# Chapter 17
# Implementing Makerspace in Nigerian School Libraries:
## Issues and Challenges

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## ABSTRACT

*The 21st century is a knowledge age where the only currency is knowledge; thus, to function in it, possession of 21st century skills is germane. The required skills are critical thinking, problem-solving, analytical, mathematical, communication and cooperative, leadership, and technical skills. In the same vein, 21st century libraries are evolving to instill the 21st century skills into learners through makerspace. Makerspace is an avenue for creating, making, tinkering, and inventing by trial and error based on the interest of the learners. This study, therefore, examines makerspace, school library and makerspace, the role of school librarians in makerspace, implementing makerspace in school library, challenges of hosting makerspace in school libraries in Nigeria, and recommendations.*

## INTRODUCTION

The 21st Century is a knowledge age where the only currency is knowledge, thus, to function in it, possession of 21st Century skills is germane. The required skills are critical thinking, problem-solving, analytical, mathematical, communication and cooperative, leadership and technical skills (Ubawuike, 2018). In the same vein, 21st Century libraries, are evolving to instill the 21st Century skills into learners through Makerspace. Makerspace is a designated workspace for collaborative making, inventing, exploring, tinkering, building and sharing using low and high technology (European Schoolnet 2020). Makerspace is an approach that stimulates learning through doing, hands-on activities and learner-centred methods. It is a way of helping learners to develop multiple literacies across science, technology, engineering and mathematics and stimulate them for their future careers.

Dale Dougherty coined the term "maker education" in 2013 to explain a problem and a project-based approach to learning that involves hands-on, collaborative, and active involvement of students in finding solutions to authentic problems they care about (Jamalian, 2018). Its purpose is to provide a comfortable/suitable environment for learners/users to experiment, create and learn within a controlled setting.

According to Fernandez (2014), makerspace enables students and educators to apply scientific principles and meet curricular science through the design, creation and building of products. The emphasis of the makerspace phenomenon includes creation, collaboration and sharing. The creative projects could be simple or complex depending on the focus of the space and the available tools.

Makerspace has many benefits, such as developing the culture of creating rather than consuming, allows collaborative learning where students and educators share knowledge and skills, facilitates informal learning opportunities, connections among home, school and community contexts and promotes participatory learning through practical hands-on activities, exploration and play (Hatch, 2014). Makerspace is beneficial to learners, teachers, libraries and society as a whole. It creates the opportunity for learners at all levels of education, to make tangible objects, gain real-life skills, work in teams, develop friendships, integrate formal and informal learning, take ownership of their learning and prepares them for careers (Li & Todd, 2019). There are various types of Makerspace, it depends on its domain, it could be located in schools, universities, churches, libraries and museums. It varies in size and purposes but the common goal is to create opportunities for individuals to make and build projects of their choice (Vuorikari, Ferrari, & Punie, 2019).

The library is a centre of informal learning and a living organism that keeps changing to support her community. As a result, librarians are proactive and always in tune with the continuous changes around them and have embraced makerspace as a way of inculcating 21st Century skills in them. Makerspace in the library is an additional means for library users to get inspiration for social and creative engagement with the library and technology.

Makerspace in the school library is essential because it has been observed that 65% of scientists with advanced degrees started their interest in science before middle school (Institute of Museum and Library Services, 2014, pp.1). To 'catch them young', implementing a makerspace in the school library will be suitable to stimulate children's interest in STEM disciplines. School library makerspace offers free opportunities for children to learn, create and make through play and exploration at various making levels. According to Wong (2013) makerspace in school libraries proves desired results for 21st-century learners and for learning as an overall process and build a new culture of participatory learning. Makerspace encourages student-driven learning, learning by doing and student determines what to learn, hence, it has root in the theory of constructionism, where learning is effective when a learner is active in the learning process. To the teachers, Makerspace provides an engaging approach to teach learners especially, to integrate science, technology, engineering and mathematics education.

The major challenge with libraries in general in the 21st Century is low patronage, as a result, libraries are in the state of "fight or flight". If libraries are not well-patronized nobody will be willing to invest in such libraries, so the onus is on the librarians to ensure that users are motivated and attracted to libraries. Consequently, libraries are encouraged to host makerspace because 'making' is an activity that motivates patrons to use the library. Makerspace in the school library provides opportunities for creative expression, to develop creative potentials in today's learners. In addition, technological explosions in the past few decades, has led to increasing demand for creative thinkers to be able to function in society. Therefore, hosting makerspace in the library fosters creativity and attracts users to patronize

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