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Makerspaces Realities in Nigerian Academic Libraries

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Introduction

As the world is technology-based, the library is not left behind as technology has brought about developments in library management. There has been a paradigm shift and dynamism in library services. The roles of institutions such as libraries, museums and archives are evolving beyond being primarily about collecting, storing and disseminating information towards becoming spaces of social learning and spaces where knowledge is created and shared (Paulus, 2011). Similarly, Aiyebilehin, Ayam&Akpom (2018) noted that library cannot afford to stay with the same old flag as the library must move, change roles and redefine spaces to retain its relevance. Black and Roberts (2006) argue that new technology has actually reenergized libraries. However, as libraries strategise to develop their virtual services provided, there is need to take into cognizance the physical space in the library.

Chan and Spodick (2014) noted that space is one of the most valuable assets a library possesses. Also, Bryant, Matthews & Walton (2009) opines that shift to electronic collections and services is providing libraries from all sectors with opportunities to use their physical space in different ways that supports the changing information need of the twenty-century students many libraries are dedicating spaces that go beyond the written word to provide services or teach skills to assist faculty and students in their creative endeavours. Turner, Welch & Reynold (2013) added that one of the changes occurring in academic libraries is the use of space to support the library activities and the mandate of its parent body, sometimes in competition with other stakeholders in the academy. This in turn, creates the opportunity for libraries to market their products and services due to the increased number of visitors to the library.

As such, many contemporary authors have also noted the extent to which academic/research libraries have been transformed into learning environments, study spaces, collaborative spaces, maker spaces, etc., where open shelving has been replaced by various other student-oriented libraries and non-library services (Beard & Bawden, 2012; Beard & Dale, 2010; Kao & Chen, 2011; Ludwig & Starr, 2005; Montgomery, 2014; Paulus., 2011). Libraries now provide spaces where people can gather in groups to collaborate on projects, practice presentations or chat. Many libraries host programs and workshops and reserve space for group study, author readings, and other interactive activities.

As noted, libraries have participated in most of these developments, assimilating all emerging technologies (Massis, 2014). According to Okpala (2016), the wave of this technology is gradually spreading worldwide and libraries are participating in this trend by promoting library maker space. Makerspaces were initially launched in 2005, but gained wider recognition after 2011 (Hussain & Nisha, 2017). As Okpala (2016) emphasized, a makerspace is usually equipped with the necessary tools that act as raw materials for creating products and act as a vehicle for creativity and innovation in the university. According to her, the purpose of the makerspace is to give patrons the opportunity to learn directly through experimentation and from each other.

Makerspace as a Learning Space in the Library

A makerspace by design is a place for cross-fertilization of ideas and creation of things (Ginsberg,2015) Makerspaces, also sometimes known as fab labs or hacker spaces tech shops (Davis,2018), are locations where students and patrons can produce, craft, solve problems, collaborate, and develop new skills (Preddy, 2013). Also, makerspace is a physical location where people of all ages can use digital and physical technologies for creative production to explore ideas, learn technical skills, and create new products (Sheridan et al., 2014).Beyond just providing access to innovative technologies, makerspaces are a place to discover those technologies, use them, and in turn cultivate student engagement. The advent of makerspace has enabled individuals incubate ideas and share it with others. Makerspace is a conducive environment where people are able to design products from zero to existence a place designed to ‘democratize the act of making something from scratch’ (Cavalcanti, 2013). Makerspaces therefore entails collaborative work space inside a school, library or separate public/private facility for making, learning, exploring and sharing knowledge that uses high tech or no tech tools (Makerspaces.com, 2019). One area of balance in makerspaces is in providing group training on specific creative activities while also offering open lab times in the makerspace for individuals to work independently or in small collaborative groups on their projects (Burke, 2015). It is more of Do-It-Your-self (DIY) or active learning that opens curiosity, innovations, creativity, etc., it involves using old technologies and new platforms (Curry, 2016)

Makerspaces are believed to hold great potential for learning (Blikstein. 2013). Not all people can learn from books; we need these hands-on opportunities for students to think and explore. Makerspace is a shift in approach to teaching which Fleming (2015) termed ‘turning knowledge into action. Gerstein (2014) pointed out that makerspace is a place to allow the minds of learners to do creative thinking and get access to enabling resources that could help them bring their thoughts into reality. Similarly, Lamb (2015) submits that Makerspaces is one of the proven routes where students can express their imaginations, creativity, expressions of ideas and a place to emerge as tinkers, inventors, collaborators who will bring forth great products. This invariably means that the Makerspace concept allows a touch of playfulness in the learning process, which improves the efficiency of the learning process in a way that is completely different from the usual conventional learning and makes students think more deeply about the concepts learned in the classroom, but with the real-worldwide application.

Yusuf, Segun-Adeniran, Esse, Izuagbe, Iwu-James, Adebayo, Fagbohun, Olawoyin & Owolabi, (2019) noted that higher institutions are gradually encouraging the establishment of library makerspace for collaborative research known as learning commons. It is envisaged that this form of collaboration will birth inventions that could lead to major breakthroughs in science, technology, engineering and mathematics (STEM) (Roffey, Sverko, Therien, 2016). However, makerspaces are not only for scientific and technological activities. Increasingly, makerspaces serve the educational need in fields other than STEM. One good example is the Maker Lab in the Humanities at the University of Victoria. (Wang, Wang, Wilson, & Ahmed, 2016). In a more interdisciplinary vein, other schools are opening makerspaces for the purpose of stimulating innovation and developing students’ skills as entrepreneurs. (Delaney, 2015)

Some of the skills learned in the maker spaces are related to electronics, 3D printing, 3D modeling, coding, robotics, and even woodworking (Omorodion, 2019). Moreover, maker spaces can focus on sewing, laser cutting, programming, or some combination of these skills (Roslund and Rodgers, 2014)

As more and more libraries become interested in creating a makerspace, there are many factors to consider, including sustainability, staffing, funding, ongoing technology maintenance, operating model and future directions for the space. (Wang, Wang, Wilson, & Ahmed, 2016).

The qualifications and skills of the professional librarians who manage the maker spaces are also important. Koh and Abbas (2015) recommend not only learning skills such as leadership, fundraising, program development, technological literacy, and application of learning theories and user behavior, but also a set of "soft skills" including learning and adaptability to changing situations, collaborating, advocating and serving different people. Without having the right set of skills to operate the maker space effectively, a librarian may be a cause of perishing the maker-space area.

Adoption of Makerspace in Academic Libraries in Nigeria

Literatures as shown that academic universities in some developed countries have adopted Library Makerspaces. (Wong and Partridge 2016; Michalak and Rysavy, 2019). For example, in a study by Wong and Partridge (2016), forty-three Australian universities showed that twelve have maker spaces, and three of those few have two maker spaces reserved for this purpose. These are the University of South Wales, the University of Sydney, and Monash University.

However, the level of adoption of makerspaces in academic libraries in Nigeria is still at the embryonic state. This is justified by a study by Yusuf, Segun-Adeniran, Esse, Izuagbe, Iwu-James, Adebayo, Fagbohun, Olawoyin & Owolabi, (2019) who noted that adoption of library makerspaces is still at the early stage.

Similarly, Adamu, Abubakar, and Dogara (2020) conducted a study on the awareness, availability, and adoption of maker space as a tool for staff development in federal university libraries in Northern Nigeria. The results revealed that the majority of the respondents were aware of the maker space, none of the studied university libraries have a maker space, and the majority of the respondents had a positive attitude towards the introduction of a maker space for staff development in university libraries. Among other things, the study recommended that university library management should think about ways to use existing spaces or create space in libraries by decongesting already existing spaces so that library spaces can be created in collaboration with other existing learning centers, such as workstations and study rooms for effective and productive learning.

Efe (2021) assessed librarians' awareness of the Maker space concept in university libraries in South-South Nigeria. The findings showed that librarians in university libraries in South-South Nigeria are well aware of the Makerspace concept. However, the survey results also showed that none of the universities in the South-South region adopted maker spaces in their libraries. Also, findings revealed that challenges affecting Makerspace implementation in university libraries in South-South Nigeria include unavailability of space for Makerspace, insufficient funding for libraries, high cost of Makerspace facilities, and insufficient skilled staff to handle the Makerspace.

Okpala (2016) emphasized that the Mobile College of Technical Vocational Education and Research Centre, established in 2015, functions as a mobile maker space based at the University of Nigeria, Nsukka. However, the maker space is not located in the university library.

Value of Makerspace in Academic Libraries

Because academic libraries already nurture critical thinking and learning, they are a perfect environment for makerspaces (Julian & Parrott, 2015). Academic libraries are essential to achieving the core mandate of higher institution across the nation, and its building plan should include active space management where information commons, learning/maker space, research-commons, group collaborative activities, etc., is given a pride of place. (Edem, Obasi, Ogueri & Eke, 2020).

The library makerspace trend started with public libraries, but more and more academic libraries are recognizing the benefit of makerspaces and their relevance to their strategic mission. This emerging trend can bring faculty and students together across disciplines, facilitate collaborative and hands-on learning, encourage knowledge sharing and creation, and help academic libraries adapt to the ever changing needs of their community (Wang, Wang, Wilson, & Ahmed, 2016). Library makerspaces can also provide free opportunities for patrons to learn and create through play and exploration (Britton, 2012; Moorefield-Lang, 2015).

Makerspace can be a reason for the students to increase their visits to the library, which will make the library more valuable place, affecting its survival positively (Mousawi, 2018)

Okon and Umoh (2014) reported that 'marketing of information and library services in Nigerian University Libraries has been at very low ebb.' However, the introduction of makerspace technology could pave way for creativity, self-discovery, collaboration and further help in marketing the library. these spaces support the library's broader mission, and their context within the university. (Anstice 2012). as well as boost the library's image. The makerspace within the academic library provides new opportunities to all members of campus and is an effective tool in creative teaching and stimulating active learning.

Abram (2013) submitted that libraries with Makerspaces are able to:

- Provide access to a wide variety of tools and technology;
- Facilitate group interaction, knowledge, and resource sharing;
- Supply access to physical space for individual project development;
- Provide an open environment for expression of creativity and innovation;
- Access to equipment for prototyping project ideas for companies

Maker-space hosts different patrons that have different backgrounds who could help, and benefit each other academically, and socially.

Steps in Planning a Successful Academic Library Makerspace in Nigeria

In planning a successful makerspace in Nigerian libraries, Ajemasu, Inuwa, Saad & Jumba (2019) outlined the following steps:

- i. Identify the need for a makerspace in your institution
- ii. Check for available/unused space in your library: It could be a storage room, under the stairs (depending on how large it is).
- iii. Sell your idea to management: This is the reason why librarians are encouraged to participate in courses outside library and information science. In this regard, a librarian skilled in persuasive speaking would do better. Some of these may be obtained in MOOCs (Massive Online Open Courses). These courses are not there just for others, but librarians could take advantage and even learn how to plan a business which would offer those tips on setting up structures in the library.

- iv. Cite other libraries that have makerspace: As libraries in Nigeria are competing with other libraries in Africa and beyond, it would not be a bad idea to cite to your management, one of the successful ventures of your competing institution.
- v. Justify reasons for makerspace in libraries: In doing this, find out the purpose which makerspaces serve and then marry it with that of the library.
- vi. Define who should use your makerspace: Science students, crafters, artists, architects and history students, who should be your makerspace users? Beyond that, can other users outside your organization utilize your makerspace technologies? This should be clearly stated with terms of usage as regards the audience chosen.
- vii. Prepare a proposal, with budget statements: Avoid exaggerated budget; you can start small and grow in the process.
- viii. Organize training for staff and students: The training should gear towards first creating awareness about makerspace, then leading the trainees to the technologies in it. To add, librarians also must be familiar with the makerspace programme for effective deployment and optimal utilization
- ix. Market your makerspace: This should be done through flyers, announcer emails, website, social networks, SMS, word-of mouth, more workshops.

Perceived Challenges facing the creation of Makerspaces in Nigerian Academic libraries

Despite the numerous benefits of makerspace in the library, there are challenges that could hamper its creation in Nigerian academic libraries:

Inadequate Spaces: As physical space plays a pivotal role in setting up a makerspace in the library, Okuonghae (2019) opined that adequate spaces is one thing many libraries do not have and it has hindered many libraries from creating maker spaces programmes and workshops.

Technophobia: The phobia for advanced technology devices pose as a challenge in the adoption of technological innovations in libraries such as the makerspace programme. Okpala (2016) observed that the issue of technophobia is common among the older librarians and they form a greater population in most libraries in Nigeria. This may hinder the creation of makerspaces in most academic libraries.

Incessant power Outage: Irregular power supply remains a bane in creating or running an academic library makerspace effectively. Makerspaces, just like any other library project is affected with the incessant power failure experience in Nigerian libraries (Okuonghae, 2019). Many lofty innovations in libraries have been jettisoned due to the epileptic state of power supply.

Funding issue: Nok (2006) affirmed that poor funding remains one of the major challenges to libraries in Nigeria. Getting funds to create a makerspace might be challenging most especially in this part of the world where budgets are cut down so as to meet up with other projects (Adebayo, et al. 2019). Lofty innovations like the makerspace programme have been kept in view due to lack of funds. Also, lack of financial support by the institutions' administration can be a challenge in creating or running makerspace programmes.

Inadequate Trained Personnel to Handle the Makerspaces: The paucity of trained library personnel poses a big threat to the optimal actualization of makerspace programme in Nigerian academic libraries. In view of this, there must be adequate skilled staff in the library if the library is to organize effective makerspace programs.

Staff Resistance to Change: Humans are sometimes rigid and do not like to change from the usual pattern of doing things and thus preferred the status quo to remain. This resistant attitude on the part of the library staff may pose a challenge to the creation or use of makerspaces in academic libraries in Nigeria.

Conclusion

Academic library being the heart of the institution is not left out in this evolution era where libraries are evolving from a place where patrons consult books to a place where patrons from all disciplines create, interact, explore, collaborate and gain knowledge. As makerspace remain a new trend of academic library services, Okpala (2016) clamour for the integration for maker spaces in academic libraries in Nigeria as it will help to build a community of collaborators, introduce new technologies, as well as, boost the library's image. However, it is therefore imperative for library administrators to support this innovation.

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