LIBRARY MAKERSPACE: SUPPORTING AN ENTREPRENEURIAL SYSTEM IN NIGERIAN TERTIARY INSTITUTIONS

[1]Maalla Ajemasu; [2]Yusuf Mohammed Inuwa; [3]Yusuf Saad; [4]Abdullshi Adamu Jumba

[1]Muhammadu Wabi Library, Federal Polytechnic Bauchi

[2 & 3]AbubakarTatari Ali Polytechnic, Bauchi

[4]Bauchi State Library Board

Email: madallajemasu@gmail.com; Yunuwa80@gmail.com; yusufsaadazare@yahoo.com abdullahiadamujumba@yahoo.com

ABSTRACT

The unemployment situation in Nigeria is at the alarming rate. It has eaten deep into the nation's fabric. Graduates in Nigeria suffer the most because they make up the highest number of people in the country. This unemployment situation has caused macroeconomic distortions in the country. This calls for training of the graduates to be entrepreneurial and self-reliant so that the nation can overcome the issue of unemployment as well as become more prolific. The library has a role to play in inculcating the skills of entrepreneurship in the youth. To this regard, the concept Library Makerspace, Justification for a Library Makerspace as a tool for supporting an entrepreneurial system as well as different library making activities were discussed. Such activities include, Computer workstations, 3D printing, Photo editing, Video editing, video and audio capture, large format printing, Computer programming/software, Scanning photos to digital, Creating a website or online portfolio, Digital music recording, Electronic music recording and programming VHS conversion equipment, and so forth. Furthermore, the Entrepreneurial Skills Required by undergraduates/youths have been

discussed, andthe challenges faced by the Nigerian libraries in facilitating these entrepreneurial programs have been identified and solution proffered. Lastly the author's suggested ways of Planning a Successful Library Makerspace.
Keywords: Entrepreneurship, youths, unemployment, library, Nigeria

INTRODUCTION

Nwachukwu (2012) reported that Economic survey in 2011 doted unemployment rate in Nigeria at 23.9%. Put differently over 38million Nigerians are unemployed. It is disturbing to acknowledge that a greater number of this percentage are graduates from Nigeria universities, colleges of education and polytechnics who roam the streets, seeking for non-existing jobs due to lack of entrepreneurial skills. According to Maigida, Saba and Namkere(2013),Nigeria is an important case study of the youth unemployment. The country has had a pervasive unemployment for over a decade. Ngwuchukwu (2015) added that, this goes to explain the reasons for cases of kidnaps, rape, suicide bombings, and the recent Boko Haram insurgency that is ravaging the country. Ngwuchukwu further pointed that Nigerian government tried to tackle the unemployment situation via its amnesty program, poverty alleviation, poverty eradication scheme, firing squad, as well as teaching a course as entrepreneurship in tertiary institution. Others are the Sure-P empowerment scheme by President Goodluck Jonathan and the recent N-Power program by President Muhammadu Buhari led government. All these are good attempts, but it has not entirely solved the problem of unemployment in Nigeria. Furthermore, the one-year National Youth Service Corps scheme (NYSC) in Nigeria appears to be a temporary palliative measure to assuage the prevalent

situation (Fasasi and Elejere, 2009). This is evident as many graduates still stay 3-4 or more years after graduation before securing a job or worst still stay with no job at all.

In another development, Ajidofor (2013) noted that federal government has not properly addressed the philosophy of self- reliance in tertiary institutions which has the highest number of the youths. This poses a lot of problems to Nigeria as a nation. Youths are the backbone of every nation and they form the highest group of people in the country. A nation that has an ill-informed, redundant and jobless youth is sick, because there will be high rate of crime and other vises in that Nation. Therefore, there is need to engage the youths in reasonable jobs and well-meaning ventures so as to enhance and develop the nation's wellbeing. This can be done by engaging them in entrepreneurial skills.

Lack of entrepreneurial skills is no doubt a major contributing factor to the problem of unemployment of graduates and youths in Nigeria (Adebisi and Oni, 2012). Literatures have shown that the incidence of graduate/youth unemployment is also attributed to the educational system operated during pre and post-independence era in the country which placed emphasis on liberal education rather than acquisition of vocational skills, which prepares school leavers and graduates with vocational skills for better employment opportunities. Suffice it to say, that the system focused on and produced school leavers and graduates whose number are always on the increase year after year without commensurate provision of employment opportunities.

However, entrepreneurial studies are out to making beneficiaries to think creatively to job creation during their undergraduate days and after graduation from higher institution of learning. Similarly, Adeola and Bolarinwa (2010) sees entrepreneurship education as a collection of formalized teaching that informs, trains and educate anyone interested in business creation or small business development. For Uzo-Okonkwo (2013) entrepreneurship education is the process of providing individuals with the ability to recognize commercial opportunities and the insight, self-esteem, knowledge and skills to act on them. Highlighting the importance of promoting entrepreneurship education in tertiary institution, Ademiluyi (2007) affirmed that, it addresses some socio-psychological problems and delinquency that arise from joblessness.

Even though entrepreneurial education has been introduced in Nigerian higher education system, the library has a big role to play in supporting and inculcating entrepreneurial spirit in Nigerian undergraduate students/youths. This can be done through library making activities/services and programs so that the graduate/youth will be amicably nurtured into business like minds and the vacuums will be positively filled. Books (recorded knowledge) according to Medina (2000) are the bread of the intellect; and ideas are easily gotten from books which are usually kept in libraries. Therefore, the library as a repository of knowledge has a role to play in providing lasting solutions to the problem of unemployment in Nigeria.

To this regard the concept Library Makerspace have been discussed, Justification for a Library Makerspace as a tool for supporting an entrepreneurial system as well as different library making activities, such as Computer workstations, 3D printing, Photo editing, Video editing, video and audio capture, large format printing, Computer programming/software, Scanning photos to digital, Creating a website or online portfolio, Digital music recording, Electronic music recording and programming VHS conversion equipment, Game creation and so forthare been explored. Also the Entrepreneurial Skills Required by undergraduate/youth have been discussed and the challenges and constraint faced by the Nigerian libraries in facilitating these entrepreneurial programs have been identified and solution proffered. Lastly the author's suggested ways of Planning a Successful Library Makerspace.

The Concept Library Makerspaces

According to spring, (2013),Makerspaces serve as a gathering points where communities of new and experienced makers connect to work on real and personally meaningful projects, informed by helpful mentors and expertise, using new technologies and traditional tools. While Cavalcanti, (2013), described it as a technology-enabled space for making things or environment where individuals come together to share knowledge and ideas. It is a conducive environment where people are able to design products from zero to existence. Anderson (2012), cited in Burke (2015), reported that 'the rise of makerspaces as a concept began around 2005 with the beginning of *Make:* magazine and its promotion of creative projects and methods for making. Makerspace is an enabling environment that enhances sharing of ideas among individuals.

The findings of the study carried out by Moorefield-Lang (2015) revealed that 'the implementation of a maker learning space is still new to many libraries'. Makerspace is a recent technology in libraries which is geared towards facilitating group learning (Ejikeme&Okpala, 2016). Furthermore, Lankes (2011), wrote that "librarianship is not about artefacts, it is about knowledge and facilitating knowledge creation. So librarians should be spending their precious resources on knowledge creation tools, not the results of knowledge creation". According to Burke (2015),library makerspace have a mission to provide patrons with access to resources and technologies that can improve and enhance their lives. Libraries are already makerspaces of a sort, or at least maker-friendly, partly because of the technology that they offer and partly because of the "how-to" resources their collections may include. Library makerspace provide a community space to bring diverse individuals together with the opportunity to collaborate.

Justification for a Library Makerspace as a Tool for Supporting an Entrepreneurial System

The library is a central place where learners come together to learn new things. It is a center for innovation where spaces are created to support learning in digital literacy, visual literacy, cultural literacy, and spark innovation on every level (Chan and Spodick, 2014). In a study conducted by Slatter and Howard (2013), participant remarked that 'in providing materials, technologies, and spaces, library makerspaces offer new learning opportunities, increase community engagement, and enable equitable access appealing to a variety of users. Therefore the library's role in knowledge creation endorses

the library makerspace as a tool for supporting entrepreneurship.

Library Makerspaces support tremendously an entrepreneurial ecosystem through, fostering innovation, creativity and 'making' skills. The makerspace programs developed by libraries have the potential to help communities to learn science, math, technology, and engineering through hands-on activity. These programs foster exploration and encourage users/students to seek careers in those fields, be entrepreneurial and creative as well as develop skills that would allow them to adapt to changes in the economy (Britton, 2012). According to Benton (2013), library makerspaces provide patrons with free workshops and access to tools. In other word libraries assist entrepreneurs by facilitating access to technology and information, including business information and referrals.

Martinez, and Stager (2013) says library Makerspaces provide resources that students can use to solve problems through creation, and also offer guidance and examples of products to inspire the learner to deeper understanding. While Jenkins (2009) added that not only does this provide students with the freedom to shape their own visions into products, but it also allows them to grow in their skills at their own pace, and to have guidance from and collaboration with more experienced creators. Library makerspaces is also a venue for learning specific types of skills relevant to fields of study in higher education. Johnson et al (2015) wrote that schools are opening library makerspaces for the purpose of stimulating innovation and developing students' skills as entrepreneurs. Students may develop a marketable product in the space, or

may set forth on a new career or area of research thanks to an interest they discovered (Delaney, 2015).

Restivo (2014) believes "the development of library Space to support innovation" is a great way for libraries to play a direct role in supporting entrepreneurs. Building on Restivo's thoughts on library spaces, Moorefield-Lang (2014), discusses maker spaces, physical locations within libraries where patrons may "create, craft, solve problems, and develop new skills". These spaces are ideal for inventors and entrepreneurs. They typically have 3D printers, which take "the next step toward meeting patron needs as well as a technology and space for engaging curiosity, creativity, and collaboration" Numerous entrepreneurs noted the importance of access to free resources at the library.

Library Making Activities

1. *Computer workstations:* Recently, it is a standard practice in libraries to provide some type of computer facility to assist library users in their research. Originally, the focus was on providing access to library resources, first the online catalog and then journal databases. This has expanded to general-use computers, often in an information-commons environment, capable of supporting all aspects of student research from original resource discovery to creation of the final paper or other research product (Thompson, 2012). In the computer workstation users can learn different type of computer Operating System (Microsoft Windows), Computer basics (with application packages e.g. MS Office) and other relevant packages as the need may arise as well as searching/browsing the Internet for

information. The users can also use the computer to design different object that can be printed later for use.

2. *3D printing:* 3D printers are the objects and structures that can be printed from materials other than plastic. With the onset of the digital revolution, the library community assumed a leading role in the effort to help people of all ages build the skills and competencies they need to thrive in a high-tech world. Library 3D printing is empowering people to engage in creative learning,launch business ventures and solve complex health problems (http://www.ala.org).
3. *Photo editing, Video editing, Video capture and Audio capture, Scanning photos to digital, Digital music recording, Electronic music recording and programming, VHS conversion equipment:* These activities takes place in the audio visual section of the library. The section has all the equipments and gadgets needed for capturing and editing of pictures, video and audio. Students and other library users can be taught in handling this machines and how to successfully carry out editing of the pictures, video and audio captured.
4. *Large format printing and Binding:* Many libraries provide this services particularly the academic library. This making activity takes place in the printing and Bindery section of the library.
5.

The Entrepreneurial Skills Required By Undergraduates/Youths

It is still a topic of much debate whether entrepreneurs are born or made. While it is generally acknowledged that there are natural 'born' entrepreneurs, there are also researchers

who believe that entrepreneurship is a skill that can be learned. Drucker (1985) argued that entrepreneurship is a practice and that "most of what you hear about entrepreneurship is all wrong. It's not magic; it's not mysterious; and it has nothing to do with genes. It's a discipline and, like any discipline, it can be learned."

Given the current economic challenges facing many countries across the globe, the notion of engendering greater entrepreneurial activity has become a prominent goal for many national governments. The relevance of entrepreneurship to economic development has been highlighted by many researchers (e.g. Davidson et al, 2006) and it is now well-recognized that education and training opportunities play a key role in cultivating future entrepreneurs and in developing the abilities of existing entrepreneurs to grow their business to greater levels of success(Henry et al, 2003). According to the European Commission (2008), the aim of entrepreneurship education and training should be to 'develop entrepreneurial capacities and mindsets' that benefit economies by fostering creativity, innovation and self-employment.

In a traditional understanding, entrepreneurship was strongly associated with the creation of a business and therefore it was argued that the skills required to achieve this outcome could be developed through training. The educational methodology needed in today's world is one which helps to develop an individual's mindset, behavior, skills and capabilities and can be applied to create value in a range of contexts and environments from the public sector, charities, universities and social enterprises to corporate organization's and new venture start-ups. Lichtenstein and Lyons (2001) argued that it is important for service providers to recognize that

entrepreneurs come to entrepreneurship with different levels of skills, and therefore each entrepreneur requires a different 'game plan' for developing his or her skills. Furthermore, they suggested that skill development is a qualitative, not quantitative, change which demands some level of transformation on the part of the entrepreneur.

When considering some of the literature that has been published regarding the skill-sets required to be an entrepreneur, Cooney (2012) captures much of the essence of what many researchers have presented as key requirements. These skill-sets can be broken down into three groups and each is further subdivided:

1. *Entrepreneurship Skills:* Inner Discipline, Ability to Take Risk, Innovative, Change, Orientated and persistence.
2. *Technical Skills:* Operations Specific to Industry, Communications, Design, Research and Development and Environmental Observation.
3. *Management Skills:* Planning, Decision-Making, motivating, Marketing, Finance and Selling.

The level of education and training required to develop each of these skills will be highly dependent upon the levels of human capital that individuals might already possess before embarking upon their entrepreneurial journey. Indeed it has been argued that developing these skill-sets will engender enterprising persons who should be equipped to fulfil their potential and create their own futures, whether or not as entrepreneurs (NESTA, 2008).

Kutzhanov et al (2009) examined an Entrepreneurial Development System located in the Appalachian region of USA and identified four main dimensions of skill:

1. *Technical Skills*: which are those skills necessary to produce the business's product or service;
2. *Managerial Skills*: which are essential to the day-to-day management and administration of the company;
3. *Entrepreneurial Skills*: which involve recognizing economic opportunities and acting effectively on them;
4. *Personal Maturity Skills*: which include self-awareness, accountability, emotional skills, and creative skills.

Furthermore, in examining the key skills required of entrepreneurs, O'Hara (2011) identified a number of key elements which he believed featured prominently in entrepreneurship:

1. The ability to identify and exploit a business opportunity;
2. The human creative effort of developing a business or building something of value;
3. A willingness to undertake risk;
4. Competence to organize the necessary resources to respond to the opportunity.

However, Kelley et al (2010), propounded that within any society it is important to support all people with 'entrepreneurial mindsets', not just the entrepreneurs, as they each have the potential to inspire others to start a business. Kelley argued that any educational training should enable people not just to develop skills to start a business but rather to be capable of behaving entrepreneurially in whatever role they take in life. This approach is quite broad but it captures the critical philosophy of modern entrepreneurship education and training programs required if

countries are to generate an increasing pool of people who are willing to behave entrepreneurially.

The library as a repository of knowledge has a role to play in providing a lasting solutions to the problem of unemployment in Nigeria. Libraries play a crucial "think tank" role for local start-up businesses and community development advocates, helping them acquire entrepreneurial skills and discover methods of raising capital (http://www.pps.org). Books according to Medina (2000) are the bread of the intellect and ideas are easily gotten from books. For people seeking work or taking on career changes, libraries connect them to employers and specialized job training. For the consumer, libraries may provide up-to-date information about the best businesses to patronize in their area. The library's thorough range of services–from recommending useful books to hands-on coursework–provides resources for all kinds of small-scale entrepreneurs.

More so, library Makerspaces provide resources that students can use to solve problems through creation, and also offer guidance and examples of products to inspire the learner to deeper understanding. Library makerspaces is also a venue for learning specific types of skills relevant to fields of study in higher education. Johnson et al (2015) wrote that schools are opening library makerspaces for the purpose of stimulating innovation and developing students' skills as entrepreneurs. Students may develop a marketable product in the space, or may set forth on a new career or area of research thanks to an interest they discovered (Delaney, 2015).

Challenges Faced By Nigerian Libraries in Facilitating Entrepreneurial Programs

1. *The challenge of training the users:* It may take time before the users master the terminologies and intricacies of the makerspace. 3D technology in particular, is not an easy one to master; it may take longer time than expected for the users to master. Learning the ins and outs of 3D printers and other equipment takes a lot of time and patience (Harris and Cooper, 2015).
2. *Security challenges:* Safeguarding the equipments in the makerspace is very crucial and it becomes paramount that more security personnel are deployed to the library for this purpose to avoid stealing of objects.
3. *Funding Issues:* Poor funding is a major challenge to libraries in Nigeria (Nok, 2006).
4. *Lack of sufficient space in the library building*: Space is one of the most valuable assets a library possesses (Chan and Spodick, 2014). The library physical space has an important role in learning, teaching and research, despite the increase in digital information provision (Matthews and Walton, 2014).
5. *Erratic power supply:* Nigeria is yet to be named among the African countries that have celebrated one whole year of uninterrupted power supply as regular power generation remains a problem in Nigeria. Frequent power outages constitute a serious bottleneck to the support for entrepreneurship. The cost of running generating plants is prohibitive (Nok, 2006). Quite a lot of money is being invested in higher institutions to find alternative power supply. In a study conducted by Krubu and Osawaru (2011), it was ascertained that poor funding

and epileptic power supply are the major factors acting as a drawback or an impediment to facilitating entrepreneurship programs by libraries.

6. *High cost and maintenance of equipment, Internet bandwidth, hardware and software*: The librarian has always worked with less and done more, it often comes down to a simple lack of resources that prevents the librarian and the library from innovating at an even higher level (Massis, 2014). When the required resources are seemingly off-limits for libraries, makerspace can seem an expensive indulgence thereby affecting entrepreneurship program by libraries (Slatter and Howard, 2013).

Solutions to the Above Mentioned Problems

1. The staff of Nigerian libraries should be well trained in the use of the equipments available in the library so that they can train the users operate the equipments effectively for maximum benefits.
2. Adequate security should be provided in and around the library to safeguard the makerspace equipments from damage and theft. This could mean installing modern monitoring security gadgets like close circuit television (CCTV), and many others. Similarly, additional security personnel could be deployed to the library for this purpose.
3. The library should be provided with adequate funds for the provision, maintenance and securing of the required facilities and services for efficiency.
4. Most of the equipments for the makerspace and other activities in the library require space; therefore, libraries should be constructed in such a way that

sufficient space is provided for theequipments. This will enhance learning, teaching and research.

5. Alternative power supply such as generating plants should be provided in order to solve the problem of erratic and irregular power supply in Nigeria and Nigerian libraries in particular.
6. Government should subsidize the cost purchasing some of the modern technology equipment that are of benefit to users and the society at large. These equipments could also be provided freely in support of the entrepreneurial progamme.

Planning a Successful Library Makerspace

In planning a successful makerspace in Nigerian libraries, the following steps have been outline to help those willing go a long way:

1. *Identify the need for a makerspace in your institution*
2. *Check for available/unused space in your library*: It could be a storage room, under the stairs (depending on how large it is).
3. *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 them tips on setting up structures in the library.
4. *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.

5. *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
6. *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.
7. *Prepare a proposal, with budget statements*: Avoid exaggerated budget; you can start small and grow in the process.
8. *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.
9. *Market your makerspace*: This should be done through flyers, announcer emails, website, social networks, SMS, word-of mouth, more workshops.

REFERENCES

Adebisi, T.A. & Oni, C.S. (2012). Assessment of relevance of National Directorate of Employment training programme to the needs of the trainees in South-West in Nigeria. *International Journal of Vocational and Technical Education,* 4(3)

Adeola, K. L. and Bolarinwa, K. (2010). Strategies for promoting entrepreneurship education in Secondary school curriculum. *Business Education Journal 1, (10)*

Ademiluyi, L. F. (2007) Business competencies needed for effective entrepreneurship as Perceived by fresh graduates. *Business Education Journal 1(1)*

Benton, Cristina (2013) Makerspaces: Supporting an Entrepreneurial System. Co-Learning Plan Series MSU EDA University Center for Regional Economic Innovation (REI)

Britton, L. (2012). "The Makings of Maker Spaces, Part 1: Space for Creation, Not Just Consumption," *Library Journal. The Digital Shift.* Online. Available at http://www.thedigitalshift.com/2012/10/public-services/the-makings-of-maker-spaces-part-1-space-for-creation-not-just-consumption/

Burke, John (2015) Making Sense: Can Makerspaces Work in Academic Libraries? ACRL Portland, Oregon.

Cooney, Thomas M. (2012) Entrepreneurship Skills for Growth-Orientated Businesses. Report for the Workshop on 'Skills Development for SMEs and Entrepreneurship. Copenhagen.

Davidsson, P., Delmar,F. &Wiklund, J. (2006) - *Entrepreneurship as Growth: Growth as Entrepreneurship* - In Davidsson, P, Delmar, F, &Wiklund, J (Eds.) *'Entrepreneurship and the Growth of*

Firms', Edward Elgar Publishing, United Kingdom, England, Cheltenham.

Diane Slatter&Zaana Howard (2013) A place to make, hack, and learn: makerspaces in Australian public libraries, The Australian Library Journal, http://dx.doi.org/10.1080/00049670.2013.853335.

Drucker, P (1985), '*Innovation and entrepreneurship',* William Heinmann, London

European Commission (2008) – *Entrepreneurship in Higher Education, Especially Within Non-Business Studies* – European Commission, Brussels.

Henry Jenkins, *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century* (Cambridge MA: The MIT Press, 2009).

Kutzhanova, N., Lyons, T.S. & Lichtenstein, G.A. (2009) - *Skill-Based Development of Entrepreneurs and the Role of Personal and Peer Group Coaching in Enterprise Development* - Economic Development Quarterly, Vol. 20, No. 10

Kelley, D., Bosma, N., &Amorós, J. E. (2010) - *Global Entrepreneurship Monitor: 2010 Global Report* - Babson College, Wellesley, MA

Lankes, R. D. (2011). *The atlas of new librarianship*. Cambridge, Mass: MIT Press.

Larry Johnson, et el (2015) *NMC Horizon Report: 2015 Higher Education Edition* (Austin, Texas: The New Media Consortium, 2015), http://cdn.nmc.org/ media/2015-nmc-horizon-report-HE-EN.pdf.

Lichtenstein, G.A. & Lyons, T.S. (2001) - *The Entrepreneurial Development System: Transforming Business Talent and Community Economies* - Economic Development Quarterly, Vol. 15.

Maigida, J.F., Saba,T.M. and Namkere, J.U. (2013) Entrepreneurial Skills in Technical Vocational Education and Training as A strategic Approach for Achieving Youth Empowerment in Nigeria. *International Journal of Humanities and Social Science Vol. 3 No. 5; www.ijhssnet.com*.

Melissa Delaney,(2015) "Making Makerspaces Work on Campus." *EdTech*, http://www.edtechmagazine.com/higher/article/2015/02/ making-makerspaces-work-campus.

Mark Hatch, (2014) *The Maker Movement Manifesto: Rules for Innovation in the New World of Crafters, Hackers, and Tinkerers.* New York: McGraw-Hill Education.

Moorefield-Lang, H. M. (2014), "Makers in the library: Case studies of 3D printers and makerspaces in library settings", *Library Hi Tech*, Vol. 32 No. 4.

NESTA (2008) - *Barriers Developing Entrepreneurial Graduates* – NESTA (UK).

Nwachukwu, I (2012) Nigeria's unemployment rate at 23.9% in 2011.http://business day online.com/NG/index.phb/economic. Watch/32204…).

O'Hara, B. (2011) – *Entrepreneurship in Ireland* – Gill and MacMillan, Dublin.

Restivo, L. (2014), "Why startups need libraries (and librarians)", *The Serials Librarian: From the Printed Page to the Digital Age*, Vol. 67 No. 1.

Student Use of Library Computers: (2012)Are Desktop Computers Still Relevant In Today's Libraries? Susan Thompson INFORMATION TECHNOLOGY AND LIBRARIES availablhttps://ejournals.bc.edu/ojs/index.php/ital/article/download/2284/**pdf**.

Sylvia Libow Martinez, and Gary Stager, (2013) *Invent to Learn: Making, Tinkering, and Engineering in the Classroom* (Torrance, CA: Constructing Modern Knowledge Press.

Spring (2013) *Makerspace Playbook. School Edition.* Online. Available at: http://makerspace.com/wp-content/uploads/2013/02/MakerspacePlaybook-Feb2013.pdf).

Uzo-Okonkwo, N. H. (2013). Entrepreneurial competencies needed by NCE business teacher. Education graduates in Anambra State. Unpublished Ph.D Thesis, Department of

Business Education, Ebonyi State University, Abakaliki.
http://www.ala.org/offices/sites/ala.org.offices/files/content/3d_printing_tipsheet_version_9_Final.pdf
http://www.pp s.org/reference/libraryattributes/

References to this paper should be made as follows: Maalla Ajemasu et al., (2019), Library Makerspace: Supporting an Entrepreneurial System in Nigerian Tertiary Institutions. *J. of Arts and Contemporary Society,* Vol. 11, No. 1, Pp. 53-74