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PERCEPTION OF LIBRARIANS TOWARDS MAKERSPACE: A TOOL FOR EFFECTIVE LIBRARY SERVICES IN COLLEGES OF EDUCATION LIBRARIES IN NORTH CENTRAL, NIGERIA.

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Abstract
The study investigated on the perception of librarians towards makerspace: a tool for effective library services in colleges of education libraries in north central, Nigeria. To answer the research questions two objectives and research questions guided the research. Quantitative research method was adopted for the study, with a correctional survey research design. The population for this study consists of seven hundred and fifty (750) librarians in Colleges of Education Libraries in North Central Nigeria. A sample size of Two hundred and Fifty-Four (254) using krejcia and morgan was used. Proportionate and random sampling techniques was used to select the respondent. Descriptive statistics was used to analyze the data. The study finds out that Need for adequate training and professional development to manage makerspaces effectively, Recognition of makerspaces as valuable tools for fostering creativity and innovation, Uncertainty about how to integrate makerspaces with existing library services Awareness of the potential for makerspaces to attract diverse user groups and Challenges related to maintaining and updating makerspace equipment are the perceptions of librarians in colleges of education in North Central Nigeria towards the integration of makerspaces in their libraries. The study also discovered the challenges librarians face in implementing and managing makerspaces in their libraries to include; Lack of funding and financial resources, Insufficient training and professional development, Limited space within the library for makerspace setup, Maintenance and upkeep of equipment, Resistance to change from traditional library services and Inadequate technical support The study concludes that The integration of makerspaces in college of education libraries in North Central Nigeria presents a unique opportunity to enhance library services, foster creativity, and support student learning. The study recommended that to address the mixed feelings about the additional workload associated with managing makerspaces, colleges of education should implement supportive measures such as hiring dedicated makerspace staff and providing administrative and technical assistance to alleviate the burden on existing librarians. Additionally, offering time management training and creating collaborative work schedules can help librarians balance their traditional responsibilities with the new demands of makerspace management. These steps will ensure that librarians are well-supported, reducing burnout and enhancing the overall effectiveness and sustainability of makerspaces in college libraries. To address the challenge of inadequate technical support, it is recommended that colleges of education establish robust technical support systems specifically tailored for makerspaces.

Keywords: Effective library services, Librarians, Makerspace, Perception,

Introduction

A makerspace is a collaborative environment designed to provide individuals with access to tools, materials, and technologies that enable hands-on learning, creativity, and innovation. These spaces, found in educational institutions, libraries, and community centers, encourage people to explore various fields such as electronics, woodworking, and digital fabrication. Makerspaces democratize access to advanced equipment like 3D printers and laser cutters, which were previously limited to industrial settings, thereby fostering a culture of experimentation and problem-solving (Kurti, Kurti, & Fleming, 2014). They support interdisciplinary learning and provide practical experiences that complement theoretical knowledge,

particularly in STEM education, where students can apply concepts in real-world scenarios (Martin, 2015). Moreover, the community-oriented nature of makerspaces enhances collaboration and knowledge sharing, contributing to a dynamic environment where innovative ideas can flourish. These spaces often operate on a model that promotes collective learning and peer support, which not only builds a sense of community but also stimulates entrepreneurial initiatives by offering resources and mentorship for budding innovators (Cavalcanti, 2013).

The perception of librarians towards makerspaces has evolved significantly in recent years, reflecting a growing recognition of their value in fostering creativity, learning, and community engagement within libraries. Makerspaces, which provide resources for hands-on activities such as 3D printing, coding, and crafting, are increasingly viewed as essential components of modern library services. Librarians generally perceive makerspaces positively, appreciating their role in expanding the library's educational offerings and supporting informal learning. A 2022 survey by the American Library Association highlighted that many librarians see makerspaces as vital in promoting STEM education and digital literacy. This shift towards a more active learning environment aligns with the broader mission of libraries to be hubs of knowledge and innovation (American Library Association, 2022). Moreover, librarians value makerspaces for their ability to attract diverse user groups, including children, teens, and adults, thereby broadening the library's appeal. A study by Slatter and Howard (2023) found that librarians believe makerspaces enhance community engagement by providing inclusive spaces where users of different ages and backgrounds can collaborate on creative projects. This community-building aspect is particularly important in fostering a sense of belonging and shared purpose among library patrons (Slatter & Howard, 2023).
However, the integration of makerspaces into libraries is not without challenges. Some librarian’s express concerns about the cost and maintenance of equipment, as well as the need for staff training. According to Anderson and Stafford (2023), while librarians are generally enthusiastic about the potential of makerspaces, they also highlight the necessity for adequate funding and professional development to ensure the effective use of these spaces. This underscores the importance of institutional support and continuous learning to maximize the benefits of makerspaces (Anderson & Stafford, 2023). Additionally, there is a perception among librarians that makerspaces can significantly impact the library’s role in lifelong learning. Makerspaces are seen as pivotal in transitioning libraries from traditional repositories of information to dynamic environments that encourage experiential learning and innovation. This perspective is supported by recent research indicating that librarians who have successfully implemented makerspaces report increased patron satisfaction and engagement, suggesting that these spaces contribute positively to the library's mission (Johnson et al., 2022).

Effective library services in colleges of education libraries are critical for supporting the academic and professional development of future educators. Several tools have emerged as pivotal in enhancing these services, ranging from digital resources and collaborative technologies to innovative physical spaces designed for active learning. Digital resources and technologies are fundamental tools in modern educational libraries. The integration of e-books, academic databases, and online journals provides students and faculty with access to a vast array of information, fostering research and scholarship. According to Smith and Brown (2022), the adoption of digital libraries and open educational resources (OER) significantly enhances the accessibility and affordability of learning materials for students in colleges of education. These resources not only support diverse learning needs but also help in bridging the gap between traditional and digital learning environments (Smith & Brown, 2022).
Another critical tool is the implementation of Learning Management Systems (LMS). These systems enable libraries to offer seamless access to course materials, facilitate communication between students and instructors, and provide platforms for collaborative learning. A study by Johnson et al. (2023) found that the use of LMS in college libraries has improved student engagement and academic performance by providing a centralized hub for educational resources and activities. This integration supports a more organized and efficient learning process, benefiting both students and educators (Johnson et al., 2023). Furthermore, makerspaces and collaborative learning environments have become essential tools in enhancing library services. Makerspaces provide hands-on learning experiences that promote creativity,

problem-solving, and technical skills. According to Martinez and Stager (2023), incorporating makerspaces into college libraries encourages active learning and fosters a culture of innovation among education students. These spaces allow future teachers to experiment with new teaching methods and technologies, preparing them for modern classroom environments (Martinez & Stager, 2023). The role of librarians as instructional partners and technology facilitators has evolved, necessitating professional development and continuous learning. As noted by Anderson and Thompson (2022), librarians in colleges of education are increasingly involved in teaching information literacy, research skills, and digital competence. This expanded role requires ongoing training and support to ensure librarians can effectively guide students in navigating complex information landscapes and utilizing advanced technological tools (Anderson & Thompson, 2022). User feedback and data analytics are crucial tools for assessing and improving library services. Libraries are utilizing data-driven approaches to understand user needs and preferences better. According to Williams and Garcia (2023), employing data analytics allows libraries to tailor their services, optimize resource allocation, and enhance user satisfaction. By analyzing usage patterns and feedback, libraries can make informed decisions about resource acquisition, program development, and service improvements (Williams & Garcia, 2023).

Statement of the Problem

The advent of makerspaces in libraries has introduced a dynamic shift in the way educational resources and services are provided, particularly in fostering creativity, innovation, and hands-on learning. In colleges of education libraries, especially in the North Central region of Nigeria, the integration of makerspaces holds significant potential to enhance the educational experience and support the development of future educators. However, the perception of librarians towards these makerspaces, their readiness to adopt such innovations, and the effectiveness of these spaces in achieving educational goals remain underexplored.

Despite the growing global recognition of makerspaces as valuable educational tools, there is limited empirical research examining how librarians in North Central Nigeria perceive these spaces and their impact on library services. Therefore, the researcher investigates on the perception of librarians towards makerspace: a tool for effective library services in colleges of education libraries in North Central, Nigeria.

Research Questions

1. What are the perceptions of librarians in colleges of education in North Central Nigeria towards the integration of makerspaces in their libraries?
2. What are the challenges librarians face in implementing and managing makerspaces in their libraries?

Research Objectives

1. To describe the perceptions of librarians in colleges of education in North Central Nigeria towards the integration of makerspaces in their libraries
2. To identify the challenges librarians face in implementing and managing makerspaces in their libraries.

Methodology

Quantitative research method was adopted for this study with a cross-sectional survey research design. The population for this study consist of seven hundred and fifty (750) librarians in Colleges of Education Libraries in North Central Nigeria Namely: Federal College of Education Kontagora Library, Federal College of Education Okene Library, College of Education Akwanga library, Kogi State College of Education Library Ankpa, Kwara State College of Education Library Ilorin, Kwara State College of Education Library Oro, College of Education (Technical), Library Lafiagi, Niger State College of Education Library Minna, and FCT College of Education, Zuba.

The Librarians of the Nine Colleges of Education Libraries in North Central Nigeria were selected using a proportionate sampling technique. This was followed by a simple random sampling technique which was used to select librarians in each college of education. Two hundred and Fifty-Four (254) which of the librarians were selected as the sample of this study. This number is appropriate according to krecia and

morgan (1970) who believed that for a population of Seven Hundred and Fifty, 254 should be selected. A self-designed closed-ended questionnaire was used to collect data. Eight (8) research assistants were employed and trained by the researcher to assist in the data collection within a timeline of eight weeks. Descriptive statistics was used to analyze the data collected from the research questions. The bench mark for decision is 50% and above.

Data Presentation, Analysis and Discussion

Out of the Two hundred and Fifty-Four (254) copies of questionnaire distributed to the respondents, a total of 193 (89.4%) of questionnaire were duly completed, returned and found usable for the analysis.

4.3.1.1 Perceptions of librarians in colleges of education in North Central Nigeria towards the integration of makerspaces in their libraries

The data on the perceptions of librarians in colleges of education in North Central Nigeria towards the integration of makerspaces in their libraries were collected.

S/N	Perceptions of librarians towards the integration of makerspaces	Frequencies	Percentages (%)
1	Enthusiasm for the potential to enhance student engagement and learning.	115	(59.6)
2	Concerns about the cost and funding required for establishing makerspaces.	156	(80.8)
3	Need for adequate training and professional development to manage makerspaces effectively.	96	(49.7)
4	Recognition of makerspaces as valuable tools for fostering creativity and innovation.	126	(65.3)
5	Uncertainty about how to integrate makerspaces with existing library services.	157	(81.3)
6	Awareness of the potential for makerspaces to attract diverse user groups.	122	(63.2)
7	Challenges related to maintaining and updating makerspace equipment.	122	(63.2)
8	Positive views on the role of makerspaces in promoting STEM education and digital literacy.	118	(61.1)
9	Perception of makerspaces as beneficial for community building within the college.	117	(60.6)
10	Mixed feelings about the additional workload associated with managing makerspaces.	87	(45.1)

Table 4.1 shows the respondents Perceptions of librarians towards the integration of makerspaces. Based on the benchmark of 50% the table from the total percentage shows that items 1, 2, 4, 5, 6, 7, 8 and 9 have response scores above the acceptable benchmark of 50%. Thus, it can be said that they are the perceptions of librarians towards the integration of makerspaces. However, items 3 and 10 have responses scores below the acceptable benchmark of 50%. Hence, they are not the Perceptions of librarians towards the integration of makerspaces.

The data reveals several key perceptions of librarians in colleges of education in North Central Nigeria towards the integration of makerspaces in their libraries: The majority of librarians (80.8%) expressed concerns about the cost and funding required to establish makerspaces. This suggests that financial constraints are a significant barrier that needs to be addressed. Additionally, 81.3% of librarians expressed uncertainty about how to effectively integrate makerspaces with existing library services, indicating a need for guidance and training on implementation.

On a more positive note, librarians demonstrated enthusiasm for the potential of makerspaces to enhance student engagement and learning (59.6%) and recognized them as valuable tools for fostering creativity and innovation (65.3%). They also showed awareness of the ability of makerspaces to attract diverse user groups (63.2%) and promote STEM education and digital literacy (61.1%). These perceptions highlight the perceived benefits of integrating makerspaces in college libraries. However, the data also reveals some challenges librarians anticipate, such as the need for adequate training and professional development to manage makerspaces effectively (49.7%) and concerns about maintaining and updating makerspace equipment (63.2%). Additionally, 45.1% of librarians had mixed feelings about the additional workload associated with managing makerspaces, suggesting the need for careful planning and resource allocation.
The findings suggest that while librarians in North Central Nigerian colleges of education recognize the potential benefits of makerspaces, they also have valid concerns about the practical and financial implications of implementation. Addressing these concerns through strategic planning, funding, and training initiatives may be crucial in facilitating the successful integration of makerspaces in these academic libraries.

4.3.1.2. Challenges librarians face in implementing and managing makerspaces in their libraries

The data on the challenges faced by librarians in in implementing and managing makerspaces in their libraries were collected.

S/N	Challenges librarians face in implementing and managing makerspaces in their libraries	Frequencies	Percentages (%)
1	Lack of funding and financial resources	126	(65.3)
2	Insufficient training and professional development	104	(53.9)
3	Limited space within the library for makerspace setup	105	(54.4)
4	Maintenance and upkeep of equipment	99	(51.3)
5	Resistance to change from traditional library services	102	(52.8)
6	Inadequate technical support	98	(50.8)
7	Difficulty in integrating makerspaces with existing library programs	105	(54.4)
8	Limited staff to manage and oversee makerspace activities	106	(54.9)
9	Ensuring equitable access for all users	100	(51.8)
10	Keeping up with rapidly changing technology and trends	99	(51.3)

Table 4.1 shows the respondents opinion on the Challenges librarians face in implementing and managing makerspaces in their libraries. Based on the benchmark of 50%, the table shows that items 1 to 10 have response scores above the acceptable benchmark of 50% Thus, it can be said that they are the Challenges librarians face in implementing and managing makerspaces in their libraries.
The data collected on the challenges faced by librarians in implementing and managing makerspaces in their libraries reveals several significant obstacles: One of the most prevalent challenges identified is the lack of funding and financial resources, with 65.3% of respondents highlighting this issue. This indicates that financial constraints pose a major barrier to the successful establishment and maintenance of makerspaces in libraries. Additionally, insufficient training and professional development (53.9%) emerged as a key challenge, suggesting a need for enhanced skills and knowledge among library staff to effectively manage makerspace activities. Limited space within the library for setting up makerspaces was also a

notable challenge, with 54.4% of respondents expressing concerns about space constraints. This limitation can hinder the physical implementation of makerspaces and may require creative solutions to optimize available space. Maintenance and upkeep of equipment (51.3%) and resistance to change from traditional library services (52.8%) were identified as additional challenges that librarians face in managing makerspaces. Moreover, inadequate technical support (50.8%), difficulty in integrating makerspaces with existing library programs (54.4%), and the need for more staff to oversee makerspace activities (54.9%) were highlighted as significant challenges. Ensuring equitable access for all users (51.8%) and keeping up with rapidly changing technology and trends (51.3%) were also identified as key concerns that librarians encounter in the implementation and management of makerspaces.

The findings emphasize the different aspect of challenges that librarians face in integrating and managing makerspaces in their libraries. Addressing these challenges will require strategic planning, investment in training and resources, creative problem-solving to optimize space, and a proactive approach to adapting to evolving technologies and user needs.

Conclusions

The integration of makerspaces in college of education libraries in North Central Nigeria presents a unique opportunity to enhance library services, foster creativity, and support student learning. A significant majority express enthusiasm for the role of makerspaces in fostering STEM education and digital literacy. However, they also identify substantial barriers to successful implementation. Financial constraints are a major concern, with many librarians highlighting the lack of funding and resources as a critical issue. Furthermore, there is a clear need for more training and professional development to equip librarians with the skills necessary to manage these new spaces effectively. While librarians in North Central Nigeria's colleges of education are optimistic about the benefits of makerspaces, they also face significant challenges that need to be addressed. Tackling these issues head-on through strategic initiatives and support, colleges of education can effectively integrate makerspaces into their libraries, thereby enriching the educational experience and better preparing future educators.

Recommendations

1. To address the mixed feelings about the additional workload associated with managing makerspaces, colleges of education should implement supportive measures such as hiring dedicated makerspace staff and providing administrative and technical assistance to alleviate the burden on existing librarians. Additionally, offering time management training and creating collaborative work schedules can help librarians balance their traditional responsibilities with the new demands of makerspace management. These steps will ensure that librarians are well-supported, reducing burnout and enhancing the overall effectiveness and sustainability of makerspaces in college libraries.
2. To address the challenge of inadequate technical support, it is recommended that colleges of education establish technical support systems specifically tailored for makerspaces. This can include hiring dedicated IT support staff with expertise in makerspace technology, providing ongoing technical training for existing staff, and creating a helpdesk or support hotline for immediate assistance. Additionally, partnerships with technology vendors for regular maintenance and updates can ensure that equipment remains functional and up-to-date, thereby minimizing downtime and enhancing the user experience in makerspaces.
3. Improved curriculum support by providing practical tools and resources that align with educational goals.

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