



INFLUENCE OF DIGITAL LITERACY SKILLS ON RESEARCH PRODUCTIVITY AMONG LIBRARIANS IN PUBLIC COLLEGES OF EDUCATION IN SOUTHWESTERN NIGERIA

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Abstract

This study investigated the influence of digital literacy skills on research productivity among librarians in public colleges of education in Southwestern Nigeria. It evolved around determining the level of digital literacy skills possessed by the librarians and its influence on research productivity among librarians in public colleges of education in Southwestern Nigeria. Descriptive survey design was adopted for the study using professionals in public colleges of education in Southwestern Nigeria. Questionnaire was used for data collection purposes. Data collected were analysed using descriptive statistics such as frequency counts, percentages, means and standard deviation for research questions, while Pearson's Product Moment Correlation (PPMC) was adopted to analyse the only hypothesis stated at a 0.05 level of significance. The study concluded that the level of digital literacy skills of librarians in public colleges of education was high. Findings also revealed that the digital literacy skills possessed by the librarians greatly contribute to their level of productivity. The study concluded that digital literacy skills positively affect the productivity of librarians in public colleges of education.

Keywords: Digital Literacy Skills, Productivity, Librarians

Introduction

Research productivity could generally be interpreted to be the quantity and quality of a researcher's output in terms of publications, patents, citations relative to time and resources invested. It is an important factor in both personal and professional settings, measuring the relationship between what is put in and what is brought out. Productivity focuses on maximization of efficiency and effectiveness at work, to achieve good

results with the same or reduced effort. It goes beyond hard work, but ability to work smarter and manage time, energy and reduce overhead cost. Librarians' productivity comes to bear on the successful realization of educational processes in colleges of education in Nigeria. Libraries in educational institutions are expected to facilitate the transference, storage and preservation of knowledge. Despite new technologies, including the advent of



the internet, the college of education libraries are still beneficial for researchers, educators and students.

The research productivity levels of the librarians define the level of impact the librarians research output will have on the community of users. The librarians plan the physical and material resources needed to encompass the goals of library, they are expected to do their task with integrity and ensure that they are more productive over an extended period of time. Innocent (2022) explained that research productivity can include research publication in professional journals and in conference proceedings, writing a book or chapter, gathering and analyzing original evidence, working with post-graduate students on dissertations and class projects, obtaining research grants, carrying out editorial duties, obtaining patents and licenses, writing monographs, developing experimental designs, producing works of an artistic or creative nature, engaging in public debates and commentaries. Innocent's explanation implies that the knowledge, skills and attitude possessed by the librarian will be expressed in the quality and quantity of the research output and made available to the community of users.

Improved research productivity among librarians in public colleges of education could depend on digital literacy skills, self-efficacy, and level of job satisfaction of the librarians. Digital literacy skills, most often referred to as information and communication technology (ICT) skills by researchers such as Adamu and Babalola (2022) denoted the capacity, abilities and proficiencies required to use digital technology to facilitate education and training, advance employability, and accomplish personal goals. It is important because digital information resources have taken over from the former traditional library practice and as such without digital literacy skills

'synonymously called ICT' skills, librarians would find it difficult to function efficiently. Digital literacy skills involve the use of varieties of digital facilities to search for information, navigate through volumes of information resources, generate and communicate information and cooperate. It also involves the skills for critical thinking and information analysis. To engage in today's society, librarians need to possess certain digital literacy skills abilities. Osinulu (2022) described digital literacy skills by library professionals and information workers as having required competence and being familiar with the use of the Internet and digital devices to create, retrieve and communicate information. The competencies needed to apply digital literacy skills vary depending on the setting (workplace and employment, personal and community, education and training), and there is a continuum of these skills.

Components of digital literacy skills include the ability to use devices efficiently, create and edit documents, communicate information to end users, transact information with ease. Digital literacy includes ability to use digital devices for creating, editing and disseminating content, working effectively with end users, conducting transactions, maintaining safe online behaviour, and adapting to technology changes. Librarians' ability to effectively operate the digital devices is likely to influence their productivity in cataloguing and classification. In addition, if librarians are able to create and edit documents and have technology literacy to transfer information to end users, it will indicate an improved productivity in carrying out acquisition and circulation functions. Apart from these, possession of skills for transacting information with ease and being safe and responsible online speak a lot about the productivity of librarians' schedule of performing selective dissemination of information in colleges of education. Most importantly,



skills to use emerging technologies, which describes ability to keep in touch and abreast of new technologies as they are emerging is an indispensable component of digital literacy skills of librarians.

Digital literacy skills among librarians in colleges of education are about the ability of the librarians to effectively and efficiently make use of digital tools and internet resources, which is different qualitatively and quantitatively from evaluative skills required of them to printed materials. Digital literacy skills are also the quality possessed by librarians in colleges of education to understand and demonstrate day-in and day-out, the use of information from a variety of digital sources. However, being digitally literate may be different from being skillful in the utilization of digital instruments. The capacity for effective and efficient utilization of potentials developed through training for the execution of specific activities may be looked at as skill. It may also be regarded as 'dexterity or coordination especially in the execution of learned physical tasks, while it is by extension regarded as a learned power of doing something competently.

Possession of adequate digital literacy skills by librarians will enable them to execute activities and services such as online database utilization, e-mail service, web-based interactive tutorials and online referencing service (Akintola, 2021). Organisations are rapidly shifting from the printed mode of utilizing information to the digital mode. For librarians to perform efficiently and productively in this technological information age, digital literacy skills are required. Skills in basic computer software will enhance their abilities in connection with using technology to help people to locate, access, arrange, produce, and share information and foster effective digital relationship and responsible use of digital technology. Therefore, digitally literate skilled librarians should be able

to handle and manipulate digital information gadgets to suit the purpose and meet the delivery of the learning objectives of the college. Possession of the ability to make and share meaningful information in different modes and formats is also a required determinant of the digital literacy skills of librarians. Digital literacy skills will enable librarians to create information needed in the college, collaborate and communicate effectively with other college functionaries. They would understand how and when digital information technologies can be used to support the provision of effective teaching and learning processes and encourage the students in cultivating individualized learning.

Digital literacy skills of librarians also include the possession of specific digital skills not only for library activities but also for research purposes. It involves having the knowledge, coordination and capability to use available digital information processing tools and applications to meet the needs of the research requirements of the librarians in colleges of education. Librarians' acquisition of digital literacy skills has been shown to significantly improve their service delivery to clients and also enable them to effectively execute their primary duties and core responsibilities, thereby meeting the aims and objectives of the library and the institutions. Possession of digital literacy skills by librarians is the gateway to the realization of adequate research output of librarians in present-day digitalized tertiary institution libraries.

Nowadays, information is communicated around the world through the internet, mobile devices, laptops, applications, and numerous databases. What information is available in college libraries and how it is transmitted depends on its nature, purpose, implications, and advantages. Emerging technology utilization skills of librarians come to play in this perspective. Knowledge can sometimes



be freely shared or subject to restrictions, and it can be viewed as goods and or services. However, the trend in information terrain nowadays is emerging technologies which requires adequate skills and dynamics of the librarian for effective adoption and utilization. Ability to communicate and collaborate means a lot in possession of digital literacy skills. For the librarians to carry out their duties to the best of their abilities, information must be transmitted between staff members working in different units or sections. Librarians' possession of high digital literacy skills will help to maximise research productivity and contribute positively to research output through the assistance of artificial intelligence. When librarians in the colleges of education demonstrate sufficient digital literacy skills, with continuous learning and adaptability, they can feel more confident in responding to readers' needs, which will raise their sense of confidence and facilitate increased research productivity.

The submission above may be applicable in academic library especially colleges of education and this may lead to increased research productivity among librarians as a facilitator of collaborative research activities. Invariably, digital literacy skills might have become crucial for librarians in public colleges of education in other to empower them and improve their research productivity. This connotes that, librarians with adequate digital literacy skills may possess a considerable level of research skills, and attain a convenient degree of high research productivity. Therefore, the study investigated the influence of digital literacy skills on research productivity among librarians in public colleges of education in Nigeria.

Statement of the problem

Librarians in colleges of education are expected to provide services that facilitate teaching and learning and research. Librarians are

mandatorily expected to publish quality scholarly articles as part of the indices of their productivity. Although employee productivity is increasingly being studied by organisations, there still remains a scarcity of literature on the productivity of librarians in public colleges of education in Nigeria. The existing studies on it have taken a general human resource management (HRM) focus, which had created a wide gap on issues such as influence of digital literacy skills on research productivity among librarians in public colleges of education. There is less research carried out on tertiary institutions library especially in Southwestern Nigeria. Therefore, this study aims to investigate how digital literacy skills affect research productivity among librarians in public colleges of education in Southwestern Nigeria to fill the existing gap in the literature.

Objectives of the study

The main objective of this study is to investigate the influence of digital literacy skills on research productivity of librarians in public colleges of education in Southwestern Nigeria.

The specific objectives are to:

- i. find out the level of research productivity of librarians in public colleges of education in Southwestern Nigeria;
- ii. examine the level of digital literacy skills possessed by librarians in public colleges of education in Southwestern Nigeria;
- iii. investigate the influence of digital literacy skills on research productivity of librarians in public colleges of education in Southwestern Nigeria.

Research questions

The following research questions were answered in the study

1. What is the level of research productivity of librarians in public colleges of education in Southwestern Nigeria?
2. What is the level of digital literacy skills possessed by librarians in



public colleges of education in Southwestern Nigeria?

3. What are the influences of digital literacy skills on research productivity of librarians in public colleges of education in Southwestern Nigeria?

Literature Review

Conceptual review

Productivity studies that have been published in the literature are varied and complex. They include research on both individual personnel productivity and organizational productivity. Kabir and Rabby (2023) explained that higher productivity is the outcome of happier, more motivated employees who are more likely to put their all into their work. According to them, the ability of human beings to accomplish the desired goals is productivity in the real sense. Adebayo (2021) described productivity as the outcome of several interrelated factors which are related to the input and output components of a production process. The author added that productivity is synonymously used to determine progress and profitability in an organization and all human endeavours. Eniekebi (2023) also defined productivity as a measure of how well-specified resources and services are offered and rendered to meet stated goals promptly. Turner (2020) stated that an engaged employee achieves above-average levels of productivity and contributes significantly to team effectiveness. Productivity of the librarians thrives when their engagement flourishes in a rapidly developing modern library.

Numerous studies have also examined library productivity at the organisational level with the aim of enhancing service delivery and fulfilling institutional aims and objectives. Chowdhury and Khan (2024) asserted that the character and quality of an institution of higher learning are shaped in large measure by the nature and

accessibility of its library resources as well as the expertise and availability of its librarians. Several roles performed by librarians within the institutions include not only teaching credit courses but also provides access to information, whether by individual and group instruction, selecting and purchasing resources, digitizing collections, or organizing information.

According to Chowdhury and Khan (2024), library services and project offered in the library are many and are segregated into different sections. Selection of materials, ordering and preparation of payment vouchers to purchase materials or library resources is carried out in the acquisition section. Once the order is received, the books, accessioning and general processing will take place and sent to the Technical Section.

According to Cadiog (2024) research has a great impact on librarians' role in the society nowadays. This role has integrally evolved in assisting in the provision of research services and other informational service to faculty, students, and staff in both public and private sectors. Iwu-James, Egbuchuwa, Ugwuanyi et al, (2023) also defined research as a systematic analysis to uncover new facts or to gain further information needed to explain or resolve a specific problem. It is investigation undertaken for the creation and advancement of knowledge using verifiable facts, it is the engine that fuels development. Librarians are involved in research and in descriptions of this work, practicing librarians have a high potential impact on library and information science. Their productivity as scholars varies greatly, depending on things like institutional support, resources, and professional norms.

Digital literacy skills

Digital literacy according to Okeji, Nwankwo, Anene and Olorunfemi (2020) empowers professionals of all works of life (including librarians) to possess the



necessary skills that improve their economic and social status and improve the quality and output of their overall job performance and living standard. The authors further emphasized that digital literacy encompasses the skills, knowledge, and behaviours required for the effective and efficient use of digital devices, such as smartphones, tablets, iPhones, laptops, iPads, and desktop computers, to facilitate collaboration, communication, expression, advocacy and decision-making. According to Drew (2022), in a world where new information is constantly being published and consumed, having this capability is vital. Workers with digital literacy skills can also connect and collaborate more effectively. These can also prevent generation gaps in a diverse workforce with up to five generations working together.

Empirical review

Research Productivity of Librarians

Ossai-Ugbah and Akporhonor (2023) empirically analyzed librarians' productivity in generic perspective. They explained that one of the significant factors of transformation under any working condition in an academic environment is a dedicated, industrious, positively driven, and inventive human workforce. With the rise in technological innovations and changes in the library profession, there is a need for the organization (library) to consider employee productivity. This is because the achievement, existence, and power of any organization to compete with others depend on the productivity of their workforce.

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Digital literacy skills of librarians

Information and communication technology resources are being used by the library more than in the past. This necessitates that its staff have sufficient levels of digital literacy skills. Chukwueke and Idris (2023) looked into how the digital literacy skills of librarians affect their ability to provide services in academic libraries in Taraba State, Nigeria. They used a correlational approach and studied 112 librarians from 11 academic libraries in the state. Their results showed that having good digital literacy skills and delivering services are closely linked to the productivity and use of library resources in academic settings. This according to them, can help create a more organized and effective environment for getting and sharing information. The study found that the librarians had low levels of digital literacy, especially in using the internet for searching, communication, evaluating websites, and applying Boolean logic.

Research Productivity and Digital literacy of librarian

Several studies have been reported in the area of digital literacy skills and their relationship with research productivity. It had been discovered that possession of digital literacy skills by librarians is possibly a means to an end, but not an end itself. The goal must be geared towards improved research productivity of



librarians in academic libraries. Justifying the relationship between productivity and job satisfaction of librarians, the role of digital literacy came into mentioning by Rodarte and Moore (2022) that as point of need services have transitioned into online forums, chat and text reference, online consultations, and virtual instruction, academic librarians are more available, and savvy, online than ever before. This can be translated to mean that possession of digital literacy skills by librarians is a necessity for high level of research productivity to be derived.

Methodology

Research design

The study adopted a survey design of mixed method of convergent parallel type to collect both quantitative and qualitative data. A structured questionnaire was used to collect quantitative data while focus group discussion was used to collect qualitative data. This design helped to find out the influence of digital literacy on productivity of librarians in public colleges of education. Mixed method of both quantitative and qualitative (focus group discussion) approach was used to corroborate the findings of the study and ensure that the findings accurately reflect the responses of the respondents.

Population of the Study

The population for the study comprised all librarians in all the public colleges of education in Southwestern Nigeria. As at the time of carrying out this study, four, out of the thirteen colleges of education namely: Adeyemi College of Education, Ondo; College of Education, Ikere; Michael Otedola College of Primary Education, Epe; Osun State College of Education, Ilesa, were still running NCE programmes. The total population for the study was 224.

Sampling Techniques and Sample Size

Total enumeration was adopted to cover all the 224 librarians in the 13 public colleges of education in Southwestern Nigeria.

Research instruments

The research instrument for this study was a structured questionnaire titled *Questionnaire on Digital Literacy Skills and Productivity (QDLSPLP)*. It is divided into five sections A-E.

Section A dealt with the Demographic Information of the respondents such as Name of institution, gender, age, years of working experience, highest academic qualification. This is used to ensure that the responses represent a diverse, cross-section of respondents or the responses are somewhat representative of already-established, baseline data (if any exists).

Section B was tagged Digital Literacy Skills Scale (DLSS) consisted of 20 items, covering parameters such as: basic computer skills, library specific digital skills, Emerging technology utilization skills, communication and collaboration skills, and continuous learning and adaptability skills. The measurement was determined using Likert scaling techniques. Testing with 4 modules respectively based on the standardised scale of Strongly Agree, Agree, Strongly Disagree, Disagree. The authors used the scale in the development of digital literacy indicators for Thai undergraduate students using mixed-method research.

Method of data analysis

The data collected were analysed using descriptive statistics such as frequency counts, percentages, means and standard deviation for research questions one and two, and multiple regression analysis for research question three. Pearson's Product Moment Correlation (PPMC) was adopted to analyse the only hypothesis at a 0.05 level of significance.



Research question 1: What is the level of digital literacy skills possessed by librarian in public colleges of education in Southwestern Nigeria?

Table 1. Level of Digital literacy skills of the librarians in public colleges of education in Southwestern Nigeria

S/n	Statements	SD (%)	D (%)	A (%)	SA (%)	Mean	S.D.
Basic Computer skills							
1	I easily utilise basic computer software such as word processors and spreadsheet programmes.	44 (19.6)	27 (12)	60 (26.8)	93 (41.5)	2.90	1.14
2	I perform basic file management tasks, such as creating folders, renaming files, and moving files between folders.	48 (21.4)	31 (13.8)	69 (30.8)	76 (33.9)	2.77	1.13
3	I have confidence in troubleshooting common issues on computer software.	21 (9.4)	82 (36.6)	91 (40.6)	29 (13.4)	2.58	.837
	I use keyboard shortcuts and other efficiency tools in computer software.	68 (39.8)	14 (6.3)	130 (58)	11 (4.9)	2.38	.977
Weighted mean= 2.66							
Library Specific Digital Skills							
5	I use library management software for cataloguing, circulation, and inventory management.	123 (54.9)	74 (33)	14 (6.3)	13 (5.8)	1.63	.852
6	I am familiar with electronic databases and online library resources.	13 (5.8)	77 (34.4)	108 (48.2)	26 (11.7)	2.65	.75
7	I am skilled in troubleshooting library-specific software and systems issues.	91 (40.6)	82 (36.6)	33 (14.8)	18 (8)	1.90	.932
8	I efficiently operate new digital tools and technologies to enhance library services.	119 (63.1)	69 (30.8)	25 (11.2)	11 (4.9)	1.67	.86
Weighted mean= 1.96							
Emerging Technology Utilization Skills							
9	I subscribe to use of emerging technologies in my library	12 (5.4)	73 (32.6)	18 (8.1)	121 (54)	1.48	.642
10	Emerging technology is a challenge to my job productivity	24 (10.7)	55 (24.5)	69 (30.8)	76 (33.9)	2.87	1.00
11	I prefer old technology to emerging trend	21 (9.4)	18 (8)	91 (40.60)	94 (41.9)	3.19	.94



12	Advent of emerging technologies in library enhances my job performance	22 (9.8)	69 (30.80)	14 (6.3)	119 (53.1)	3.02	1.11
Weighted mean= 2.64							
Communication and Collaboration Skills							
13	I have skill in using email for professional communication and collaboration with colleagues	22 (9.8)	20 (9)	103 (46)	79 (35.3)	3.06	.913
14	I use digital communication channels such as blogs or social media for library activities.	24 (10.7)	76 (33.9)	55 (24.5)	69 (30.8)	2.75	1.01
15	I am proficient in using collaborative tools, such as shared documents or project management platforms.	18 (8)	82 (36.6)	33 (14.9)	91 (40.6)	2.87	1.04
16	I do participate in online collaborative projects and discussions related to library services and research activities	14 (6.3)	22 (9.8)	119 (53.1)	69 (30.8)	3.08	.80
Weighted mean= 2.94							
Continuous Learning and Adaptability Skills							
17	I engage in professional development activities related to digital literacy and emerging technologies.	33 (14.7)	62 (27.7)	112 (50)	17 (7.6)	2.50	.836
18	I always search for information about emerging technologies that could benefit library services.	13 (5.8)	114 (50.9)	39 (13)	68 (30.4)	2.63	.93
19	I have ability to adapt to new technologies for library services.	22 (9.8)	87 (38.8)	104 (46.5)	11 (4.9)	2.49	.75
20	I do encourage and support my colleagues in adopting new digital tools.	29 (12.9)	76 (33.9)	98 (43.8)	21 (9.4)	2.49	.83
Weighted mean= 2.53							
Grand weighted mean=2.55							

Table 1 showed the responses of the respondents on the level of digital literacy skills of librarians in public colleges of education in Southwestern Nigeria. The responses of the respondents were rated as follows: Communication and collaboration skills (2.94) being the highest. This

revealed that the librarians utilized communication and collaboration skills to increase their research productivity through peer review and co-authorship. This is followed by basic computer skills (2.66), which provide the librarians the opportunity to make use of computers not only for



research and publication activities but also for other library functions. Emerging technology utilisation skills that ranked third with (2.64) showcased the advancement of the respondents on the use of new research technology tools such as artificial intelligence for research and publication purpose. Continuous learning and adaptability skills that ranked (2.53) indicated the readiness of the respondents to continue learning and adapting to the new trends in information processing and assessment, while library specific digital skills (1.96) that ranked lowest made it possible for the respondents to apply their skills to daily library activities for increased research productivity to take place. Table 1 further reveals the grand weighted mean of 2.55. Out of the maximum 3.00 obtainable score which is higher than the standard mean of 1.50, this connotes that librarians in public colleges of education in Southwestern, Nigeria possessed high level of digital literacy skills. It could be inferred from the findings that

communication and collaboration skills (2.94), basic computer skills (2.66), emerging technology utilization skills (2.64) and continuous learning and adaptability skills (2.53) were the major skills that are contributing to digital literacy skills application to increased research productivity of librarians in public colleges of education in Southwestern Nigeria.

Testing of Hypothesis

The study postulated one null hypothesis tested at 0.05 level of significance. The results are presented in the following tables:

Ho1: There is no significant relationship between digital literacy skills and research productivity among librarians in public colleges of education in Southwestern Nigeria.

The table shows the influence of digital literacy skills on research productivity of librarians in public colleges of education in Southwestern Nigeria. The Pearson Product Moment Correlation (PPMC) analysis was used.

Table 2. Correlation analysis of digital literacy skills and research productivity among librarians in public colleges of education

		Research productivity	Digital literacy skills
Personnel Productivity	Pearson Correlation		.969
	Sig. (2-tailed)	1	.000
	N	224	224
Digital Literacy Skills	Pearson	.969	1
Correlation	Sig. (2-tailed)	.000	224
	N	224	224

Table 2 showed that there is a significant positive relationship between digital literacy skills and research productivity among librarians in public colleges of education in Southwestern Nigeria. (Correlation=0.01). Hence the hypothesis of no positive relationship was rejected. This implies that as digital literacy skill of librarians increases, their

level of research productivity also increase.

Discussion of Findings

The findings revealed that the level of digital literacy skills of librarians in public colleges of education in Southwestern Nigeria was high. It was indicated that communication and



collaboration skills and basic computer skills played the most prominent role in the digital literacy skills of the librarians. This finding is in tandem with that of Abu and Okarfor (2023) who claimed that, since the inception of this century, library and Information Science scholars are believed to have, through publications acquainted library and information science practitioners of the need to be ICT compliant, having acknowledged ICTs' sustained advances and its incontestable influence on library practices and operations. The study examined skills in the use of different application programmes as well as web technology relevant to library and information services in the technology age. The research showed that there are improvements in computer skills of librarians in Nigeria. The study however contradicted the findings of Adegbite-Badmus and Alabi (2022) who claimed that librarians in polytechnics in South-West Nigeria possess weak skills in automated cataloguing and classification/use of Online Public Access Catalogue (OPAC), and averagely skilled in presentation using Microsoft Power Point, and database creation and management. However, they still need to improve on their weak or average ICT level to make them compete favourably with their counterparts in academics and to assist in solving ICT challenges of their users to improve and increase their research productivity.

Some of the digital literacy skills that librarians need to possess as a result of the findings in this investigation is skills in using emerging technologies, such as the confidence to assess the relevance and dependability of online information sources for research purpose and library patrons, the ability to handle copyright and intellectual property rights concerns when using digital resources in the library, and the desire to take part in training sessions to enhance their information assessment abilities. Communication and collaboration to

use email for professional communication and collaboration with colleagues and also participate in online collaborative projects or discussions related to research and library services. This was supported by the findings of Chukwueke and Idris (2023) that believe that digital literacy, the skill to effectively use and manage digital technologies, combined with the consistent integration of these technologies into library services and would improve the quality of library service delivery significantly.

It is evident that digital literacy skills significantly influence librarians' research productivity. This explains why the digital literacy skills of librarians and the quality and quantity of their research output in Nigerian academic libraries are of great concerns. As custodians of information, librarians must adeptly navigate various digital platforms to deliver services effectively and contribute to scholarly publication of research findings.

Conclusion

The study investigated the influence of digital literacy skills on research productivity among librarians in public colleges of education in Southwestern Nigeria. Digital literacy skills significantly affect research productivity of librarians in public colleges of education. Based on the findings, it could be concluded that, possession of adequate digital literacy skills by librarians in public colleges of education would lead to enhanced research productivity among librarians in public colleges of education in Southwestern Nigeria.

Recommendations

Based on the findings of this study, the following recommendations were proposed:

1. Management of public colleges of education should implement properly tailored training and development programme to equip librarians with digital literacy skills



necessary for their roles as custodians of knowledge and researchers.

2. Library administrators should prioritise maintaining and enhancing librarians' advanced digital literacy skills through regular in-house seminars and workshops. As new technologies are continuously emerging, regular updates are equally essential to boost librarians' research productivity.

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