

Adoption of Makerspace by Public Libraries for National Rebirth: Edo State in Focus

Idhalama Ogagaoghene Uzezi (CLN)*

Dept. of Library and information Science Ambrose Alli University, Ekpoma, Nigeria

Email: idhalamao@gmail.com

Ikenwe Iguehi Joy (CLN)

Dept. of Library and information Science Ambrose Alli University, Ekpoma, Nigeria

Omigie Christopher Agbeniaru (CLN)

Dept. of Library and information Science Ambrose Alli University, Ekpoma, Nigeria

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Abstract

The public library is established to be a citadel of learning, cultural rebirth, national development, information and knowledge creation. It is no longer seen as a dormant building housing outdated information bearing materials. To this end, the 21st century public library users now visit the library with a lot of expectations and this is the reason why the library must always be above board in meeting their patrons' needs which encapsulate makerspace provision for creativity. This paper therefore investigated state of public library development in Nigeria: Edo State in focus, role of public libraries in national development, level of makerspace adoption in public libraries, integrating makerspace in public libraries for Edo State development, benefits of makerspaces in public libraries and many more.

Keywords: Adoption; Makerspace; Public libraries; National development; National rebirth; Edo State.

1. Introduction

In Nigeria today, the concept of technology is impacting every aspect of human life. The train of development has left the conventional station of getting everything bought to the digital ways of getting everything done. This means people are now creative by way of making things themselves through information and shared knowledge. The library as an organization is a flexible learning institution that encourages creative minds. Generally, since the adoption of information and communication technology (ICT) in library service delivery, the library has being an innovative and creative hub (Massis, 2014). In another sense, libraries and librarians are known to always be in the driver's seat in accepting and introducing the newest, latest, high tech service delivery models such as the makerspace. Makerspace is a library service, function or space that engenders innovation, creativity and proliferation of information and new knowledge for the public library users. This new technology now spreading across libraries in the world, is enhancing public library services and role in nation building. Colegrove (2013), observed that quite a number of libraries are aware of the benefits of makerspaces to librarians and library users hence they are slowly but steadily introducing it across the globe.

Public libraries are centers for scholarship, information, recreation, innovations and discoveries. This Russell and Tiemey (2008) supported by advocating the need for librarians to always adopt, support and by extension nourish change and ingenuity in libraries. In the same vein, Welch and Reynolds (2013) made their position known when they added that a major change in today public library is the adoption of makerspace in support of the library's activities and also to meet up with the changing world. This adoption leads to sharing of ideas that brings about development at the end of the day. Makerspace is actually used to mean a compartment purposely and deliberately created in the library which enables users of the public library to ventilate and cross-fertilize ideas and do collaboration.

2. Conceptual Definition and Purpose

Understanding the concept of makerspace is very crucial to this study, it is used to mean a space provided for people to share creative intelligence which by extension leads to new knowledge. A makerspace may not necessarily be found only in the library though very important. Wong and Patridge (2016), assert that a makerspace is an established hub to invent, create, recreate, explore and tinker while using various kinds of materials to arrive at certain skills. It is said to house different people with various backgrounds with an only aim of inventing and reinventing. These makerspaces are very flexible in the sense that they allow free exchange of views and opinions through exploration, interaction and experimentation.

Scholars like Rurto, Kurti *et al.* (2014) shared some interesting qualities of a typical makerspace by stating that this space is expected to be focused driven to the tastes and objectives of the user population. They opined that the space should be inspiring, full of light and inviting to its users. There is therefore a great correlation between a makerspace and a public library. A public library is that library that renders services to all users irrespective of age, sex, creed or colour and funded by public funds. A major primary target of the public library is to ensure that people

*Corresponding Author

across a state or nation are well informed, educated and knowledgeable. In the final analysis, this can only be realized if makerspaces are fully adopted in public libraries.

3. State of Public Library Development in Nigeria: Edo State in Focus

It is no longer news that there has been a lot of outcry regarding the attitude of young people towards reading culture coupled with the dilapidating state of our public libraries in Nigeria with particular focus on Edo state public libraries. This prompted [Ejechi \(2018\)](#) to opine that the state libraries otherwise known as public libraries in Enugu state, Jos, Benin City, Ogun state and others are practically battling for survival and if urgent step is not taken, some of them will simply extinct. [Ejechi \(2018\)](#), therefore suggested a state of emergency for all public libraries in these states.

In Edo state, the situation is more pathetic as [Idhalama et al. \(2014\)](#) made it clear that public libraries of today are being challenged by lack of qualified staff, inadequate funding, inadequate information bearing materials and others. The disturbing aspect of the issue is the fact that government is yet to display the zeal and will to properly rescue the situation. Public libraries are instrumental to the development of young adults and development of nation, but with the reported cases of public libraries neglect by state and federal governments, one is tempted to ask, when will Nigerian government see the library institutions as development partners? Sometime in 2017, the government of Edo state promised to transform the state libraries, but that dream is yet to be realized after over two years. What therefore comes to mind is whether public libraries are ripe or mature enough to incorporate the new technology of makerspace. It must be noted that makerspace introduction will consume funds and requires flexible and smart librarians to thrive.

4. Role of Public Libraries in National Development

Public libraries as information centers have a core responsibility in the development of a nation. The difference between one nation and another is the difference in their information awareness and utilization. The extent of information provision and use determines the degree of the library contribution to national development however; the tremendous roles of public libraries in national development are as follows:

4.1. Provision of Access to Information

Providing access to information is a crucial role of public libraries, the availability and accessibility of information by a nation's citizens enhance their development. This is why information is regarded as power and a factor in production ([Ikenwe and Omigie, 2015](#)). Consequently, the power of information in the life of a nation mandated public libraries with a fundamental role of providing unrestricted access to information free of charge to the people irrespective of their age, educational status, language, colour, religion and political party concern. [Essays \(2018\)](#), highlighted the benefit of access to information as social information inclusion which include democratic participation and understanding, improved decision making and reduce danger of human rights violation. This implies that, unequal access to information retard development in a nation. Thus, public library as repositories of knowledge and core information service provider provides access to information. This corresponds with the declarations of [IFLA \(2002\)](#) that public libraries:

- Provides equality of services
- Provides access to information, ideas and works of imagination in various formats, supporting personal development in all age groups and active participation in society.
- Contributes to the development and maintenance of intellectual freedom and safeguards basic democratic values and universal civil rights
- Acquire, preserve and make available to all users without discrimination variety of materials
- Tackle information inequality demonstrated in the growing information gap and digital divide.

4.2. Educational Role of Public Libraries

Education is a continuous process for development in the life of an individual. Educating citizens gives them the tools and resources to reduce inequalities. (IREX cited in [Alemayehu \(2014\)](#)). Hence, public libraries are catalyst for educational development by promoting reading, literacy and life-long learning through adult education, continuing education, community information centers, book clubs, provision of facilities, information resources and other reading materials, using modern technologies to augment the process. Johnson and Lanre in [Oyenronke \(2012\)](#) identified five ways public libraries contribute to education as; encouraging reading, expanding learning process, developing learning skills, developing appreciation, attitudes and value and assisting with development task. Interestingly, public libraries are making progress in adopting digital library resources to argument their print resources due to the numerous benefits. According to [Oyinloye et al. \(2016\)](#), the key role of education towards national development has made qualitative education a key component of the 7 point agenda of sustainable economy which requires libraries to improve our educational system.

4.3. Developing New Programmes Relevant for an Information Society

Public libraries develop programs that enhances "beyond access". Beyond access project according to [Alemayehu \(2014\)](#), is an emphasis by International Research and Exchange board (IREX) in which libraries identify ways to contribute, promote and nurture national development goals, while advancing national digital inclusion. Notably, public libraries must go beyond mere depository of books to serve its users in this century of technological

advancement by integrating technology into its services. To this very end, public libraries should train its' users on Information Communication Technology skills in the effective use of digital technology to meet their information needs. In addition, public libraries could collaborate with multimedia bodies to support ICT skills training for library users. This would enhance their literacy and search skills. Similarly, technology could be used to promote health programs through social media, radio and television establishing a network between users and health personnel.

4.4. Promoting Economic Development

Public libraries play prominent role in promoting sustainable and economic development in a nation through the provision of information resources and services to entrepreneurs for business start-up and sustenance, income generation, loan facilities e.t.c. Based on this, [Yusufu \(2011\)](#) opined that public libraries now house special sections for entrepreneurs where they can find sources of information about local and international business. More so, the economic role played by public library is dependent on the access to information because national development is very much influenced by the amount of information available ([Nwosu and Ugbomo, 2010](#)).

4.5. Reduction on the Level of Unemployment in a Nation

Public libraries in a bid to reduce the level of unemployment in a nation engage in the following activities as identified by [Oyenronke \(2012\)](#):

- Organize seminars and workshops by liaising with government agencies in training of youths willing to be entrepreneurs and equip them with loan.
- Creation of awareness to young adults on employment information and entrepreneurship through media. This could be through jingles, television, radio, newspapers e.t.c.
- Provision of mobile library services to youth in rural areas
- Re-engineering youth in the society for positive thinking and actions
- Promote continuing programme for young adults

4.6. Cultural development

Public libraries are local gateway of knowledge and cultural development of the individual and social group, guided towards the realization of national development ([Anyalebechi and Udo-Anyanwu, 2016](#)). Public libraries as reservoirs of information are the most reliable information centers people can seek information on the culture of a people.

5. Level of Makerspace Adoption in Public Libraries

Recently, Makerspace has advanced in popularity as a modern way through which libraries of all types can serve their users effectively and efficiently, particularly, public libraries. There is clearly no doubt that, most public libraries in developing countries have seen the necessity of embracing and adopting makerspace in a bid to satisfy the information needs of its users and provide solutions to nagging problems. According to [Bagley \(2012\)](#), most of the early makerspaces are in public libraries. In support of this claim, the web-based survey conducted by [Bunke \(2013\)](#) had 51% of respondents from public libraries. Perhaps it can be reasonably argued that ,public libraries in a bid to retain its relevance in the society, support learning by creating the enabling environment through makerspace for creative learning, innovations, practical's and sharing of ideas. To this very end, [Aiyebilehin et al. \(2018\)](#), opined that in most cases, public library spaces have been redefined as makerspace in a bid to meet the emerging need for a space for creativity and innovation coupled with access to new technologies.

Aiyebilehin, Onyam and Akpom asserted that a report on the state of public libraries in Nigeria by [LRCN \(n.d\)](#) revealed that many public libraries in Nigeria lack the necessary ICT facilities and recommended ICT facilities be made available in public libraries and librarians be trained on the use of the facilities. [Chisenga \(2004\)](#), also reported that due to lack of funds, many public libraries in sub-Saharan Africa find it difficult to implement ICT project and this result in poor ICT services. [Ikenwe and Adegbilero-Iwari \(2014\)](#), in their study lamented on the situation of public libraries in the 21st century and revealed that it has not fully demonstrated appreciable seriousness in adopting technologies because the modern facilities are lacking which impede users' satisfaction with the library. This has also to a large extent affected the introduction of makerspaces in Nigerian public libraries. The position was further corroborated by [Ajuonuma \(2018\)](#) lamenting thus: "if we have had makerspaces in all Nigerian libraries and schools, the youth would have been able to work together earlier enough to generate solutions that would have positioned the country to an enviable technology, manufacturing, art, and agricultural heights".

6. Integrating Makerspace in Public Libraries for Edo State Development

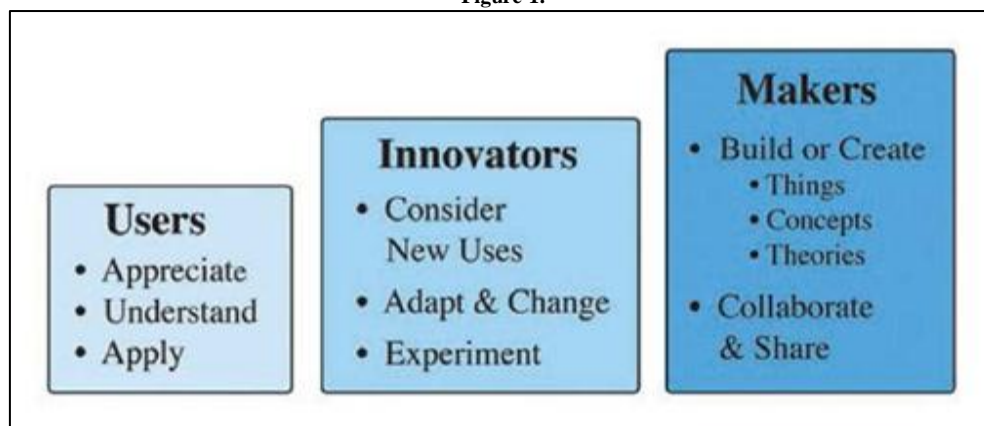
Makerspace is a new technology tool whose benefits to the public library cannot be overemphasized. To this end, the first step to take is acceptability of change by libraries and librarians in Edo state. The librarians should be ready to adopt makerspace in their libraries. The government must play a major role through provision of necessary funds to acquire tools needed for a makerspace environment. Makerspace tools may include AutoCAD and 3D printers, drawing programs, scanners, software and other simple electronics. It must also be noted here that the tools needed in a makerspace depends on the users of that particular space. If they are pilot/aviators, requisite tools should be available, if they are engineers, related machines should be provided for innovative works. Steady power supply or alternative source of power is very important in implementing makerspace in public libraries in Edo state. This

was supported by Krubu and Osawaru (2011) when they opined that any ICT related technology requires power supply in order to thrive. Unfortunately, power supply in Edo state of Nigeria is yet to reach an advanced stage.

It is also on record that Okpala (2016) made it clear that public libraries should draw a work plan for makerspace programme. To her, makerspace is a technical new trend technology that requires strategic/effective planning..... She also noted that there is need for prospective users of the public library to be notified about the existence of makerspaces. This was shown by the University of Pretoria, South Africa as the adoption of the institutions makerspace was communicated through the University of Pretoria news page on April 13, 2015 after its establishment in March same year.

For public libraries in Edo State Nigeria to maintain its original calling, they must proceed beyond mere depository of books and integrating makerspace in it services. Public libraries are gateway to knowledge and so should assist users to become innovators and systematically become makers by being creative and sharing such knowledge with others. Below is a model of Makerspace in libraries which should be considered by public library in Edo State, Nigeria in integrating makerspace.

Figure-1.



6.1. Shapiro Library Makerspace Model Adapted by Okpala (2016)

However, in a related development, the following core steps should be imbibed by Edo State public libraries in integrating makerspace:

- Planning:** This is the first step in integrating makerspace in public libraries. This focus on setting the objectives for adopting makerspace and strategies to achieve results. There is need for the library to engage in long term outcome base strategic planning Bhatt (2018). Public libraries need to identify the potential and actual users of the library, their information needs and strategize how the needs could be met.
- Space:** Space is nexus for makerspace functionality. Thus, public library must identify and create space for makerspace operations or workstation in the library. The space allocated should be conducive enough to promote innovation, collaborative learning and knowledge sharing.
- Fund:** This is essential in the integration of makerspace in public libraries. The library must continuously source for fund from government and other alternative sources like Philanthropist, prominent individuals with passion for reading and innovation.
- Acquisition of makerspace equipment or tools:** Acquisition of makerspace tools such as computers, 3D printers, 3D scanners, recorder, camera, tables, digital technologies, markers, cardboard papers e.t.c. Okpala (2016) listed the technologies and tools to include; digitization technology, software, hardware, furniture (tables, chairs, white board, duster e.t.c.), consumable materials, electricity, 3D printer, 3D scanner, internet, soldering iron, cutting machines, big screens, sew machines, needles, scissors and audio equipment. Also, frantic efforts must be put in place towards the maintenance of the acquired tools and technologies for continual availability and accessibility to users.
- Creation of awareness:** Public libraries must endeavor to create extensive awareness to users on the importance and use of makerspace. This corresponds with the suggestion by Aiyebilehin *et al.* (2018), that in promoting the idea of makerspace in Nigerian public libraries, a lot must be done in the area of creating awareness and changing the service concept perception of Nigerian librarians.
- Staffing:** staff must be assigned to makerspace workstation. Makerspace requires competency in ICTs, hence the staff must be ICT competent to enable them train users to possess the basic skills in order to understand, appreciate, apply, engage in collaborative learning and innovation and share knowledge. There should be room for continuous training of staff.
- Evaluation:** There should be room for periodic assessment of makerspace in public libraries to ensure things are working as planned.

7. Benefits of Makerspaces in Public Libraries

Many people before now have regarded the public library as a passive place for engagement with books and movies. But in this digital era, the library has entered a new realm of creating and building new opportunities for patrons in low and high technologies through library makerspaces. The benefits of this new library strategic innovation is making public libraries relevant in the creative technology and collaborations for users. In advanced

countries, many libraries are now in the movement of library makerspace because of the many benefits accruing to them.

In Nigeria and especially in Edo State where the relevance of public libraries as instrument for cultural and educational development is in doubt, the benefits of makerspace can be harnessed to repositioned public libraries for strategic cultural and educational rebirth in the face of present mistrust and uncertainty. Makerspaces has its goods which are summed up by these authors as follow:

1. Makerspace provides a platform of opportunities for library patrons to create physical and electronic items by using a common provided equipment, skills and resources in the library makerspace.
2. Library makerspace offers library patrons opportunities to promote and preserve their cultural heritage through use of common makerspace resources, equipment, skills, etc. to create digital or physical artifacts, films, photographs, videos, etc. for posterity.
3. It offers individuals windows of exploration and discovery of hidden potentials through progressive creativities.
4. Makerspace provides patrons training on specific skills and open laboratory for independent or collaborative work on a project.
5. It offers educational platform for experimental learning, skills and knowledge sharing by using equipment and facilities available.
6. Makerspaces are practical laboratories for teaching and learning new concepts in the field of science, technology, engineering and mathematics.
7. It is a space that provides informal collaborative learning and discovery of potentials through hand on creation using any combination of art and technology.

8. Envisaged Challenges of Makerspace in Public Libraries in Nigeria

8.1. Lack of Trained librarians

Makerspace is a new frontier in library service functions. In Nigerian library schools, makerspace is not in the curriculums. Integrating this uncharted program into the public libraries without skilled and knowledge based librarians to trek this new path, will certainly be taken with a pinch of salt. Another challenge would be, who prepares the blueprint for the libraries? Even when workshops and conferences are organized for experts to discuss and present papers on the benefits of makerspace, such forums would be mere academics rather than the reality that would be implemented. Also, such platforms would be inadequate to prepare skilled personal for such gigantic technical project when traditionally trained librarians still pervade our public libraries. Makerspace requires a high technical infrastructure with skilled librarians to manage the program so as to ensure its desirability and successful implementation. Successful makerspace therefore, would require library schools to adjust their curriculums to incorporate makerspace and the traditional trained librarians be retrained for the new library project.

8.2. Poor Funding of Public Libraries

Shado (2018) reports that most public libraries in Nigeria are in shabby structures due to poor funding, ill-motivated staff, power supply, outdated resources, lack of ICT facilities, etc. which scare users. In this situation, introducing makerspace in such libraries will be frustrated with poor funding, ill-motivated library staff, poor power supply, lack of ICT facilities, etc. Makerspace is cost intensive, power consuming, proper supervisions, resource persons and equipment replenishment. Funding such ventures in Nigerian public libraries will not be easy because of corruption and cultism that are used to greet genuine ventures and good efforts. Moorefield-Lang (2015), asserts that makerspaces focus on use of certain technologies, resources and equipment which may be very expensive to acquire and install. Public libraries in Nigeria is a free service offering institutions and raising funds for makerspace programs will posed serious challenges since government do not regard public libraries as essential service institutions that are provided with regular subventions. According to Murandi (2015), the primary source of library funding is government grants. Keeping makerspace running depends on how regular the grants. It is possible for makerspace to grow as awareness increases so, the maintenance and expenditure must increase and be regular.

8.3. Makerspace/Noising Nuisance

Library premises are supposed to be a noiseless zone for assimilated reading and research. Makerspace in library premises have the potentials to create and invite loud noise from equipment and activities of patrons. Also, makers' activities can damage the library surface structure and furnishings such as tables, chairs, electrical connections, cables, carpets, etc. Again, untidiness, disorderliness, and insecurity, may expose the library premises and infrastructure to serious dangers. In the light of these issues, Moorefield-Lang (2015) suggests users' agreement to maintain tools and ensures security responsibility to use equipment with care.

8.4. Lack of Maintenance Skills

Fresh graduate librarians may not have the knowledge and skills required to maintain and serve in makerspaces. This would require them to obtain new trainings to be at breast with new technologies and trends in the evolving makerspace programs. This is the easiest way fresh librarians will be able to translate the value and relevance of new programs and technologies in makerspace programs. Again, this would require dedicated time for planning and consistency in execution.

8.5. Safety Precautions

Makerspace equipment have the potential to provide hazardous risk to building structures, patrons and supervisors. Working tools such as saws, sharp tools, electric sockets, soldering irons, laser cutting implement, chemicals, etc. can cause serious harm if not properly handled. Again, taking insurance policy for the makers would not be possible especially for public libraries in Nigeria where grants and government subventions are irregular. In another view, where there is no prohibition of what items not to produce, makerspace could be a hiding place for producing dangerous weapons of war. Also, monitoring who goes in and out may not be that easy where there are no circuit cable television. Blurt (2016), suggests monitoring all who goes in and out of the makerspaces to ensure good security network of makers and equipment through the use of personal and technology gadgets. Also, safety tools such as gloves, glasses, fire extinguishers, sound buckets, blankets, etc. with clear and specific guidelines and precautions for patrons, equipment and spaces be provided.

8.6. Resistance to Innovation

Slatter and Howard (2013) notes that library personnel and even patrons can sometimes be resistant to embracing new innovation in library programs. So, introducing makerspaces in Nigerian public libraries would also not be an easy road to get general acceptance. In the light of this challenge however, Slatter and Howard (2013) suggest provisions for capacity building programs and effective change-management models while advocating for community support in advance of implementation.

9. Conclusion

Makerspace is a new technology concept for libraries to test run the confidence on its ability to create the needed platform for skills acquisition and employability with gainful jobs. In Nigeria public libraries, makerspaces adoption will no doubt increase public confidence in public libraries' ability to meeting their unique roles in Nation building. In this era of youths unemployment in Nigeria and in Edo state in particular, makerspace is an innovative road map to facilitate skills acquisition and sustainable collaborative process to end unemployment by providing them the required tools or equipment to be self-sustaining and reliant in the country.

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