attending. (It is noteworthy that the single supervisor comment on course availability was from a supervisor whose subordinate is in Financial Management.)

Further investigation should be conducted to assess how well SYS200 will be able to meet its future requirements for attendance.

Timing of SYS200 Attendance

This study found that 41 percent of the sample had eight or more years of acquisition experience prior to attending the course. Although this may be a function of "catching up" to APDP requirements, interim guidance from SAF/AQ now calls for most functional disciplines to complete SYS200 for Level III certification (which would typically come later in a person's career). For this reason, experience levels of attendees may continue to be high.

Further study should investigate an "optimal" time for attendance in light of APDP goals, and consider whether SYS200's overview of the acquisition process should be communicated to acquisition personnel earlier in their careers.

Correlation Of Measures

While correlating the results of the three measures was primarily intended to strengthen the research and construct validity, this process also generated another finding of interest.

The single case in which knowledge and self-efficacy scores were not closely correlated occurred in the Communications/Computers functional discipline, where persons tended to score higher on the knowledge tests but lower on the self-efficacy measure (though the differences from the other groups were not statistically significant).

One possible explanation for this finding is that communications and computer systems which are not "embedded" in weapons systems are often procured through a different acquisition process governed by the 700-series Air Force regulations. Lack of familiarity with the DoD 5000-series process taught in SYS200 may be affecting self-assessment of the ability to perform these tasks, despite demonstration of sufficient learning on the knowledge measure.

Further study should investigate possible causes of this phenomenon, assess the differences between these two acquisition processes and (if necessary) reflect upon APDP certification requirements in the face of any discovered differences.

Summary

This study found that SYS200 is performing effectively as a broadening course, and is well-suited for its role as a required course for certification in all acquisition functional disciplines. This study also identified areas for incorporation into the SYS200 curriculum which could enhance its performance relative to APDP goals. Finally, acquisition experience was found not to be a significant factor in determining breadth of knowledge and capabilities.

The results of this study support the concept of acquisition professional development. In the current environment of reductions in force structure and budget authority, it is more important than ever to continue the focus on developing and maintaining a highly educated and motivated acquisition workforce.

Appendix A: SYS200 Course Syllabus

Section 1

COURSE OBJECTIVES:

The purpose of AFIT Course SYS 200, Acquisition Planning and Analysis is to prepare program/project officers for basic management level task accomplishment in a program office.

The objectives of the course are for each student to:

a. Understand the individual management processes involved in weapon systems acquisition.

b. Understand the concept of an integrated team approach to acquisition.

c. Develop/refine skills in planning, analyzing, executing, and controlling acquisition projects.

Section 2

COURSE DESCRIPTION:

SYS 200 consists of lectures, discussions, individual and group exercises in three main subject areas:

I. Planning the Program

Includes an overview of the presentations on the acquisition process, acquisition contracting, financial planning, work breakdown structure generation and network analysis.

II. Achieving Program Objectives

Includes the interfaces with functional groups (the Integrated Team Approach) and introduces these various groups and their unique disciplines: systems engineering, configuration management, software management, test and evaluation, acquisition logistics and contracting. In addition, a group exercise called the Integrative Exercise reinforces these ideas through student group interaction to plan out a given project (Block I) and task various groups of functional specialists (Block II) to get the project done.

III. Controlling the Program

Includes lectures and exercises to introduce various control mechanisms and practice these disciplines: program control, program review (briefing of program status to a new program director), cost estimating and performance measurement (cost/schedule control system criteria) analysis techniques.

Section 3

COURSE OUTLINE

	Lesson or Activity	Number of Hrs
a.	Course Registration/Orientation	1.5
b.	The Acquisition Process	5.5
c.	Program Management	1.5
d.	Acquisition Program Planning	3
e.	Acquisition Program Planning Exercise	3
f.	Financial Management	3
g.	Financial Management Exercise (POM Ex)	3
h.	Work Breakdown Structures	1
i.	WBS Exercise	2
j.	Scheduling	1.5
k.	Networking Exercise	2.5
l.	Exam #1 and Review	1.5
m.	*Integrative Planning Exercise*	12
n.	Systems Engineering	4
o.	Configuration Management	2
p.	Software Management	2
q.	Test & Evaluation	3
r.	Acquisition Logistics	4
s.	Technical Package Requirements Formulation	3
t.	SOW/CDRL Exercise	3
u.	Contracting	2
v.	Dealing with Contractors	2
w.	Facilities Acquisition Management	1.5
x.	Manufacturing Management	2

y.	Exam #2 and Review	1.5
z.	Program Control	1
aa.	Cost Estimating	2.5
bb.	Cost Estimating Exercise	1.5
cc.	Performance Measurement (Including exercise)	7.0
dd.	Final Exam and Review	1.5
ee.	Critique of Program Review and Integrative Exercise	1
ff.	Course Critique, Summary, and Closing Comments	1
	Total	90

Section 4

ADMINISTRATIVE INFORMATION

1) ATTENDANCE POLICY:

While attending SYS 200, all students are under the administration of the Dean, School of Systems and Logistics. The Dean has prescribed that students:

a. Will report on time for and attend all course presentations and exercises.

b. Will be excused from attendance only for emergency or health reasons (student or immediate family member(s)).

c. Will not be excused from any class session to return to their job/home duty station, to attend any courses at local civilian colleges, to attend meetings or briefings or normal duty, or to conduct personal business (medical/dental appointments, vehicle maintenance, committee meetings, sports, etc.).

d. Will notify the Course Director or Class Leader of location or destination if leaving the local area during weekends.

e. Must obtain prior Course Director or Class Leader permission to be absent from any class session.

2) INSTRUCTIONAL METHODS, ACADEMIC FREEDOM, AND NONATTRIBUTION POLICY:

Lectures are presented by faculty members of the School of Systems and Logistics and by selected guest speakers. Instructional methods used include lecture, discussion, in-class exercises and homework exercises. Homework is in the form of readings and take-home exercises. The Integrative Exercise is a group project done partly in class. Additional time outside of class is required to complete the project.

Academic Freedom is defined as the privilege of debate with discretion on any subject related to curricula within the school forum.

Nonattribution means treating statements made in the school forum as privileged information not to be attributed to a specific individual. (That is, outside of the school forum, we do not quote a lecturer's or fellow student's remarks: Such as, "Joe Smith said in class, 'program X did not comply with AFRXX-X.'"). Within these guidelines, each student is encouraged to participate and freely discuss the subject matter presented.

3) STUDENT PREPARATION: Students are expected to:

a. Read scheduled assignments in advance.

b. Remain alert and attentive in class.

c. Take notes. Notes in your own words add greatly to your retention of material presented.

d. Participate actively in discussions, but please do not monopolize or side track them.

e. Remember that some of the speakers are our guests and are contributing their time and efforts to aid our program. Treat them accordingly.

4) CLASS LEADER RESPONSIBILITIES:

The senior military student will be designated the course Class Leader. The Class Leader's responsibilities include:

a. Representing the Course Director.

b. Monitoring class attendance.

c. Monitoring class care of the classroom (housekeeping).

d. Organizing any social functions desired by the class.

e. Serving as a focal point to provide student feedback to the Course Director and the Head of the Department of System Acquisition Management.

5) STUDENT EVALUATION OF THE COURSE:

Four principal means of obtaining student evaluations of the course content and conduct are provided by:

a. Direct feedback to the Course Director/Assistant Course Director at any time and/or at the final class session.

b. Student end-of-course written appraisals submitted at the final class session.

c. Student Class Leader debriefing (optional) on the last class day with the Head of the Department of System Acquisition Management.

d. Post-course (approximately six months) surveys ofselected classes.

Section 5

EVALUATION CRITERIA/GRADING POLICY

SYS 200 grading is on a satisfactory/unsatisfactory (pass/fail) basis. The minimum acceptable (satisfactory) averages are a 70% overall average for the entire course with a average of 60% on all quizes. Failure will occur should either of these minimums not be reached. There is no provision to retake a failed final exam. The only option is to retake the entire course by special permission from the Course Director.

a. The "I" grade will be given for failure to complete the required course work. The "I" recipient has six (6) weeks after the original course completion data to complete such. Two options are inherent with the award of an "I" grade.

(1) Option A: If you submit unfinished work for grading, and it is satisfactory, the "I" grade will be changed to Satisfactory (S). If submitted and the work is unsatisfactory, you will receive the grade Unsatisfactory (U).

(2) Option B: If you do not submit uncompleted course work and desire for valid reasons not to complete it or if you cannot realistically complete the work within a six week time frame, you will receive a "W" grade.

b. The "W" grade will be given to those who must withdraw from a course prior to completing requirements. This grade is not used as a substitute for a failing grade but is only used when attendance is shortened by illness, recall, or other valid reasons.

c. Students will be evaluated in the three areas listed below:

EVALUATION AREA	% OF GRADE
Quiz #1	20
Quiz #2	20
Quiz #3	20
Integrative Exercise	15
Other Exercises	25

NOTE: (Course overall minimum passing average 70%)
(Minimum passing score for the quizes: 60% Average)
(Must meet both of these criteria to pass the course)

Section 6

COURSE SCHEDULE

The detailed class schedule for the course varies with each offering. Therefore, each student is given a copy of the class schedule during the class registration period.

Section 7

INDIVIDUAL LESSON PLANS

The remainder of this document is a detailed description of each lesson in the SYS 200 course. The following is a simple explanation of key parts of the syllabus lesson plan page that should be of greatest interest to the students.

a. Time: Approximate number of classroom hours to be spent on the lesson.

b. Lesson Objective: A broad statement of the ultimate student outcome.

c. References: Major documents used as source data for lesson content.

d. Instructional Material: A listing of the materials the student is provided as a routine part of the curriculum. However, student may receive additional supplemental materials during the conduct of the class. Unless otherwise specified, this supplemental material is optional and nontestable.

e. Student Preparation: Actions the student must accomplish before a particular lesson is formally presented in class.

Section 8

CHEATING

If a student is suspected of cheating on an assignment or examination, he or she may receive a failing grade for (1) the assignment, (2) the examination, or (3) the course. If the student feels the grade is not justified, he or she may appeal first to the course director for reconsideration. Secondly, an appeal may be made to the department head who will review the circumstances and if a conflict still exists, will request a faculty board be convened to investigate the charge and render a recommendation. Upon receipt of the board's recommendation, the department will make the final decision.

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: The Acquisition Process (I-1)

TIME: 5.5 hrs

MODULE OBJECTIVE(S): The Module Objective(s) for each student are as follows:

1. The student will understand the Requirements Evolution Process.

2. The student will understand the process of program phase transition (milestones).

3. The student will understand the objective(s) of the various phases of the acquisition life cycle.

4. The student will distinguish among the four categories of acquisition programs.

5. The student will know the structure of the Air Force Acquisition Executive System.

6. The student will understand the acquisition related responsibilities of the following players / boards / organizations: Defense Acquisition Executive (DAE), Air Force Acquisition Executive (AFAE), Program Executive Officer (PEO), Program Director/Manager (PD/PM), Commanders of the Acquisition Commands, Defense Acquisition Board (DAB), Air Force Systems Acquisition Review Council (AFSARC), and Joint Requirements Oversight Council (JROC).

7. The student will understand the purpose and basic content of the following acquisition program documents / requirements: Mission Need Statement (MNS), System Requirements Document (SRD), Operational Requirements Document (ORD), Acquisition Program Baseline (APB), Exit Criteria, Acquisition Information System (AIS), Program Management Directive (PMD), Integrated Program Summary (IPS), Integrated Program Assessment (IPA), Acquisition Decision Memorandum (ADM).

8. The student will understand the philosophy underlying the interface of the Requirements Generation System, the Acquisition Management System, and the Planning, Programming, and Budgeting System (DoD's three major decisionmaking support systems).

9. The student will understand the process of transitioning a program to Operations and Deployment.

10. The student will identify the Department of Defense, and Air Force Directives and Regulations on systems acquisition.

11. The student will know the DoD guidance (MIL-HDB-248B) on the concept of acquisition streamlining.

12. The student will understand the overall modification management process of an acquired system throughout its life cycle.

13. The student will know the major modification management responsibilities of the Systems Program office / Air Logistics Center / and user.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Lesson viewgraphs

AUDIO-VISUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson readings

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Program Management (I-2)

TIME: 1.5 hrs

MODULE OBJECTIVE(S): The Module Objective(s) for each student are as follows:

1. The student will identify the role definition of the Project Officer in systems acquisition.

2. The student will distinguish between management and acquisition management.

3. The student will identify the dominant and subordinate objectives of a Systems Program Office (SPO).

4. The student will distinguish between a typical single Systems Program Office (SPO) and a typical multiple (basket) Systems Program Office (SPO).

5. The student will understand the interface between a Systems Program Office and other acquisition related organizations.

6. The student will identify the key factors that determine the success of a program.

7. The student will understand the nature of a Project Officer's responsibilities (tasks).

8. The student will identify the skills/attributes that are essential for a Project Officer.

9. The student will identify the keys to success for a Project Officer.

10. The student will understand the general methods available to assist the Project Officer in problem solving / decision making.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Lesson viewgraphs

AUDIO-VISUAL AIDS: Transparency, overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Reading

REQUIRED STUDENT REPARATION: Lesson Readings

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Acquisition Program Planning (I-3)

TIME: 6 hrs

MODULE OBJECTIVE(S): The Module Objective(s) for each student are as follows:

1. The student will understand the top level processes (activities / decisions) required prior to award of an acquisition contract.

2. The student will understand the concept of acquisition strategy.

3. The student will recognize the purpose and content of the acquisition plan.

4. The student will understand the activities required for development and release of a Request for Proposal (RFP).

5. The student will understand the activities of Source Selection.

6. The student will identify contracting decisions that must be made during acquisition planning.

7. The student will understand the acquisition streamlining concepts applied to acquisition planning (RFP and Source Selection).

8. The student will develop an Acquisition Strategy and Acquisition Plan for a simulated program.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Lesson viewgraphs

AUDIO-VISUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson Readings

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Financial Management (I-4)

TIME: 6 hrs

MODULE OBJECTIVE(S): The Module Objective(s) for each student are as follows:

1. The student will understand the Six Year Defense Program (SYDP).

2. The student will understand the Biennial Planning, Programming, and Budgeting System (BPPBS).

3. The student will understand the Enactment Phase of the Federal Budget Process.

4. The student will understand the Execution Phase of the Federal Budget Process.

5. The student will understand the role of the Project Officer in programming resources.

6. The student will understand the concept of the Program Objective Memorandum (POM).

7. The student will forecast financial requirements by preparing a typical System Program Office (SPO) Program Decision Package (PDP), Program Objective Memorandum (POM).

METHOD OF INSTRUCTION: Lecture/Discussion/Group Exercise

INSTRUCTIONAL MATERIALS: Lesson viewgraphs and Exercise

AUDIO-VIDUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson readings
Read POM Exercise

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Work Breakdown Structure (I-5)

TIME: 3 hrs

MODULE OBJECTIVES (S): The module objective(s) for each student are as follows:

1. The student will understand the concept of the Work Breakdown Structure (WBS) in acquisition planning.

2. The student will understand the WBS structure.

3. The student will understand how the Cost Account/Work Package structure fits into the WBS.

4. The student will understand how the different types of Work Breakdown Structures are used in acquisition program management.

5. The student will understand the relationship between the WBS and the Statement of Work (SOW).

6. The student will understand the relationship between the WBS and Contractor Performance Measurement (C/SCSC/Cost Performance Report).

7. The student will understand the benefits of using Work Breakdown Structures in acquisition program management.

8. The student will understand the importance of the Work Breakdown Structure in providing a foundation(thread) for acquisition program management.

9. The student will develop a Summary Work Breakdown Structure (WBS) for a simulated acquisition program.

10. The student will develop a Project Summary Work Breakdown Structure (WBS) for a simulated acquisition program

METHOD OF INSTRUCTION: Lecture/Discussion/Group Exercise

INSTRUCTIONAL MATERIALS: Lesson viewgraphs and Mil-S-881A

AUDIO-VIDUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson Readings
Read WBS Exercise

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Scheduling (I-6)

TIME: 4 hrs

MODULE OBJECTIVE(S): The module objective(s) for each student are as follows:

1. The student will distinguish between the different forms of scheduling techniques (Gantt Chart, Milestone Chart, Flow Process Chart, Line of Balance, and Network Analysis).

2. The student will understand the concept of using Integrated Program Master Schedules within the program office.

3. The student will identify the strengths and weaknesses of the different forms of scheduling techniques.

4. The student will understand the process of acquisition project networking.

5. The student will identify the four basic steps used to construct a network schedule.

6. The student will understand the concept of the critical path.

7. The student will understand the concept of slack time.

8. The student will know the software tools available to assist the Project Officer in scheduling.

9. The student will apply the technique of network analysis to a simulated acquisition program.

10. The student will understand the different solutions availiable to correct a scheduling problem discovered in the network analysis process.

METHOD OF INSTRUCTION: Lecture/Discussion/Group exercise

INSTRUCTIONAL MATERIALS: Lesson viewgraphs

AUDIO-VISUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings/Exercise

REQUIRED STUDENT PREPARATION: Lesson readings
Read Case Exercise

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Acquisition Program Planning (I-7)

TIME: 12 hrs

MODULE OBJECTIVE(S): The Module Objective(s) for each student are as follows:

1. The student will understand the top level processes (activities / decisions) required prior to award of an acquisition contract.

2. The student will understand the concept of acquisition strategy.

3. The student will recognize the purpose and content of the acquisition plan.

4. The student will understand the activities required for development and release of a Request for Proposal (RFP).

5. The student will understand the activities of Source Selection.

6. The student will identify contracting decisions that must be made during acquisition planning.

7. The student will understand the acquisition streamlining concepts applied to acquisition planning (RFP and Source Selection).

8. The student will develop an Acquisition Strategy and Acquisition Plan for a simulated program

METHOD OF INSTRUCTION: Lecture/Discussion/Group exercise

INSTRUCTIONAL MATERIALS: Exercise package, Mil Standards, and Mil-HDBK-245B

AUDIO-VISUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Computer

REFERENCE: Exercise

REQUIRED STUDENT PREPARATION: Read Exercise before class. Submit a package of all taskings required by the course director.

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Systems Engineering (II-1)

TIME: 3 hrs

MODULE OBJECTIVE(S): The module objective(s) for each student are as follows:

1. The student will understand the basic concept/philosophy of Systems Engineering.

2. The student will understand the content of the Systems Engineering Management Plan (SEMP).

3. The student will understand the Systems Engineering Process.

4. The student will differentiate between the Functional, Allocated, and Product Baselines.

5. The student will understand the purpose of each of the major reviews / audits in the Systems Engineering Process.

6. The student will understand the documentation associated with each major design review / audit.

7. The student will know the sequential time phasing of the major reviews / audits.

8. The student will understand the importance of risk management in the Systems Engineering process.

9. The student will identify the major pitfalls of the Systems Engineering process

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Lesson viewgraphs

AUDIO-VIDUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson Readings

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Configuration Management (II-2)

TIME: 1.5 hrs

MODULE OBJECTIVE(S): The Module objective(s) for each student are as follows:

1. The student will understand what is meant by the term configuration.

2. The student will understand the concept of the configuration item (CI).

3. The student will understand the overall purpose of configuration management in weapon system acquisition.

4. The student will understand the functions of configuration management in weapon system acquisition.

5. The student will understand the overall concept of progressive design control.

6. The student will understand the concept of configuration management baselines (functional, allocated, and product).

7. The student will distinguish between a Type A (Systems) specification, Type B (Development) specification, Type C (Product) specification, Type D (Process) specification, and Type E (Material) specification.

8. The student will understand the process required to change a specification.

9. The student will understand the use of the different types of drawings.

10. The student will understand the purpose of design reviews/ configuration audits.

11. The student will understand the difference between an Engineering Change Proposal (ECP) and an Advanced Change Study Notice (ACSN).

12. The student will know the content of a typical Engineering Change Proposal(ECP).

13. The student will understand the function of the Configuration Control Board (CCB).

14. The student will understand the concept of Interface Control.

15. The student will understand the benefits afforded by using configuration management in acquisition program management.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIAL: Lesson viewgraphs

AUDIO-VIDUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson Materials

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Software Management (II-3)

TIME: 2 hrs

MODULE OBJECTIVE(S): The Module Objective(s) for each student are as follows:

1. The student will understand how Air Force agencies manage Mission Critical Computer Resources (MCCR) software throughout the systems acquisition life cycle.

2. The student will describe the eight (8) phases of the software development cycle as outlined in DoD-STD-2167A.

3. The student will summarize the responsibilities of the developing, supporting, and using commands for Mission Critical Computer Resources (MCCR) software life cycle management.

4. The student will identify the purpose of a Computer Resources Working Group (CRWG).

5. The student will know the member organizations on the Computer Resources Working Group (CRWG).

6. The student will identify the purpose of the Computer Resources Life Cycle Management Plan (CRLCMP).

7. The student will know the content of the Computer Resources Life Cycle Management Plan (CRLCMP)

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Lesson viewgraphs

AUDIO-VIDUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson Readings

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Test and Evaluation (II-4)

TIME: 2 hrs

MODULE OBJECTIVE(S): The Module Objective(s) for each student are as follows:

1. The student will understand the need for Test and Evaluation (T&E) in Air Force weapon system acquisition.

2. The student will know the test responsibilities of the various organizations during the systems acquisition life cycle of a system.

3. The student will identify the activities which take place during Development Test and Evaluation (DT&E).

4. The student will identify the activities which take place during Initial Operational Test and Evaluation (IOT&E).

5. The student will identify the activities which take place during Follow-On Operational Test and Evaluation (FOT&E).

6. The student will know the Project Officer's role during all phases (DT&E/IOT&E/FOT&E) of Test & Evaluation during the acquisition of a new system.

7. The student will know the advantages / disadvantages of a combined Development Test & Evaluation (DT&E) and Initial Operational Test & Evaluation (IOT&E).

8. The student will know the purpose of the Test Planning Working Group (TPWG).

9. The student will know the purpose of the Test and Evaluation Master Plan (TEMP).

10. The student will know the purpose of the Requirements Coorelation Matrix (RCM).

11. The student will know the reporting requirements for the Test & Evaluation function of major systems acquisition.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Lesson viewgraphs

AUDIO-VIDUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson readings

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Acquisition Logistics (II-5)

TIME: 2.5 hrs

MODULE OBJECTIVE(S): The module objective(s) for each student are as follows:

1. The student will understand the overall concept of acquisition logistics planning as it applies to the overall systems acquisition process.

2. The student will understand how acquisition logistics planning is used in the overall acquisition planning process.

3. The student will know the objectives of Integrated Logistics Support (ILS) Program as they relate to the systems acquisition process.

4. The student will identify the ten (10) elements of logistics.

5. The student will understand the Logistics Support Analysis (LSA) process used to establish the logistics support structure.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Lesson viewgraphs

AUDIO-VISUAL AIDS: Overhead projector, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson readings

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Technical Package Requirements Formulation (SOW, Data, and Specifications/Standards) (II-6)

TIME: 6 hrs

MODULE OBJECTIVE(S): The module objective(s) for each student are as follows:

1. The student will be able to distinguish requirements as to their correct placement in the different parts of a contract (e.g., the Schedule, the General Provisions, the SOW, the Contract Data Requirements List (CDRL), and the Specification).

2. The student will understand the importance of the Statement of Work (SOW) in the overall systems acquisition process.

3. The student will know the procedures for writing a Statement of Work (SOW).

4. The student will know the Air Force Policy (AFR 310-1) on placing data tasking and data preparation instructions in the Contract Data Requirements List (CDRL).

5. The student will know the procedure for ordering data for an impending contractual action.

6. The student will know the DoD guidance (MIL-HDBK-245B) on developing a Statement of Work (SOW) for an impending contractual action.

7. The student will distinguish between the different types of Statements of Work.

8. The student will understand some of the major problems caused by a poorly prepared Statement of Work (SOW).

9. The student will understand the purpose of a specification / standard.

10. The student will understand the content of a specification / standard.

11. The student will distinguish between a specification and a standard.

12. The student will understand the requirements of a specification for the development of a new system.

13. The student will distinguish between Qualification and Acceptance Test provisions of specifications.

14. The student will distinguish between the Department of Defense Index of Specifications and Standards (DODISS) and the Acquisition Management Systems and Data Requirements Control List (AMSDL).

15. The student will understand the acquisition streamlining tools and techniques used to streamline acquisition documents (MIL-HDB-248B).

16. The student will understand the process by which standards and specifications are annotated to tailor out unnecessary requirements (MIL-HDB-248B).

17. The student will know the different government software packages available to assist the Project Officer in the preparation of acquisition related documents.

18. The student will demonstrate the use of the Acquisition Management Systems and Data Requirements Control List (AMSDL) and Data Item Descriptions (DID's) to select candidate data for application as data by-products of a SOW task.

19. The student will be able to rewrite Statement Of Work (SOW) paragraphs by analyzing draft SOW paragraphs (for errors) and data applications and applying the appropriate policies and procedures to formulate a proper SOW/CDRL package.

20. The student will be able to properly generate new tailored Data Item Descriptions (DIDs) using AF Form 585 (Contract Data Item Substantiation) for a Statement of Work (SOW).

METHOD OF INSTRUCTION: Lecture/Discussion/Group exercise

INSTRUCTIONAL MATERIALS: Data Item Descriptions, AMSDL, and Viewgraph Slides

AUDIO-VIDUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings/Exercise/Classroom references

REQUIRED STUDENT PREPARATION: Lesson readings
Read exercise

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Contracting (II-7)

TIME: 2.5 hrs

MODULE OBJECTIVE(S): The module objective(s) for each student are as follows:

1. The student will know the various parts of a contract.

2. The student will understand the roles of the different types of Contracting Officers [Contracting Officer (PCO), Administrative Contracting Officer (ACO), and Termination Contracting Officer (TCO)] in the systems acquisition process.

3. The student will understand the Source Selection Process portion of the contracting process.

4. The student will understand the acquisition streamlining concepts applied to contracting.

5. The student will understand the Contract Administration portion of the contracting process.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Viewgraph slides

AUDIO-VIDUAL AIDS: Overhead projectors, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson Readings

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Dealing with the Contractor (II-8)

TIME: 1.5 hrs

MODULE OBJECTIVE(S): The module objective(s) for each student are as follows:

1. The student will understand how a contractor is organized to manage a government acquisition program.

2. The student will understand contractor motivation for winning a government contract.

3. The student will recognize the major pressures that a contractor has while managing a government acquisition program.

4. The student will understand the proper ethical/business relationship between a contractor and the government.

5. The student will recognize the best ways in which the Project Officer can improve the interface with a contractor.

6. The student will understand the corrective action mechanisms for unsatisfactory contractor performance relative to severity.

7. The student will understand the purpose of the Defense Contract Management Command.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Viewgraph slides

AUDIO-VISUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson Readings

AQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Facilities Planning (II-9)

TIME: 1.5 Hrs

MODULE OBJECTIVES(S): The module objective(s) for each student are as follows:

1. The student will know the process of acquiring facilities for systems.

2. The student will know the services available to Project Officers from the acquisition civil engineering organization.

3. The student will know the phases in facilities planning.

4. The student will know the Military Construction Program (MCP) planning process.

5. The student will know how facilities requirements are generated.

6. The student will identify the normal source (appropriation) of funds used in facilities acquisition.

7. The student will know who is responsible for providing timely facilities planning for a new system.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Viewgraph slides

AUDIO-VIDUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not Applicable

REFERENCE: Readings

REQUIRED STUDENT PREPARATION: Lesson readings

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Program Control (III-1)

TIME: 1 Hrs

MODULE OBJECTIVE(S): The Module Objective(s) for each student are as follows:

1. The student will distinguish between the functions/ responsibilities of the Program Evaluation, Financial Management, and Plans & Integration elements within Program Control.

2. The student will list the typical end products of the Program Evaluation, Financial Management, and Plans & Integration elements of Program Control.

3. The student will distinguish between appropriation integrity and fiscal integrity.

4. The student will know the different types of budget appropriations / funds used in Program Control.

5. The student will be able to distinguish between the financial terms of commitment, obligation, and expenditure.

6. The student will know the purpose, and content of the Selected Acquisition Report (SAR).

7. The student will know the purpose and content of the Defense Acquisition Executive Summary (DAES).

8. The student will know the purpose, objectives, and requirements of the Acquisition Program Baseline (APB).

9. The student will know how Correlation Matrices are used to control a program through the acquisition life cycle.

10. The student will know the different types of software tools available to assist the Project Officer in managing a program.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Viewgraph slides

AUDIO-VIDUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson readings

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Cost Estimating (III-2)

TIME: 5 hrs

MODULE OBJECTIVE(S): The module objective(s) for each student are as follows:

1. The student will understand the purpose of cost estimating.

2. The student will differentiate between the different types of costs (Program Acquisition Cost, Ownership Cost, Life Cycle Cost, etc) encountered in acquisition program management.

3. The student will understand the purpose of the different types of cost estimates (Independent Cost Analysis, Independent Sufficiency Review, Independent Cost Study, etc.).

4. The student will identify the criteria used by a cost estimator.
5. The student will distinguish between the cost estimating methodologies available to perform cost estimating.

6. The student will understand the cost estimating technique of economic escalation.

7. The student will understand the cost estimating technique of learning curves.

8. The student will understand the procedures for applying the economic escalation to a cost estimate.

9. The student will understand the procedures for applying the learning curve theory to a cost estimate.

10. The student will differentiate between the two cost estimating structures.

11. The student will understand the overall top level procedures for developing a cost estimate for a typical program.

12. The student will develop a cost estimate for a simulated acquisition program.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Viewgraph slides

AUDIO-VIDUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Exercise - B-1B Cost Estimating Case

REQUIRED STUDENT PREPARATION: Review exercise and lesson before class

ACQUISITION PLANNING AND ANALYSIS

SYS 200

LESSON TITLE: Contractor Performance Measurement (C/SCSC) (III-3)

TIME: 7 hrs

MODULE OBJECTIVE(S): The Module Objective(s) for each student are as follows:

1. The student will understand the overall concept of the Cost/Schedule Control Systems Criteria (C/SCSC).

2. The student will understand the objectives of the Cost/ Schedule Control Systems Criteria (C/SCSC).

3. The student will understand the purpose of the Performance Measurement Baseline (PMB).

4. The student will understand the procedures for developing a Performance Measurement Measurement (PMB).

5. The student will understand the concept of variance analysis as it applies to Contractor Performance Measurement (C/SCSC).

6. The student will understand the key concepts (BCWS, BCWP, ACWP, Earned Value, BAC, PMB, MR, EAC, CV, SV, CPI, SPI, CV%, SV%, % Complete, % Spent, % Scheduled, and TCPI) associated with analyzing contractor performance data.

7. The student will understand the difference between a Cost Performance Report (CPR), a Cost/Schedule Status Report (CSSR), and a Contract Funds Status Report (CFSR).

8. The student will calculate the following: CV, SV, EAC, CPI, SPI, CV%, SV%, % Complete, % Spent, % Scheduled, VC, and TCPI.

METHOD OF INSTRUCTION: Lecture/Discussion

INSTRUCTIONAL MATERIALS: Viewgraph slides

AUDIO-VISUAL AIDS: Overhead projector, screen, and chalkboard

INSTRUCTIONAL EQUIPMENT: Not applicable

REFERENCES: Readings

REQUIRED STUDENT PREPARATION: Lesson Readings

Appendix B: Self-Efficacy Questionnaires

SYS200 OBJECTIVES REVIEW

Purpose

The purpose of this questionnaire is to help AFIT identify strengths, weaknesses, and improvement areas in its SYS200 "Acquisition Planning and Analysis" course. This survey is part of an ongoing research effort, and AFIT will use your honest, objective inputs to design improved programs for future students.

Anonymity

Your name will not be used or associated with your answers on this survey. Your social security number is requested only as a means of tracking your answer sheet for a follow-on questionnaire. AFIT will not use or show your social security number in any other manner.

Results

The results of this research will be published in an AFIT thesis in September, 1992, and the final report will be permanently stored with the Defense Technical Information Center (DTIC). As a participant in this survey, you have an opportunity to obtain a summary of the findings and conclusions. The instructor will make available a sign-up sheet on which you may indicate your desire to receive a summary.

Instructions

Use only a number 2 pencil on the answer sheet.

DO NOT put your name on the answer sheet or questionnaire. Mark only your Social Security Account Number (SSAN) in the boxes provided.

Answer all questions according to your initial reaction. Please do not change your responses to earlier questions based on information presented in later questions.

IF YOU ARE SOMEWHAT UNSURE OF YOUR ANSWER, USE YOUR FIRST "INSTINCTIVE" RESPONSE. IF THE QUESTION SEEMS CONFUSING OR AMBIGUOUS, **LEAVE THE ANSWER BLANK** AND INDICATE WHY YOU THINK SO BY COMMENTING DIRECTLY ON THE QUESTIONNAIRE (NOT THE ANSWER SHEET) IN WHATEVER SPACE IS A"AILABLE.

This questionnaire has been designed to take approximately 20-25 minutes. Do not spend too much time on any particular question.

Once you have completed this questionnaire, return it together with your answer sheet to the instructor.

Please use the following responses in answering questions 1 through 99.

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

1. The Advanced Tactical Fighter (ATF) program has completed the Demonstration and Validation phase. I can name which milestone the program has reached as it transitions to the next phase.

2. If told that the C-17 program recently began Low Rate Initial Production, I could identify which phase of the acquisition life cycle the program is in.

3. I could describe the purpose of the Defense Acquisition Board (DAB) to a newly assigned co-worker.

4. I could describe the differences between a Mission Need Statement (MNS) and an Operational Requirements Document (ORD).

5. I can state the purpose of the Biennial Planning, Programming, and Budgeting System (BPPBS).

6. I can name the position of the individual to whom the six Air Force Program Executive Officers (PEOs) report.

7. Given a budget estimate for an acquisition program, I could determine the appropriate Acquisition Category (i.e., ACAT ID, IC, II, III, or IV) to which it most likely belongs.

8. I can differentiate among Acquisition Cost, Ownership Cost, and Total Life Cycle Cost.

9. If requested, I could develop a cost estimate in preparation for a budget submission.

10. I could apply "learning curve" theory to a cost estimate.

11. I can distinguish between various cost estimating methodologies.

12. I could state the purpose of an Independent Cost Analysis (ICA).

13. I can describe the differences in content between a Cost Performance Report (CPR) and a Cost/Schedule Status Report (CSSR).

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

14. I can state the purpose of the Performance Measurement Baseline.

15. I could describe the overall concept of the Cost/Schedule Control Systems Criteria (C/SCSC).

16. Given both budgeted and actual cost and schedule data, I could calculate cost variance and schedule variance.

17. I can identify the benefits of proper Acquisition Logistics planning.

18. I can describe the Logistics Support Analysis (LSA) process used to establish the logistics support structure.

19. I could define the objectives of Integrated Logistics Support (ILS) for a newly assigned co-worker.

20. I can describe the ten DoD elements of logistics (*i.e.*, Maintenance, Supply Support, *etc.*).

21. I could discuss the concept of Acquisition Logistics planning as it pertains to acquisition management.

22. I can describe the major functions of Systems Engineering (*i.e.*, Functional Analysis, Synthesis, Evaluation, and Description).

23. I can identify the iterative steps of the Systems Engineering process.

24. I can define the five types of systems specifications (Types A, B, C, D, and E).

25. I can state the purpose of a Functional Configuration Audit.

26. I can state the purpose of a Preliminary Design Review (PDR).

27. Given a descriptive summary of a project, I could develop a draft Work Breakdown Structure (WBS).

28. I can list the benefits of using WBS in acquisition management.

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

29. I can describe the relationship between WBS and contractor performance measurement.

30. If requested, I could describe the relationship between a WBS and the content of a Statement of Work (SOW).

31. I can state the purposes of the WBS in acquisition planning.

32. I can identify the current changes in DoD manufacturing and the problems associated with implementing these changes.

33. I could discuss the relative global competitiveness of the U.S. manufacturing industry.

34. I can describe the role of manufacturing in the DoD systems acquisition process.

35. I can define a Hardware Configuration Item (HWCI) and a Computer Software Configuration Item (CSCI).

36. I could distinguish among the three types of configuration management baselines (functional, allocated, and product).

37. I can describe the four functions of Configuration Management (*i.e.*, Configuration Identification, Configuration Control, Status Accounting, and Configuration Audits).

38. I can identify the congressional committees involved in the DoD budget enactment process.

39. I could define what a Program Element is.

40. I can state the purpose of the Chairman's Program Assessment (CPA).

41. I could explain the differences between authorizations and appropriations.

42. I can describe the role of the Defense Planning Guidance (DPG) in the Biennial Planning, Programming, and Budgeting System (BPPBS).

43. I can explain the various uses of different appropriations (for example, 3600, 3400, or 3080).

---

a) Do Not Agree	b) Agree Slightly	c) Agree Moderately	d) Agree Considerably	e) Agree Completely

---

44. I can describe the process of committing and obligating funds.

45. I could discuss the steps involved in the preparation of a Request for Proposal (RFP).

46. An acquisition agency is developing its acquisition strategy for a new research and development program. I can name the type of contract which the new program is most likely to use.

47. If assigned to a management team for a new acquisition project, I could draft an outline of the new project's acquisition plan.

48. I can identify the sequence of activities associated with planning for a source selection.

49. I could discuss the reasons for which "other than full and open competition" may be justified.

50. I can describe the "waterfall" process of software development outlined in DoD-STD-2167A.

51. I can state the purpose of a Computer Resources Working Group (CRWG).

52. I could explain the differences between the acquisition management of Information Systems Resources (ISR) and Mission Critical Computer Resources (MCCR).

53. I can identify the phases of the software acquisition life cycle.

54. Given a set of requirements, I could distinguish between those which belong in the Statement of Work (SOW), the Contract Data Requirements List (CDRL), and the Contract Specification.

55. I can state the purpose of a specification.

56. If requested, I could write a Statement of Work (SOW).

57. I could discuss potential problems caused by a poorly written Statement of Work (SOW).

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

58. I can distinguish between a specification and a standard.

59. I can differentiate between Qualification and Acceptance testing.

60. I could describe the process used to "tailor a spec" to meet specific acquisition requirements.

61. I can interpret the information presented by different project scheduling formats (for example, a Gantt chart, a PERT chart, or a Line-of-Balance diagram).

62. I can build a project network schedule.

63. I can describe the relative strengths and weaknesses of the various scheduling techniques.

64. I could use an Integrated Program Master Schedule to assess the status of a particular program.

65. I can determine a network's critical path.

66. I can identify strengths and weaknesses of the various organizational structures (*i.e.*, functional, project, matrix, etc.)

67. I could describe the various roles and responsibilities of program management to a newly assigned co-worker.

68. I can describe the unique aspects of defense systems acquisition management which distinguish it from other forms of management.

69. I can define the following financial terms: commitment, obligation, and expenditure.

70. I could explain the various functions of Program Control (program evaluation, financial management, and plans & integration).

71. I can describe the steps involved in the Source Selection Process.

72. I could distinguish among the various roles and responsibilities of the Principal Contracting Officer (PCO), the Administrative Contracting Officer (ACO), and the Terminating Contracting Officer (TCO).

a) Do Not Agree	b) Agree Slightly	c) Agree Moderately	d) Agree Considerably	e) Agree Completely

73. I could describe the various sections of the Uniform Contract Format (for example, Section A, The Schedule; Section L, Instructions to Offerors; *etc.*).

74. I can discuss the applicability of various types of contracts (for example, Firm Fixed Price (FFP), Cost Plus Fixed Fee (CPFF), *etc.*).

75. I can describe corrective action mechanisms available to acquisition managers for dealing with unsatisfactory contractor performance.

76. I could discuss ethical considerations in dealings between the government and contractors.

77. I can describe the mission of the Defense Contract Management Command (DCMC).

78. I could describe the roles and responsibilities of a Defense Plant Representative Office (DPRO) in administering a contract.

79. I can describe the Military Construction Program (MCP) as it pertains to facilities acquisition management.

80. I could identify the various phases of facilities planning.

81. I can explain how facilities requirements are generated.

82. I can define the role of Test and Evaluation (T&E) in acquisition management.

83. I can state the purpose of the Requirements Correlation Matrix (RCM).

84. I could describe the differences among Developmental Test and Evaluation (DT&E), Initial Operational Test and Evaluation (IOT&E), and Follow-on Operational Test and Evaluation (FOT&E).

Questions 85-99 pertain to the Acquisition Professional Development Program (APDP). Successful completion of SYS200 satisfies one of the course requirements for APDP certification.

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

85. I can describe the acquisition roles and responsibilities of the **Acquisition Logistics** functional discipline.

86. I can describe the acquisition roles and responsibilities of the **Communications/Computers** functional discipline.

87. I can describe the acquisition roles and responsibilities of the **Comptroller** functional discipline.

88. I can describe the acquisition roles and responsibilities of the **Contracting** functional discipline.

89. I can describe the acquisition roles and responsibilities of the **Developmental Engineering** functional discipline.

90. I can describe the acquisition roles and responsibilities of the **Program Management** functional discipline.

91. I can describe the acquisition roles and responsibilities of the **Manufacturing/Quality Assurance** functional discipline.

92. I can describe the acquisition roles and responsibilities of the **Scientific & Technical** functional discipline.

93. I can describe the acquisition roles and responsibilities of the **Test & Evaluation** functional discipline.

94. I can describe the purpose of the Acquisition Professional Development Program (APDP).

95. I could list my functional discipline certification requirements under APDP.

96. I believe these certification requirements are appropriate for acquisition managers in my functional discipline.

97. I believe these certification requirements are achievable.

98. I believe I will have adequate opportunities for achieving these certification requirements.

99. SYS200 should be a required course for acquisition managers in my functional discipline.

Questions 100, 101, and 102. Please select only ONE response from Questions 100-102 combined. Do not select more than one answer.

My primary functional discipline or area of expertise is:

(Note: If you are currently seeking or planning to seek certification in the Acquisition Professional Development Program (APDP), you should respond by selecting the primary APDP functional discipline for which you intend to seek certification. APDP functional disciplines are indicated by the asterisks.)

100. a) Acquisition Logistics *
b) Communications/Computers *
c) Comptroller *
d) Contracting *
e) Developmental Engineering *

101. a) Manufacturing/Quality Assurance *
b) Operations
c) Program Management *
d) Requirements
e) Scientific/Technical *

102. a) Test & Evaluation *
b) Not listed here. Please code in 102(b) on the answer sheet and write your functional discipline here_____ and your Social Security Number here_____.

Questions 103, 104, 105, and 106. Please select only ONE response from Questions 103-106 combined. Do not select more than one answer.

The number of years of acquisition experience I have (rounded up to the nearest whole number) is:

103.	104.	105.	106.
a) 0	a) 5	a) 10	a) 15 or more
b) 1	b) 6	b) 11	
c) 2	c) 7	c) 12	
d) 3	d) 8	d) 13	
e) 4	e) 9	e) 14	

Please use the space on the back of this page for any comments you may have about this questionnaire.

Thank you for your time and effort.

SYS200 POST-COURSE OBJECTIVES REVIEW

Purpose

The purpose of this questionnaire is to help AFIT identify strengths, weaknesses, and improvement areas in its SYS200 "Acquisition Planning and Analysis" course.

Participation

Your participation is voluntary. This survey is part of an important research effort and AFIT will use your honest, objective inputs to design improved programs for future students.

Anonymity

Your name will not be used or associated with your answers on this survey, or on the earlier pre-course survey. Your social security number is requested only as a means of matching your answer sheet to your responses from the pre-course survey. AFIT will not use or show your social security number in any other manner.

Results

The results of this research will be published in an AFIT thesis in September, 1992, and the final report will be permanently stored with the Defense Technical Information Center (DTIC). As a participant in this survey, you have an opportunity to obtain a summary of the findings and conclusions. The instructor will make available a sign-up sheet on which you may indicate your desire to receive a summary.

Instructions

Use only a number 2 pencil on the answer sheet.

DO NOT put your name on the answer sheet or questionnaire. Mark only your Social Security Account Number (SSAN) in the boxes provided.

Answer all questions according to your initial reaction. Please do not change your responses to earlier questions based on information presented in later questions.

IF YOU ARE SOMEWHAT UNSURE OF YOUR ANSWER, USE YOUR FIRST "INSTINCTIVE" RESPONSE. IF THE QUESTION SEEMS CONFUSING OR AMBIGUOUS, **LEAVE THE ANSWER BLANK** AND INDICATE WHY YOU THINK SO BY COMMENTING DIRECTLY ON THE QUESTIONNAIRE (NOT THE ANSWER SHEET) IN WHATEVER SPACE IS AVAILABLE.

This questionnaire has been designed to take approximately 20-25 minutes. Do not spend too much time on any particular question.

Once you have completed this questionnaire, please keep it and your answer sheet together and return them both to the instructor.

Please use the following responses in answering questions 1 through 99.

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

1. I could describe the differences among Developmental Test and Evaluation (DT&E), Initial Operational Test and Evaluation (IOT&E), and Follow-on Operational Test and Evaluation (FOT&E).

2. I can state the purpose of the Requirements Correlation Matrix (RCM).

3. I can define the role of Test and Evaluation (T&E) in acquisition management.

4. I can explain how facilities requirements are generated.

5. I could identify the various phases of facilities planning.

6. I can describe the Military Construction Program (MCP) as it pertains to facilities acquisition management.

7. I could describe the roles and responsibilities of a Defense Plant Representative Office (DPRO) in administering a contract.

8. I can describe the mission of the Defense Contract Management Command (DCMC).

9. I could discuss ethical considerations in dealings between the government and contractors.

10. I can describe corrective action mechanisms available to acquisition managers for dealing with unsatisfactory contractor performance.

11. I can discuss the applicability of various types of contracts (for example, Firm Fixed Price (FFP), Cost Plus Fixed Fee (CPFF), etc.).

12. I could describe the various sections of the Uniform Contract Format (for example, Section A, The Schedule; Section L, Instructions to Offerors; etc.).

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

13. I could distinguish among the various roles and responsibilities of the Principal Contracting Officer (PCO), the Administrative Contracting Officer (ACO), and the Terminating Contracting Officer (TCO).

14. I can describe the steps involved in the Source Selection Process.

15. I could explain the various functions of Program Control (program evaluation, financial management, and plans & integration).

16. I can define the following financial terms: commitment, obligation, and expenditure.

17. I can describe the unique aspects of defense systems acquisition management which distinguish it from other forms of management.

18. I could describe the various roles and responsibilities of program management to a newly assigned co-worker.

19. I can identify strengths and weaknesses of the various organizational structures (*i.e.*, functional, project, matrix, *etc.*)

20. I can determine a network's critical path.

21. I could use an Integrated Program Master Schedule to assess the status of a particular program.

22. I can describe the relative strengths and weaknesses of the various scheduling techniques.

23. I can build a project network schedule.

24. I can interpret the information presented by different project scheduling formats (for example, a Gantt chart, a PERT chart, or a Line-of-Balance diagram).

25. I could describe the process used to "tailor a spec" to meet specific acquisition requirements.

26. I can differentiate between Qualification and Acceptance testing.

27. I can distinguish between a specification and a standard.

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

28. I could discuss potential problems caused by a poorly written Statement of Work (SOW).

29. If requested, I could write a Statement of Work (SOW).

30. I can state the purpose of a specification.

31. Given a set of requirements, I could distinguish between those which belong in the Statement of Work (SOW), the Contract Data Requirements List (CDRL), and the Contract Specification.

32. I can identify the phases of the software acquisition life cycle.

33. I could explain the differences between the acquisition management of Information Systems Resources (ISR) and Mission Critical Computer Resources (MCCR).

34. I can state the purpose of a Computer Resources Working Group (CRWG).

35. I can describe the "waterfall" process of software development outlined in DoD-STD-2167A.

36. I could discuss the reasons for which "other than full and open competition" may be justified.

37. I can identify the sequence of activities associated with planning for a source selection.

38. If assigned to a management team for a new acquisition project, I could draft an outline of the new project's acquisition plan.

39. An acquisition agency is developing its acquisition strategy for a new research and development program. I can name the type of contract which the new program is most likely to use.

40. I could discuss the steps involved in the preparation of a Request for Proposal (RFP).

41. I can describe the process of committing and obligating funds.

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

42. I can explain the various uses of different appropriations (for example, 3600, 3400, or 3080).

43. I can describe the role of the Defense Planning Guidance (DPG) in the Biennial Planning, Programming, and Budgeting System (BPPBS).

44. I could explain the differences between authorizations and appropriations.

45. I can state the purpose of the Chairman's Program Assessment (CPA).

46. I could define what a Program Element is.

47. I can identify the congressional committees involved in the DoD budget enactment process.

48. I can describe the four functions of Configuration Management (i.e., Configuration Identification, Configuration Control, Status Accounting, and Configuration Audits).

49. I could distinguish among the three types of configuration management baselines (functional, allocated, and product).

50. I can define a Hardware Configuration Item (HWCI) and a Computer Software Configuration Item (CSCI).

51. I can describe the role of manufacturing in the DoD systems acquisition process.

52. I could discuss the relative global competitiveness of the U.S. manufacturing industry.

53. I can identify the current changes in DoD manufacturing and the problems associated with implementing these changes.

54. I can state the purposes of a Work Breakdown Structure (WBS) in acquisition planning.

55. If requested, I could describe the relationship between a WBS and the content of a Statement of Work (SOW).

56. I can describe the relationship between WBS and contractor performance measurement.

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

57. I can list the benefits of using a Work Breakdown Structure (WBS) in acquisition management.

58. Given a descriptive summary of a project, I could develop a draft Work Breakdown Structure (WBS).

59. I can state the purpose of a Preliminary Design Review (PDR).

60. I can state the purpose of a Functional Configuration Audit.

61. I can define the five types of systems specifications (Types A, B, C, D, and E).

62. I can identify the iterative steps of the Systems Engineering process.

63. I can describe the major functions of Systems Engineering (*i.e.*, Functional Analysis, Synthesis, Evaluation, and Description).

64. I could discuss the concept of Acquisition Logistics planning as it pertains to acquisition management.

65. I can describe the ten DoD elements of logistics (*i.e.*, Maintenance, Supply Support, *etc.*).

66. I could define the objectives of Integrated Logistics Support (ILS) for a newly assigned co-worker.

67. I can describe the Logistics Support Analysis (LSA) process used to establish the logistics support structure.

68. I can identify the benefits of proper Acquisition Logistics planning.

69. Given both budgeted and actual cost and schedule data, I could calculate cost variance and schedule variance.

70. I could describe the overall concept of the Cost/Schedule Control Systems Criteria (C/SCSC).

71. I can state the purpose of the Performance Measurement Baseline.

72. I can describe the differences in content between a Cost Performance Report (CPR) and a Cost/Schedule Status Report (CSSR).

73. I could state the purpose of an Independent Cost Analysis (ICA).

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

74. I can distinguish between various cost estimating methodologies.

75. I could apply "learning curve" theory to a cost estimate.

76. If requested, I could develop a cost estimate in preparation for a budget submission.

77. I can differentiate among Acquisition Cost, Ownership Cost, and Total Life Cycle Cost.

78. Given a budget estimate for an acquisition program, I could determine the appropriate Acquisition Category (i.e., ACAT ID, IC, II, III, or IV) to which it most likely belongs.

79. I can name the position of the individual to whom the six Air Force Program Executive Officers (PEOs) report.

80. I can state the purpose of the Biennial Planning, Programming, and Budgeting System (BPPBS).

81. I could describe the differences between a Mission Need Statement (MNS) and an Operational Requirements Document (ORD).

82. I could describe the purpose of the Defense Acquisition Board (DAB) to a newly assigned co-worker.

83. If told that the C-17 program recently began Low Rate Initial Production, I could identify which phase of the acquisition life cycle the program is in.

84. The Advanced Tactical Fighter (ATF) program has completed the Demonstration and Validation phase. I can name which milestone the program has reached as it transitions to the next phase.

Questions 85-99 pertain to the Acquisition Professional Development Program (APDP). As stated in AFR 36-27, "APDP is based on the functional responsibility for management of specific acquisition disciplines... The Air Force functional manager for each discipline has determined the unique acquisition education, training, and experience needed to perform acquisition duties in advancing levels of complexity and responsibility."

In keeping with provisions of the Defense Acquisition Workforce Improvement Act and applicable DoD regulations, APDP certification is required for Air Force acquisition managers. Successful completion of SYS200 satisfies one of the course requirements for APDP certification.

---

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

---

85. SYS200 should be a required course for acquisition managers in my functional discipline.

86. I can describe the purpose of the Acquisition Professional Development Program (APDP).

87. I could list my functional discipline certification requirements under APDP.

88. I believe these certification requirements are appropriate for acquisition managers in my functional discipline.

89. I believe these certification requirements are achievable.

90. I believe I will have adequate opportunities for achieving these certification requirements.

91. I can describe the acquisition roles and responsibilities of the **Test & Evaluation** functional discipline.

92. I can describe the acquisition roles and responsibilities of the **Scientific & Technical** functional discipline.

93. I can describe the acquisition roles and responsibilities of the **Manufacturing/Quality Assurance** functional discipline.

94. I can describe the acquisition roles and responsibilities of the **Program Management** functional discipline.

95. I can describe the acquisition roles and responsibilities of the **Developmental Engineering** functional discipline.

96. I can describe the acquisition roles and responsibilities of the **Contracting** functional discipline.

97. I can describe the acquisition roles and responsibilities of the **Comptroller** functional discipline.

98. I can describe the acquisition roles and responsibilities of the **Communications/Computers** functional discipline.

99. I can describe the acquisition roles and responsibilities of the **Acquisition Logistics** functional discipline.

Questions 100, 101, and 102. Please select only ONE response from Questions 100-102 combined. Do not select more than one answer.

My primary functional discipline or area of expertise is:

(Note: If you are currently seeking or planning to seek certification in the Acquisition Professional Development Program (APDP), you should respond by selecting the primary APDP functional discipline for which you intend to seek certification. APDP functional disciplines are indicated by the asterisks.)

100. a) Acquisition Logistics *
b) Communications/Computers *
c) Comptroller *
d) Contracting *
e) Developmental Engineering *

101. a) Manufacturing/Quality Assurance *
b) Operations
c) Program Management *
d) Requirements
e) Scientific/Technical *

102. a) Test & Evaluation *
b) Not listed here. Please code in 102(b) on the answer sheet and write your functional discipline here_____ and your Social Security Number here_____.

Questions 103, 104, 105, and 106. Please select only ONE response from Questions 103-106 combined. Do not select more than one answer.

The number of years of acquisition experience I have (rounded up to the nearest whole number) is:

103.	104.	105.	106.
a) 0	a) 5	a) 10	a) 15 or more
b) 1	b) 6	b) 11	
c) 2	c) 7	c) 12	
d) 3	d) 8	d) 13	
e) 4	e) 9	e) 14	

Please use the space on the back of this page for any comments you may have about this questionnaire.

Thank you for your time and effort.

Appendix C: Supervisor Survey Questionnaire

INSTRUCTIONS: Please circle the appropriate response to each question. Return by pouch or regular mail to: AFIT/LSY (Attn: Capt Hill)
Wright-Patterson AFB, OH 45433

1. Did you supervise the individual prior to his/her attendance at SYS 200?
   a. Yes
   b. No (please skip to Question 6)

2. Before attending SYS 200, my subordinate's knowledge of acquisition management was satisfactory.

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

3. Since attending SYS 200, my subordinate's knowledge of acquisition management has improved.

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

4. Since attending SYS 200, my subordinate's job-related confidence has improved.

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

5. Since attending SYS 200, my subordinate's current job performance has improved.

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

6. Since attending SYS 200, my subordinate has been able to use the information presented in the course.

a) Do Not Agree b) Agree Slightly c) Agree Moderately d) Agree Considerably e) Agree Completely

7. Please provide any comments or suggestions which will assist in course improvement.

_____
_____
_____
_____

Thank you for your time and effort.

Appendix D: ANOVA Tables

Legend

FD 1	Acquisition Logistics
FD 2	Communications/Computers
FD 3	Financial Management (Comptroller)
FD 4	Contracting
FD 5	Developmental Engineering (combined with FD 8)
FD 6	Manufacturing/Quality Assurance
FD 7	Program Management
FD 8	Science & Technology
FD 9	Test & Evaluation
FD 10	Other (APDP Non-participant)
FD 11	Logistics (Sustainment-oriented subgroup)

PT	Knowledge Measure PreTest
QAVG	Knowledge Measure Posttest (Quiz Average)
DELTA	Knowledge Increase (Posttest minus pretest)

PRETOT	Self-Efficacy Measure Pretest
POSTTOT	Self-Efficacy Measure Posttest
DELTA	Self-Efficacy Increase (Posttest minus pretest)

KRUSKAL-WALLIS ONE-WAY NONPARAMETRIC AOV FOR PT BY FD

FD	MEAN RANK	SAMPLE SIZE
1	64.1	24
2	48.8	3
3	45.7	9
4	52.5	3
6	63.4	7
7	59.7	32
8	72.8	19
9	68.9	18
10	57.6	9
TOTAL	59.3	124

KRUSKAL-WALLIS STATISTIC 6.1496
P-VALUE, USING CHI-SQUARED APPROXIMATION 0.6305

PARAMETRIC AOV APPLIED TO RANKS

SOURCE	DF	SS	MS	F	P
BETWEEN	8	7992.81	999.102	0.76	0.6429
WITHIN	115	1.519E+05	1320.63		
TOTAL	123	1.599E+05			

TOTAL NUMBER OF VALUES THAT WERE TIED 114
MAX. DIFF. ALLOWED BETWEEN TIES 0.00001

CASES INCLUDED 124 MISSING CASES 13

KRUSKAL-WALLIS ONE-WAY NONPARAMETRIC AOV FOR QAVG BY FD

FD	MEAN RANK	SAMPLE SIZE
1	50.5	26
2	87.3	5
3	51.1	10
4	44.2	5
6	70.1	7
7	68.2	34
8	81.8	22
9	85.8	19
10	81.3	9
TOTAL	68.9	137

KRUSKAL-WALLIS STATISTIC 17.2974
P-VALUE, USING CHI-SQUARED APPROXIMATION 0.0272

PARAMETRIC AOV APPLIED TO RANKS

SOURCE	DF	SS	MS	F	P
BETWEEN	8	27223.3	3402.91	2.33	0.0227
WITHIN	128	1.868E+05	1459.51		
TOTAL	136	2.140E+05			

TOTAL NUMBER OF VALUES THAT WERE TIED 106
MAX. DIFF. ALLOWED BETWEEN TIES 0.00001

CASES INCLUDED 137 MISSING CASES 0

ONE-WAY AOV FOR QAVG BY FD

SOURCE	DF	SS	MS	F	P
BETWEEN	8	1123.42	140.427	2.46	0.0165
WITHIN	128	7309.46	57.1052		
TOTAL	136	8432.88			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	6.65	8	0.5753

COCHRAN'S Q 0.2119
LARGEST VAR / SMALLEST VAR 4.1562

COMPONENT OF VARIANCE FOR BETWEEN GROUPS 5.77544
EFFECTIVE CELL SIZE 14.4

FD	MEAN	SAMPLE SIZE	GROUP STD DEV
1	79.115	26	8.3957
2	86.466	5	5.0913
3	78.633	10	10.379
4	78.133	5	7.9183
6	83.476	7	6.3270
7	83.078	34	6.8416
8	85.772	22	6.1595
9	85.947	19	8.4028
10	84.703	9	6.8057
TOTAL	82.814	137	7.5568

CASES INCLUDED 137 MISSING CASES 0

TUKEY (HSD) PAIRWISE COMPARISONS OF MEANS OF QAVG BY FD

FD	MEAN	2	9	8	10	6
2	86.466					
9	85.947	0.19				
8	85.772	0.26	0.10			
10	84.703	0.59	0.58	0.51		
6	83.476	0.96	1.05	0.99	0.46	
7	83.078	1.32	1.87	1.84	0.81	0.18
1	79.115	2.82	4.24*	4.30*	2.70	1.92
3	78.633	2.68	3.50	3.50	2.47	1.84
4	78.133	2.47	2.91	2.89	2.20	1.71

FD	MEAN	7	1	3
7	83.078			
1	79.115	2.85		
3	78.633	2.31	0.24	
4	78.133	1.93	0.38	0.17

CRITICAL Q VALUE 4.037 REJECTION LEVEL 0.100
STANDARD ERRORS AND CRITICAL VALUES OF DIFFERENCES
VARY BETWEEN COMPARISONS BECAUSE OF UNEQUAL SAMPLE SIZES.

ONE-WAY AOV FOR QAVG BY FD

SOURCE	DF	SS	MS	F	P
BETWEEN	9	1550.53	172.281	3.14	0.0019
WITHIN	127	6961.13	54.8120		
TOTAL	136	8511.66			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	14.00	9	0.1222

COCHRAN'S Q 0.2334
LARGEST VAR / SMALLEST VAR 5.6149

COMPONENT OF VARIANCE FOR BETWEEN GROUPS 8.99624
EFFECTIVE CELL SIZE 13.1

FD	MEAN	SAMPLE SIZE	GROUP STD DEV
1	81.555	18	5.0111
2	86.466	5	5.0913
3	78.633	10	10.379
4	78.133	5	7.9183
6	83.476	7	6.3270
7	83.078	34	6.8416
8	85.772	22	6.1595
9	85.947	19	8.4028
10	84.703	9	6.8057
11	73.625	8	11.874
TOTAL	82.139	137	7.4035

CASES INCLUDED 137 MISSING CASES 0

TUKEY (HSD) PAIRWISE COMPARISONS OF MEANS OF QAVG BY FD

FD	MEAN	2	9	8	10	6
2	86.466					
9	85.947	0.20				
8	85.772	0.27	0.11			
10	84.703	0.60	0.59	0.52		
6	83.476	0.98	1.07	1.01	0.47	
7	83.078	1.35	1.91	1.88	0.83	0.18
1	81.555	1.86	2.55	2.53	1.47	0.82
3	78.633	2.73	3.58	3.58	2.52	1.88
4	78.133	2.52	2.97	2.95	2.25	1.74
11	73.625	4.30*	5.58*	5.62*	4.36*	3.64

FD	MEAN	7	1	3	4
7	83.078				
1	81.555	1.00			
3	78.633	2.36	1.42		
4	78.133	1.97	1.29	0.17	
11	73.625	4.60*	3.57	2.02	1.51

CRITICAL Q VALUE 4.129 REJECTION LEVEL 0.100
STANDARD ERRORS AND CRITICAL VALUES OF DIFFERENCES
VARY BETWEEN COMPARISONS BECAUSE OF UNEQUAL SAMPLE SIZES.

KRUSKAL-WALLIS ONE-WAY NONPARAMETRIC AOV FOR DELTA BY FD

FD	MEAN RANK	SAMPLE SIZE
1	49.7	24
2	92.8	3
3	68.9	9
4	47.8	3
6	66.4	7
7	66.2	32
8	61.3	19
9	64.6	18
10	67.1	9
TOTAL	65.0	124

KRUSKAL-WALLIS STATISTIC 7.1940
P-VALUE, USING CHI-SQUARED APPROXIMATION 0.5159

PARAMETRIC AOV APPLIED TO RANKS

SOURCE	DF	SS	MS	F	P
BETWEEN	8	9334.58	1166.82	0.89	0.5257
WITHIN	115	1.503E+05	1306.64		
TOTAL	123	1.596E+05			

TOTAL NUMBER OF VALUES THAT WERE TIED 73
MAX. DIFF. ALLOWED BETWEEN TIES 0.00001

CASES INCLUDED 124 MISSING CASES 13

ONE-WAY AOV FOR DELTA BY FD

SOURCE	DF	SS	MS	F	P
BETWEEN	8	940.798	117.599	0.96	0.4736
WITHIN	115	14127.7	122.849		
TOTAL	123	15068.5			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	11.58	8	0.1710

COCHRAN'S Q 0.2527
LARGEST VAR / SMALLEST VAR 70.109

COMPONENT OF VARIANCE FOR BETWEEN GROUPS -0.40489
EFFECTIVE CELL SIZE 13.0

FD	MEAN	SAMPLE SIZE	GROUP STD DEV
1	36.513	24	12.651
2	48.444	3	1.8954
3	42.148	9	6.8416
4	36.111	3	10.205
6	41.761	7	10.260
7	42.437	32	10.662
8	40.473	19	9.5415
9	41.666	18	10.972
10	44.037	9	15.870
TOTAL	41.510	124	11.083

CASES INCLUDED 124 MISSING CASES 13

TUKEY (HSD) PAIRWISE COMPARISONS OF MEANS OF DELTA BY FD

FD	MEAN	HOMOGENEOUS GROUPS
2	48.444	I
10	44.037	I
7	42.437	I
3	42.148	I
6	41.761	I
9	41.666	I
8	40.473	I
1	36.513	I
4	36.111	I

THERE ARE NO SIGNIFICANT PAIRWISE DIFFERENCES AMONG THE MEANS.

CRITICAL Q VALUE 4.099 REJECTION LEVEL 0.100
STANDARD ERRORS AND CRITICAL VALUES OF DIFFERENCES
VARY BETWEEN COMPARISONS BECAUSE OF UNEQUAL SAMPLE SIZES.

ONE-WAY AOV FOR DELTA BY FD

SOURCE	DF	SS	MS	F	P
BETWEEN	9	933.124	103.680	0.84	0.5833
WITHIN	114	14096.5	123.654		
TOTAL	123	15029.6			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	12.37	9	0.1930

COCHRAN'S Q 0.2098
LARGEST VAR / SMALLEST VAR 70.109

COMPONENT OF VARIANCE FOR BETWEEN GROUPS -1.69922
EFFECTIVE CELL SIZE 11.8

FD	MEAN	SAMPLE SIZE	GROUP STD DEV
1	35.708	16	11.740
2	48.444	3	1.8954
3	42.148	9	6.8416
4	36.111	3	10.205
6	41.761	7	10.260
7	42.437	32	10.662
8	40.473	19	9.5415
9	41.666	18	10.972
10	44.037	9	15.870
11	38.125	8	15.036
TOTAL	41.091	124	11.119

CASES INCLUDED 124 MISSING CASES 13

TUKEY (HSD) PAIRWISE COMPARISONS OF MEANS OF DELTA BY FD

FD	MEAN	HOMOGENEOUS GROUPS
2	48.444	I
10	44.037	I
7	42.437	I
3	42.148	I
6	41.761	I
9	41.666	I
8	40.473	I
11	38.125	I
4	36.111	I
1	35.708	I

THERE ARE NO SIGNIFICANT PAIRWISE DIFFERENCES AMONG THE MEANS.

CRITICAL Q VALUE 4.195 REJECTION LEVEL 0.100
STANDARD ERRORS AND CRITICAL VALUES OF DIFFERENCES
VARY BETWEEN COMPARISONS BECAUSE OF UNEQUAL SAMPLE SIZES.

KRUSKAL-WALLIS ONE-WAY NONPARAMETRIC AOV FOR PRETOT BY FD

FD	MEAN RANK	SAMPLE SIZE
1	49.6	18
2	30.8	3
3	64.4	6
4	55.2	5
6	48.5	4
7	64.3	33
8	53.3	16
9	52.9	17
10	39.5	7
TOTAL	51.0	109

KRUSKAL-WALLIS STATISTIC 9.2767
P-VALUE, USING CHI-SQUARED APPROXIMATION 0.3195

PARAMETRIC AOV APPLIED TO RANKS

SOURCE	DF	SS	MS	F	P
BETWEEN	8	9420.25	1177.53	1.17	0.3217
WITHIN	100	1.003E+05	1002.51		
TOTAL	108	1.097E+05			

TOTAL NUMBER OF VALUES THAT WERE TIED 35
MAX. DIFF. ALLOWED BETWEEN TIES 0.00001

CASES INCLUDED 109 MISSING CASES 0

KRUSKAL-WALLIS ONE-WAY NONPARAMETRIC AOV FOR POSTTOT BY FD

FD	MEAN RANK	SAMPLE SIZE
1	41.6	18
2	20.8	3
3	59.8	6
4	47.2	5
6	53.1	4
7	70.1	33
8	54.3	16
9	54.4	17
10	38.4	7
TOTAL	48.9	109

KRUSKAL-WALLIS STATISTIC 20.0436
P-VALUE, USING CHI-SQUARED APPROXIMATION 0.0102

PARAMETRIC AOV APPLIED TO RANKS

SOURCE	DF	SS	MS	F	P
BETWEEN	8	20783.9	2597.99	2.85	0.0069
WITHIN	100	91205.3	912.053		
TOTAL	108	1.120E+05			

TOTAL NUMBER OF VALUES THAT WERE TIED 47
MAX. DIFF. ALLOWED BETWEEN TIES 0.00001

CASES INCLUDED 109 MISSING CASES 0

ONE-WAY AOV FOR POSTTOT BY FD

SOURCE	DF	SS	MS	F	P
BETWEEN	8	53674.4	6709.30	2.27	0.0280
WITHIN	100	2.951E+05	2950.72		
TOTAL	108	3.487E+05			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	9.47	8	0.3046

COCHRAN'S Q 0.2591
LARGEST VAR / SMALLEST VAR 6.5061

COMPONENT OF VARIANCE FOR BETWEEN GROUPS 334.847
EFFECTIVE CELL SIZE 11.2

FD	MEAN	SAMPLE SIZE	GROUP STD DEV
1	211.27	18	53.753
2	185.66	3	30.038
3	248.83	6	43.254
4	227.80	5	34.881
6	233.75	4	53.500
7	261.30	33	46.013
8	232.62	16	57.834
9	228.70	17	76.620
10	212.28	7	39.756
TOTAL	226.91	109	54.320

CASES INCLUDED 109 MISSING CASES 0

TUKEY (HSD) PAIRWISE COMPARISONS OF MEANS OF POSTTOT BY FD

FD	MEAN	7	3	6	8	9
7	261.30					
3	248.83	0.73				
6	233.75	1.35	0.61			
8	232.62	2.45	0.88	0.05		
9	228.70	2.84	1.10	0.24	0.29	
4	227.80	1.82	0.90	0.23	0.25	0.05
10	212.28	3.07	1.71	0.89	1.17	0.95
1	211.27	4.44*	2.07	1.06	1.62	1.34
2	185.66	3.27	2.33	1.64	1.94	1.79

FD	MEAN	4	10	1
4	227.80			
10	212.28	0.69		
1	211.27	0.85	0.06	
2	185.66	1.50	1.00	1.07

CRITICAL Q VALUE 4.108 REJECTION LEVEL 0.100
STANDARD ERRORS AND CRITICAL VALUES OF DIFFERENCES
VARY BETWEEN COMPARISONS BECAUSE OF UNEQUAL SAMPLE SIZES.

ONE-WAY AOV FOR POSTTOT BY FD

SOURCE	DF	SS	MS	F	P
BETWEEN	9	57113.8	6345.98	2.13	0.0337
WITHIN	99	2.950E+05	2979.98		
TOTAL	108	3.521E+05			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	10.08	9	0.3441

COCHRAN'S Q 0.2325
LARGEST VAR / SMALLEST VAR 6.5061

COMPONENT OF VARIANCE FOR BETWEEN GROUPS 332.465
EFFECTIVE CELL SIZE 10.1

FD	MEAN	SAMPLE SIZE	GROUP STD DEV
1	212.50	12	60.043
2	185.66	3	30.038
3	248.83	6	43.254
4	227.80	5	34.881
6	233.75	4	53.500
7	261.30	33	46.013
8	232.62	16	57.834
9	228.70	17	76.620
10	212.28	7	39.756
11	208.83	6	43.379
TOTAL	225.23	109	54.589

CASES INCLUDED 109 MISSING CASES 0

TUKEY (HSD) PAIRWISE COMPARISONS OF MEANS OF POSTTOT BY FD

FD	MEAN	HOMOGENEOUS GROUPS
7	261.30	I
3	248.83	I
6	233.75	I
8	232.62	I
9	228.70	I
4	227.80	I
1	212.50	I
10	212.28	I
11	208.83	I
2	185.66	I

THERE ARE NO SIGNIFICANT PAIRWISE DIFFERENCES AMONG THE MEANS.

CRITICAL Q VALUE 4.205 REJECTION LEVEL 0.100
STANDARD ERRORS AND CRITICAL VALUES OF DIFFERENCES
VARY BETWEEN COMPARISONS BECAUSE OF UNEQUAL SAMPLE SIZES.

KRUSKAL-WALLIS ONE-WAY NONPARAMETRIC AOV FOR DELTA BY FD

FD	MEAN RANK	SAMPLE SIZE
1	49.2	18
2	50.5	3
3	54.5	6
4	45.9	5
6	59.6	4
7	60.1	33
8	53.3	16
9	52.6	17
10	61.9	7
TOTAL	54.2	109

KRUSKAL-WALLIS STATISTIC 2.5544
P-VALUE, USING CHI-SQUARED APPROXIMATION 0.9591

PARAMETRIC AOV APPLIED TO RANKS

SOURCE	DF	SS	MS	F	P
BETWEEN	8	2553.53	319.192	0.30	0.9626
WITHIN	100	1.054E+05	1054.10		
TOTAL	108	1.080E+05			

TOTAL NUMBER OF VALUES THAT WERE TIED 63
MAX. DIFF. ALLOWED BETWEEN TIES 0.00001

CASES INCLUDED 109 MISSING CASES 0

Appendix E: Summary of Supervisor Comments

"This student has 14 years experience with 7 of those in a SPO. He has a Masters from AFIT in Logistics, took this course to fill the square, and yet still got something out of the course. Also this employee is my top program manager."

"Student was an exeptional performer before and after SYS200. The course served as a square filler and an updater on the latest acronyms, but this student knew the subject matter well, long before attending. People like this should be able to CLEP the course--would save TDY funds and better use their time. This is not."

"The benefit of SYS200 to someone who has been in the field for many years is minimal. There should be greater latitude to qualify out of these often "block filling" requirements."
[Student in Comm/Computer Functional Discipline]

"Need more emphasis on Software acquisition/support and its relationship to systems engineering processes."
[Student in S&T/Engineering Functional Discipline]

"Ms. ___ is a senior Air Force executive (GM-15) with several years experience as a system program manager. She possesses a tremendous quantitative background - degrees in math and operations research. Systems 200 is an excellent course for the majority of those attending - not an intellectual challenge for Ms.__."
[Student in Acquisition Logistics Functional Discipline]

"[student] tells me that use of video camera inhibited student participation. Video negated non-attribution so student reluctant to tell valuable lessons learned regarding actual program experiences."
[Student in Project Management Functional Discipline]

"Capt. ___ was already good! SYS200 gave him some polish! Keep doing what you're doing!"
[Student in Project Management Functional Discipline]

"Smaller class would have provided a better interchange."
[Student in Comm/Computers Functional Discipline]

"The individual is putting a program together in preparation of source selection. The team goals helped to prepare him for the challenge and added to the knowledge he has."
[Student in Acquisition Logistics Functional Discipline]

"It is too early to accurately assess tangible job performance improvements related to Capt.___'s completion of SYS200. I am sure that improvement will be noted; but accurate assessments as requested are premature."
[Student in Acquisition Logistics Functional Discipline]

"Stop using volunteer guest speakers, train dedicated instructors. This is an important course."
[Student in Acquisition Logistics Functional Discipline]

"Three weeks is MUCH TOO LONG for people in this laboratory to attend this type of training. One week should suffice with the exception of those who are directly responsible for contractual efforts."
[Student in S&T/Engineering Functional Discipline].

"Increase Availability."
[Student in Financial Management Functional Discipline]

"Would like to see some modules taught on COTS acquisition. Overall the course is excellent. Do not lessen the course in scope or work expected of the student."
[Student in Acquisition Logistics Functional Discipline]

"[student] has a better understanding of the acquisition process, but our day to day work does not require overall program visibility. The best part of the course for engineers working at test centers is the introduction of the overall acquisition cycle, the chain of command or management, and understanding the acronyms used. [student] has told me that the course was well taught and all his questions were answered."
[Student in Test & Evaluation Functional Discipline]

"SAF/AQ PEM job - doesn't have the chance to directly apply what he learned, but it is very important nevertheless, since he directs SPO's & interfaces with OSD and Congress."

"It is difficult to determine course impact within two months."

"SYS200 doesn't change anyone overnight - haven't seen drastic changes. I feel his ability to manage in the future will be enhanced."

"Already a top performer."

"Course is just a square filler for certification."

"Make course shorter - eliminate team exercises."

Number of Responses With No Comment - 39

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Vita

Captain Daryl J. Hauck was born on 22 July 1964 in Aberdeen, South Dakota. He graduated from Thomas B. Doherty High School in Colorado Springs, Colorado in 1982 and attended the U.S. Air Force Academy, graduating with Military Distinction and a Bachelor of Science in Operations Research (with Management as a second major) in May 1986. Upon graduation, he received a regular commission in the USAF and was assigned to the Electronic Systems Division, Hanscom AFB, Massachusetts, as an acquisition project officer on several command, control and communications systems upgrade programs for the National Command Authority and the Strategic Air Command. He was then chosen to serve as ESD's Director of Protocol. He later served as a project manager on the Relocatable Target Capability Program, where he was responsible for directing and evaluating demonstrations of mission planning and intelligence technologies to hold Soviet mobile missiles at risk. Captain Hauck became a graduate student in Systems Management at the School of Systems and Logistics, Air Force Institute of Technology, in May 1991.

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Vita

Captain Charles A. Manship was born on 20 May 1962 in Sanford, Florida. He graduated from Escambia High School in Pensacola, Florida in 1979 and attended The Citadel in Charleston, South Carolina, graduating with a Bachelor's degree in Mathematics in May 1983. Upon graduation, he received his commission in the Air Force, serving his first tour of duty at the Eastern Space and Missile Center (ESMC), Patrick AFB, Florida. He began as a Computer Systems Acquisition Manager for the Eastern Test Range, and later served in the ESMC Directorate of Program Control. In May 1987, he was reassigned to Los Angeles AFB, California, where he was responsible for developing and managing the execution of plans for DoD/STS launch integration and operations. In March 1990, he was chosen to serve as the Space Systems Division Assistant Vice Commander's Executive Officer. Captain Manship became a graduate student in Systems Management in the School of Systems and Logistics, Air Force Institute of Technology, in May 1991.

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13. ABSTRACT *(Maximum 200 words)*

This study assessed AFIT's SYS200 course, "Acquisition Planning and Analysis," to determine whether it serves adequately as a broadening course under the Acquisition Professional Development Program (APDP). APDP certification requires persons in eight acquisition functional disciplines (Acquisition Logistics, Systems R&D/ Engineering, Program Management, etc.) to complete SYS200. Three complementary measures (assessing knowledge, self-efficacy, and a supervisor assessment) were used to determine whether SYS200 conveyed its curriculum effectively to members of all functional disciplines. The results showed that SYS200 attendance produced substantial increases in acquisition-related knowledge, self-efficacy, and supervisor assessments for all functional disciplines. In all three measures, no significant differences in increases between functional disciplines were found. These results indicate that SYS200 is functioning well as a broadening course. This study also identified three areas (Risk Management, Personal/Leadership Skills, and Sustainment) which could enhance course performance relative to APDP goals. In addition, years of acquisition experience was found to be a negligible factor in predicting course performance, indicating experience waivers may be inappropriate.

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a. Highly Significant b. Significant c. Slightly Significant d. Of No Significance

5. Comments

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