



Creating Makerspace in School Libraries in Nigeria: Implications and Challenges

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Creating Makerspace in School Libraries in Nigeria: Implications and Challenges

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Abstract

Libraries of all types are expected to be places where knowledge and skills are acquired. This paper attempts to look at the implications and challenges of creating makerspace in school libraries in Nigeria. Makerspace creates avenue for students to identify their talents/skills, satisfy their curiosity, bring their imaginative ideas to life and emerge with quality products to show. The paper rests on the theory of constructionism propounded by Seymour Papert which stipulates that learning occurs in the students head. The paper also rests on the theory of participatory culture and learning which simply means that students come together in a social space, put their hands to work and come out with great products. The paper identified the implications and challenges of creating makerspace in school libraries in Nigeria and concluded that there is a need to have makerspace in school libraries in Nigeria as this will create route of networking among students.

Keywords: Makerspace, education, school libraries, school librarians, Nigeria.





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Öz

Kütüphanelerin her türünün bilgi ve becerilerin edinildiği yerler olması beklenmektedir. Bu çalışma, Nijerya'daki okul kütüphanelerinde yaratım atölyelerinin kurulmasının etkilerini ve güçlüklerini tespit etmeyi amaçlamaktadır. Yaratım Atölyeleri öğrencilerin yeteneklerini/ becerilerini ortaya çıkarmaları, meraklarını gidermeleri, hayallerindeki fikirlerini hayata geçirmeleri ve kaliteli ürünleri ortaya çıkarıp sunmaları için bir alan oluşturmaktadırlar. Bu araştırma, Seymour Papert'in öncülük ettiği ve öğrenmenin öğrencinin beyinde gerçekleştiğini kabul eden yapısalcılık (constructionism) teorisine dayanmaktadır. Araştırma aynı zamanda basit anlamıyla öğrencilerin bir sosyal alanda bir araya gelmeleri, işe koyulmaları ve muhteşem ürünler ortaya çıkartmaları olan katılımcı kültür ve öğrenme teorisine dayanmaktadır. Bu çalışmada, Nijerya'daki okul kütüphanelerinde yaratım atölyelerinin oluşturulmasının etkileri ve sonuçları tespit edilmiş ve bunun öğrenciler arasında bir ağ oluşturmada yol göstereceği için Nijerya'daki okul kütüphanelerinde yaratım atölyelerinin olması gerektiği sonucuna varılmıştır.

Anahtar sözcükler: Yaratım atölyesi, eğitim, okul kütüphaneleri, okul kütüphanecileri, Nijerya.

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Introduction

The role of school libraries and teacher/librarian is fast changing around the world. They have been saddled with the responsibility of integrating technological tools to meet up with the demands of the 21st century which will support the teaching and learning process and also enhance the students' ability in acquisition of skills. Ideally, school libraries are to be places where there is equal access to intellectual and physical resources. Reading and learning ought to take place in a most friendly and safe environment. School librarians have the responsibility of liaising with other teachers to provide instruction, learning strategies, and practice in using the essential learning skills needed in the 21st century (American Association of School Librarians [AASL], 2007).

According to IFLA School Libraries Section Standing Committee (2015), a school library must be:

- ❖ A place that is safe, where students can satisfy their individual curiosity, creativity, and orientation. It should be a space that stimulates students to explore diversity of topics.
- ❖ A school library should be an instructional space where the students will discover the potentials and advantages of using information to create knowledge;
- ❖ Technological space where there are divergent range of technology tools, software. Fuhrman (2016) posited that certified school librarians must be capable of designing an enabling environment and spaces that will encourage students to become lifelong learners and promote creativity and collaboration. She further averred that these spaces will create an enabling environment where students can fabricate, learn, explore, invent, collaborate and communicate in several digital and non-digital ways.

What is a Makerspace?

Makerspace is a new, innovative and interesting service offered in libraries. In the words of Canino-Fluit (2014), "making is an activity that encourages students and patrons to use the library in a new way: to create, use, and share. He further stated that when makerspaces are incorporated into libraries, patrons are offered new opportunities to collaborate, learn through play, problem solve, build, investigate, and produce".

A makerspace according to Velasquez (2018) is a place where learning and discoveries take place though in an informal or collaborative method. The discoveries take place through participatory hands on art and technological tools. Sheridan et al. (2014) opined that a makerspace creates an avenue for the production art, science and engineering in an informal way, this helps people of all ages to blend digital and physical

technologies and to explore ideas, learn technical skills and create new products while Preddy (2013) posited that a makerspace is a community destination where individuals such as students, staff, mentors and even parents. This creates an atmosphere where problems are solved, skills are developed and talents discovered. The interesting fact is that all these activities takes place in the school library. However, Davee, Regalla and Chang, (2015) argued that makerspace can also be referred to by other names such as maker lab, hackerspace, tech centre, teen tech studio, make space, fablab and they can be broadly categorized into three:

- ❖ **Dedicated:** Dedicated makerspaces are the types which have all tools, equipment and materials in a single space. This is where a makerspace in a school library falls into. Another place that uses a single space is the workshop.
- ❖ **Distributed:** The distributed makerspace is an arrangement where there are many places within an organization where the creative activities can take place. For example, in a school there could be a recording studio, classrooms equipped with materials and tools as well as the computer lab and 3D printer in the school library.
- ❖ **Mobile:** Mobile makerspaces is adding mobility to makerspaces. It can take the form of vehicles that travel through a community or through carts designed for this purpose with an organization. Mobile makerspaces can be found in children's hospitals and schools.

Theoretical Framework

This study rests on the constructionism theory propounded by Seymour Papert in the 80's, participatory culture and learning. Constructionism theory is built upon the constructivist theory. In constructivist theory, learning is seen as a reconstruction instead of transmission of knowledge. The theory also states that learning is much more effective when the learner experiences and takes part in activities that will emanate in meaningful end products (Papert,1980). Martinez and Stager (2013) posited that "constructionism is all about learning occurring in the student's head, while it is the action of building something that is personally meaningful, or creating a tangible product that is shareable, that cements the real learning for the learner" this explains why Fleming (2015) averred that "the Maker Movement is about moving from consumption to creation and turning knowledge into action".

The participatory type of culture and learning is that which involves students take part in the whole process. Jenkins (2006) opined that students need educational exposures to participatory learning that will enhance their skills and knowledge. They further noted that makerspace gives opportunity for the kind of learning where students can put their hands to work to discover their skills in a free but conducive environment.

Figure 1, what a school library makerspace looks like:



Figure 1. Makerspace in a school library ¹

A Survey of Makerspace in School Libraries

Burke (2014) conducted a web based survey on makerspaces in libraries. The librarians that responded to this survey span across thirty states in the U.S and these other countries: Australia, Canada, China, Denmark, Japan, the Netherlands, and the United Kingdom. One hundred and forty three librarians responded, out of which 41% had already implemented makerspace, 36% were planning to and 24% have not implemented makerspace and they are not planning to.

Sheridan et al. (2014) conducted a comparative case study of how makerspaces serve as learning environments. The study explored three makerspace sites, and people of all ages four-years-old and older, participated in this study. The three makerspaces in this study included an adult makerspace called Sector67, a second makerspace called Mt. Elliott Makerspace, and a third site called Makeshop. This research was conducted over a period of one year. The researchers conducted 150 hours of field observations along with interviews and detailed analyses of online postings and community discussions. Sheridan et al. (2014) discovered that makerspace was similar to a learning community where at times, the teacher becomes the student and vice versa.

¹ Source: <https://www.pinterest.com/glendapierce/makerspace/>

Researchers such as Small (2014), Litts, Bakker, Stoiber and Halverson (2014) and Godfrey (2015) found out makerspaces in libraries help in no small measure to prick the curiosity and creativity of students in all school grades.

Planning School Library Makerspace

According to Burke (2014), makerspace needs to be planned and he outlined the following as some of the things to consider:

How will the space look like? Makerspace have the tendency of being messy because of scraps that will be left on the floor.

What will the operation be like? Will it take the form of a laboratory or is it just for classes? A working schedule needs to be put in place.

Who will the staff over-seeing the operations?

Is it going to be a noisy zone?

Will the space provided be permanent or there will be need to move sometimes?

Will all making be done in-house, or will technologies circulate?

How will it be funded?

Makerspace in Nigerian School libraries

Studies have shown that there are few or no libraries in schools in Nigeria (Daramola, 2013; Owate, & Iroha, 2013; Lawal-Solarin, 2016). The few that do exist did not meet prescribed standards for libraries in secondary schools. There has also been no study or report confirming the existence of makerspaces in school libraries in Nigeria. After a thorough search, it was discovered that makerspaces existed in other organizations rather than the school library. Examples include the Co-Creation Hub, Lagos, General Electric (GE) fabrication lab, the British Council maker library.

Figure 2 below shows school girls who invented a generator that runs on urine at the Maker Faire Africa, 2012.



Figure 2. Girls at the Maker Faire Africa ²

Figure 3 shows a boy with a hydraulic toy at the Maker Faire Africa, 2012.

This sends a signal that school libraries and library managers in Nigeria need to wake up and take up the task of ensuring that the students get valid education and opportunity to express themselves. Makerspaces is one of the proven route 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. (Lamb, 2015).

² Source: <http://whiteafrican.com/tag/maker/>

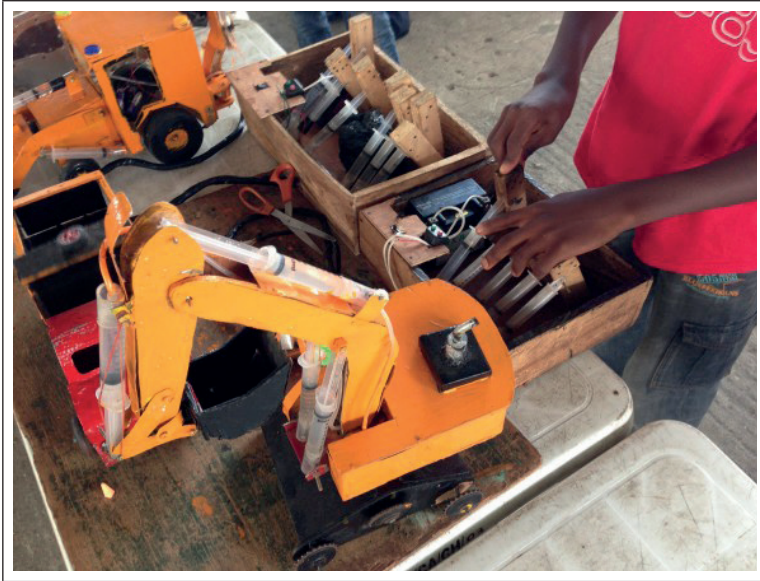


Figure 3. Boys at the Maker Faire Africa³

Implication of creating makerspace in Nigerian school libraries

The Nigerian school education is guided by a 9 year basic education curriculum which was introduced by the Universal Basic Education program in 1988 and revised in 2012. The curriculum has different subjects such as mathematics, English, basic science and technology, social studies and others. It is the responsibility of the Federal Ministry of Education to be innovative and put a quality assurance team in place to ensure that all schools in Nigeria maintain minimum standards of acceptable educational practice. Quality education according to Thom-Otuya and Inko-Tariah (2016) strives to ensure that all learners, regardless of sex, age, language, religion and ethnicity are reached, and that they have the possibility of participating in and learning from organized learning activities. One of the major reasons for implementing the 6-3-3-4 educational system was to introduce new technologies and to devise a route of graduation for those who have completed the junior school education. The initiation of the 6-3-3-4 educational system plan has been problematic, most especially at the end of junior secondary. This is because the students are not been exposed to new technologies and are most times not opportune to express their creativity which makes it impossible for them to discover their skills and put same to work even after they leave school. Moja (2000) reported that there is a high rate of failure in science subjects and part of the reasons

3 Source: <http://whiteafrican.com/tag/maker/>

given was that there were no adequate facilities (libraries inclusive) and equipment. If the facilities and equipment are put in place, makerspaces are excellent innovations that can augment mathematics and basic science. Makerspaces have also been linked to Science, Technology, Engineering and Mathematics (STEM) education or Science, Technology, Engineering, Arts and Mathematics (STEAM) education in many countries all over the world.

Having makerspace in school libraries will help the students in the following ways:

- Prepare them to be self-reliant instead of searching for white collar jobs after leaving school.
- Makerspaces give students the opportunity to bring to life ideas and their ways of thinking, allowing the students' see the errors in their thought patterns and gives a chance to rethink the concept in order to achieve better results.
- The makerspace provides an environment for students to investigate questions they were not comfortable asking in class as well as provide opportunity to illustrate points not explained in the class.
- The process of creating is bound to encounter failures and difficulties. The makerspace provides this opportunity without students having the fear of negative impact on their grades. This builds perseverance and lessons are learnt from the failures.
- Students are able to see in reality all that has been taught in class. Hence, concepts are seen to have practical applications and the learning process is reinforced because these concepts are actually seen and not just committed to memory.
- Makerspaces nurture ways of expression and conversation. In the work world it is important to communicate with other members of the team when completing a project.
- It serves as a rejuvenation center for inspiring of love for both formal and informal learning (Lynch, 2017)

Challenges

- Funding: 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.
- Facilities: lack of facilities is another major challenge. In Nigeria, there are very few school libraries in existence and this is consistent in literature.

- Training: Implementing makerspaces in libraries takes planning and training because many librarians do not have the full knowledge or background in making, hacking, inventing, crafting, or 3d printing. This makes the issue of training inevitable.

Conclusion

This study shows that there is a need to establish makerspace in school Libraries in Nigeria. This will enable students to discover their talents and develop same. The teacher-librarians should be duty bound to provide interesting and creative ways to develop makerspace in their libraries that will be in line to meet with the learning yearnings of the community they serve. This helps to create avenue for students to build networks, become creative, innovative and life-long learners.

Recommendation

- Improve: It is high time librarians start thinking outside the box. Makerspace is not all about getting big and expensive equipment, it is a kind of project that can be started in a small way. Schwartz (2016) advocates the use of cardboards, legos, recycling of waste materials such as old calendars. Furniture to be used need not be new ones, it could be old ones that could be refurbished. The space to be used might not necessarily be a library building, makerspace could be accommodated in a corner of a classroom, airy open space etc. but should be managed by teacher/ librarians.
- Create awareness: Parents, teachers, students and other stakeholders need to know what makerspace is all about and what the benefits are.
- Getting funds: Searching thoroughly on the internet, a librarian may be fortunate to get grants to sponsor projects such as makerspace.
- Librarians should be trained and retrained with the necessary skills to set up and manage makerspaces in the different forms they may take and as the makerspaces may evolve.
- Schools in Nigeria should also be encouraged to set up libraries which include makerspaces to facilitate the learning of science subjects and improve students' performance.

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