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Utilization of Digital Library Services for Blended Learning by Students in Rivers State, Nigeria

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ABSTRACT
The study investigated the utilization of digital library services for blended learning by students in library schools in Rivers State, Nigeria. *Three (3) objectives and hypotheses guided the conduct of the study. The study adopted a descriptive survey design with a sample size of 420 students from the faculty of education selected by random sampling. The study was guided by three research questions and three null hypotheses, which were tested at the 0.05 a-level of significance. A questionnaire of 15 items was used to collect data, while a Cronbach Alpha reliability coefficient value of 0.84 was estimated for the instrument. The research questions were determined by mean and standard deviation, and the hypothesis was tested by linear regression statistics.* The study found a positive relationship between OPAC and blended learning among students at Rivers State University. Also, it was revealed that there exists a positive relationship between digital reference and blended learning among students. It was further found that there is a positive relationship between internet-based users' education and blended learning among students. The study therefore recommends that the university management should make an effort to upgrade and enhance the digital library system to be more beneficial to students, the institution should organize training workshops and seminars at least once a semester for the students to enable them to effectively utilize and benefit from digital library services and blended learning and the library management should provide a feedback system that can reveal users' responses to the performance of each digital library service and their level of satisfaction.

KEYWORDS: Blended learning, Digital, Dots, library services, e-library.

I. INTRODUCTION

Information and communication technologies (ICTs) have unquestionably advanced human endeavour, and they have undoubtedly altered approaches to teaching and learning (Anigbo & Orie, 2018). The advent of digital library services has improved the blended learning approach, which combines traditional teaching and learning with e-learning. As a necessity, libraries must incorporate digital technology, transform their archives, and acquire works created as digital files (Amponsah et al., 2021). A digital library for online services is built through the digitization of library resources and the purchasing of existing digital collections (Adepoju & Adesina, 2017).

A digital library is a repository of electronic resources, such as books and educational videos that can be accessed remotely over the internet. The term "digital library" does not just refer to digitized collections and information management technologies; it also refers to a set of activities that bring together collections, services, and people to support the entire life cycle of data generation, dissemination, use, and presentation (Alhaidari, 2019; Horsfall et al., 2021). In the view of Spante et al. (2018), this is in the same domain as academic libraries that are known for gathering, compiling, preserving, and making information resources available. Its objective is to assist in enhancing higher education teaching, learning, and research.

Digital library services are services that libraries or librarians offer to their user community through digital libraries or Web 2.0 (Amponsah et al., 2021). Even though digital library services are typically provided using digital library products like e-books, e-journals, e-lecture notes, e-projects, and e-theses and e-dissertations, web 2.0 can be used to provide digital library services without necessarily utilizing the contents in digital libraries. Such services could include current awareness services and selective dissemination of information (Srivastava & Babel, 2020). A digital library's services could

be made available via CD-ROM, desktop computers, laptops, and even mobile devices. Additionally, it might be given through online databases like ProQuest, which call for an Internet connection (Adepoju & Adesina, 2017). Srivastava and Babel (2020) named the digital library services to include; gateways, Online Public Access Catalogue (OPAC), portals, subject portals, subject directories, online databases, and search engines, digital reference. Digital libraries also provide document scanning services, Selective Dissemination of Information (SDI), Current Awareness Services (CAS), and other services (Amin et al., 2021).

Blended learning incorporates both traditional chalk-and-board instruction and electronic, online, or other modes of learning into the educational system for both teaching and learning (Pima et al., 2018). Adebayo et al. (2019) define blended learning as a pedagogical strategy that merges diverse learning methods and styles, notably with the use of ICT resources, to maximize the efficiency and effectiveness of teaching and learning. Blended learning incorporates both traditional chalk-and-board instruction and electronic, online, or other modes of learning into the educational system for both teaching and learning (Pima et al., 2018; Leidl et al. 2020).

Blended learning has evolved as a valuable delivery technique and course design strategy in higher education. Libraries are offering digital content that students can use to access electronic information resources relevant to their courses to assist students and lecturers in adopting blended learning (Pima et al., 2018). Blended learning, according to McCallum et al. (2015), takes the form of flipped learning, in which homework is completed in class while teachers and students discuss and work through problems. Students typically study information online by watching video lectures at home. Instead of lecturing, teachers interact with students in a more personal way. In blended learning, technologies like videotapes, CD-ROMs, web-based training films, mixed

modes, and different ways of teaching can be used together (Muslim et al., 2019).

Connecting the dots is the process of bringing together information from various sources to represent a fact or piece of knowledge (Amin & Cohendet, 2004). In this study, the concept of "connecting the dots" refers to the incorporation of digital library services into blended learning. Taking this into account, Ahiauzu et al. (2020)proposed that library educators are now required to implement instructional resources linked to technology in teaching and learning because the talk-chalk-board method is becoming boring and students are finding it difficult to retain long-term classroom instruction by a teacher. As a result, librarians and Library and information science (LIS) educators are now implementing blended learning practices using electronic media and the Internet, such as digital boards and projectors, video conferencing tools like Skype, Zoom, and Google Meet, instant messaging tools like Whatsapp, Facebook Messenger, Telegram, etc.; and cloud technologies like Google Doc for collaboration, One-drive, email, etc. (McCallum et al., 2015). Digital materials are necessary to support blended learning, regardless of the technology used by Library and Information Science (LIS) educators for lecture delivery and communication with students (Horsfall et al., 2021).

One of the many innovative ways libraries have responded to blended learning is through digital services. Libraries provide Current Awareness Service (CAS) to students and lecturers via digital services, as well as Selective Dissemination of Information (SDI) services for students, and lecturers deliver e-books, e-journals, and e-lecture notes to improve access to teaching and course materials (Keisling, 2018). When lecturers have access to digital content and services, they are better equipped to deliver lectures to students. Students' learning experiences, on the other hand, are enhanced when they have access to course materials in digital form via digital services. The use of digital products and services is an important component of blended learning because, without them, lecturers and students will be unable to access the e-content and services required to benefit from blended learning (Mohammadimehr & Mirmoghtadaie, 2021).

Statement of Problem

Nigerian university education has recently faced some challenges, ranging from COVID-19 to the intermittent Academic Staff Union of Universities' (ASUU) strike. The strike has given some private and state-owned universities an edge with a growing student population as well as raised the challenge of instructional strategy to accommodate the rise in population. Traditional instructional pedagogical strategies cannot provide effective curriculum implementation. Thus, there is a need for pedagogical innovation that will incorporate digital technology.

Higher education institutions need an environment that encourages efforts to improve teaching and learning. Pedagogical and curriculum concerns should drive technological developments, not the other way around. As in the case of Rivers State University, where teaching and learning have been, and to some extent, mostly done through the lecture method that involves the talk-check board method only. Research has it that this way of teaching and learning is passive because there is no much interaction between the students and the teacher.

The growing usage of the internet by higher education students has necessitated a restructuring of the teaching and learning environments in these institutions (Mbazu et al., 2024). Further technological advancements are an important aspect of how the library and information science sector operates, as advancing technologies and technology-based services affect user expectations for accessing and sharing information resources. As a result, the higher education sector must utilize social and personal technologies capable of supporting teaching and learning. Although most higher education institutions have Internet-connected technologies, technology

has yet to have a significant impact on instructional practices, even though it is argued that instructional methods using technology in teaching affect learning where an interactive and participatory learning environment enables flexibility and self-pacing in the learning process.

Objectives of the Study

The study investigated the utilization of digital library services for blended learning by students in Rivers State, Nigeria. Specifically, the study sought to:

1. Determine the impact of OPAC utilization on blended learning among students of Rivers State University
2. Determine the impact of utilizing digital reference services on blended learning among students
3. Determine the impact of internet-based education services on blended learning among students

Hypotheses

The following null hypotheses were formulated and tested in this study:

1. OPAC/WEBPAC as a digital library service does not significantly impact blended learning
2. Digital reference as a digital library service does not significantly impact blended learning
3. Internet-based users' education as digital library service does not significantly impact blended learning

II. LITERATURE REVIEW

The relevant literature was reviewed under the following headings:

Impact of OPAC utilization on blended learning in universities

The introduction of online public access catalog (OPAC) facilities to university libraries has made libraries more proactive in their activities and brought about a more sophisticated method of accessing and retrieving the information resources that a library purchased to serve its customers. It has

also changed the way services are given to the user community (Németh & Drótos, 2019).Universities are currently transitioning from the manual retrieval system based on the traditional card catalogue to the use of OPAC, which is an information retrieval system characterised by brief bibliographic records pertaining primarily to books, journals, and audio. According to Eseradaand Okolo, (2019), measuring the effectiveness of the use of computer catalogues (OPAC) has been a consistent area of research for several decades. This has led to the realization that data extraction systems can be enhanced to better meet the informational needs of their users.

The Online Public Access Catalogue (OPAC) is a publicly accessible online bibliography of a library's collection. In OPAC, the online database of all library resources is maintained (Adebayo et al., 2018). It includes all DVDs, periodicals, books, music scores, microforms, computer discs, and audiovisual materials in the library's collection. By utilizing the diverse capabilities of computers and telecommunications, the OPAC provides users with easy access to information resources. OPAC provides current information and multiple online access points to library holdings, whereas the traditional catalogue is not online (Akanwa, 2017). Edam-Agbor and Ogunjimi (2018) remarked, "OPAC, which provides rapid online access to all the library's holdings via computer terminals, is impacting library operations as significantly as the emergence of bibliographic utilities and automated networks." The OPAC is a product of the newly introduced technology in library operations. It is a publicly accessible, computer-based bibliography of a library's collection that can be accessed through computer terminals in a library (Akanwa & Udo-Anyanwu, 2017; Edam-Agbor & Ogunjimi, 2018).

Utilizing digital reference services on blended learning among students

The digital reference service was developed in response to rising information demand in a

networked world. The reference service is one of the key features of a digital library that assists users in finding fulfillment. Instead of waiting at the reference desk for customers to drop by and make inquiries, a digital library enables librarians to communicate with clients via the Internet. Digital library services provide access to the aforementioned data in a range of formats, including online databases, publications, e-books, e-journals, open-access resources, e-manuscripts, and multi-media collections (Mbazu et al., 2023). Students are more likely to retrieve information from the Internet for their academic work due to the ease of access to information provided through the Internet. Some libraries believe that the expansion of information technology has made their jobs more difficult. Once more, learning environments have changed to incorporate mixed-media, online, and remote learning. As libraries think about ways to effectively help students with their academic work, the rise of blended learning has introduced new difficulties and dilemmas. As a result, digital library services like the digital reference service are included in blended learning to ensure that students may get the information materials they need by just asking a librarian. This is why Keisling (2018) claims that "blended learning increases the quality of instruction, makes learning flow effectively, and promotes marketing in the tourism sector.

Impact of internet-based education services on blended learning among students

The Internet is a web-based instrument that is acceptable for disseminating information across a large network (Singh, 2021). Internet-based aids and teaching resources can be easily updated, accessed, and recovered when needed. The library can use its websites to instruct users on how to access and use information resources through internet-based user education. Despite efforts to improve services, some users may not regard libraries as appropriate venues for disseminating these electronic services. According to the findings of Matusiak (2012), students spend less time utilizing digital library resources, which has

also resulted in some students having less awareness of some of the resources that are also available in digital content for blended learning. According to Németh and Drótos (2019), blended learning may take the form of orientation, training, and user education that is offered online through digital library services. Teachers should step in because, according to Acer Inc. (2020), "digital libraries do not always come with a librarian." To ensure that students get the most out of blended learning, teachers must help them find, recall, and apply the information they need.

III. METHODOLOGY

The study adopted a descriptive survey research design. The study was carried out at Rivers State University. The sampled population of the study was comprised of four hundred and twenty (420) students of Rivers State University. Stratified random sampling was employed to select students from all the departments in the Faculty of Education. The instrument for data collection was a self-constructed questionnaire. The instrument was titled "Digital Library Service and Blended Learning Questionnaire (DLSBLQ)". The questionnaire consisted of two sections. Sections A and B. Section A elicited information about the respondents' backgrounds, whereas Section B was divided into three (3) clusters, with Cluster A dealing with OPAC/WEBPAC services and blended learning, Cluster B dealing with digital reference and blended learning, and Cluster C dealing with internet-based education and blended learning. The instrument was validated by two experts in the Department of Library and Information Science and one expert in Measurement and Evaluation, all at Ignatius Ajuru University of Education A reliability test was not performed on the instrument based on Nworgu (2015) position that once a test is valid, it tends to be reliable. With the assistance of research assistants, the researcher visited the institution and distributed four hundred and twenty (420)

copies of the validated questionnaire draught to the respondents. The researcher collected the completed questionnaires on the spot, while the rest were collected from the research assistants after they were completed. All of the questionnaires distributed were properly completed and collected, providing a response rate of 100%. Mean descriptive statistics and simple regression were used to analyze the collected data.

IV. RESULT AND DISCUSSION

Research Questions 1: What is the impact of OPAC/WEBPAC as a digital library service on blended learning?

Table 1: Impact of OPAC/WEBPAC services on blended learning

S. No.	OPAC and webPAC services and Blended Learning	SA	A	D	SD	X	SD	RMK
1	OPAC/webPAC will have an impact on blended learning	181	88	123	28	3.005	0.995	A
2	OPAC /webPAC services help the learner locate documents in the library	240	85	78	17	3.304	0.909	A
3	OPAC / webPACs ervices help the learner access library collections and speed up the learning process	261	26	122	11	3.279	0.969	A
4	OPAC and webPAC services help learners to gain more knowledge.	320	20	20	21	3.707	0.776	A
5	OPAC and webPAC services will help the learner to retrieve e-resource	227	26	150	17	3.102	1.024	A
	Grand total					**3.279**	**0.935**	**A**

Table 1 shows the results of the respondents on the OPAC/webPAC services and blended learning at Rivers State University. Each item in the table shows a mean value greater than 2.0. This implies that the OPAC/webPAC will help learners locate and retrieve e-resources and gain more knowledge. The grand mean of 3.279 is an affirmation that OPAC/webPAC as a related digital library service will increase learners' activity in the blended learning strategy, and the concordant values of the standard deviation show the homogeneity of the respondents. The finding is in agreement with Adepoju and Adesina (2017), who researched awareness, perception, and use of digital library services by the University of Ibadan, and Akanwa and Udo-Anyanwu (2017) who worked on information resources in the library.

Research Questions 2: What is the impact of digital reference as a digital library service on blended learning?

Table 2: Impact of digital reference services on blended learning

S. No.	Digital reference services and Blended Learning	SA	A	D	SD	X	SD	RMK
6	Digital reference services influence blended learning	270	60	70	20	3.381	0.925	A
7	Digital reference services facilitate learner information search	190	72	145	13	3.045	0.959	A
8	Digital reference services provide learners	240	43	72	64	3.093	1.160	A

						X	SD	RMK
	with online databases, e-books, e-journals							
9	Digital reference services encourage learners to assimilate at his pace	218	100	39	63	3.126	1.094	A
10	Digital reference services and blended learning increase the quality of instruction	304	14	91	11	3.455	0.916	A
	Grand total					**3.220**	**1.011**	**A**

Table 2 shows the result of the relationship between digital reference as a digital library service and blended learning at Rivers State University. The mean values show that digital reference facilitates learner information search with online databases, e-books, and e-journals and encourages assimilation at their pace. The respondents are in affirmation that digital reference services and blended learning will increase the quality of instruction, and the concordant values of the standard deviation show the homogeneity of the respondents. The grand mean of 3.22 implies that digital reference will impact blended learning at Rivers State University. The findings are consistent with Norasieh and Gerbic (2010), who investigated exploring the use of digital library services in a blended learning environment, and Okwu and Opurum (2021) who researched the challenges of inadequate library services for a developing economy.

Research Questions 3: What is the impact of internet-based users' education as a digital library service on blended learning?

Table 3: Impact of internet-based education on blended learning

S. No.	internet-based education and Blended Learning	SA	A	D	SD	X	SD	RMK
11	Internet-based user education helps learners to search and locate e-resources	242	101	35	42	3.293	0.987	A
12	Internet-based user education provides recent information	272	75	53	20	3.426	0.987	A
13	Internet-based user education the learner the opportunity to learn anywhere	226	91	97	6	3.279	0.865	A
14	Internet-based user education and blended learning promote learners' interest	260	60	31	63	3.245	1.110	A
15	Internet-based user education increases learners' understanding and awareness	194	72	143	10	3.076	0.956	A
	Grand total					**3.264**	**0.959**	**A**

Table 3 shows the relationship between internet-based users' education as a digital library service and blended learning at Rivers State University. The mean values show that the internet-based user's education allows the learner to search and locate e-resources, update information, promote interest, and learn at their pace. The concordant values of the standard deviation show the homogeneity of the respondents in their view on internet-based users' education. The grand mean of 3.264 indicates that the independent variable internet-based user's education will impact on blended learning at Rivers State University. The finding corroborates the idea of Spante et al. (2018) who worked on digital competence and digital literacy in higher education and Khalil et al. (2018) who researched the teaching of anatomical sciences using a blended learning approach.

Hypothesis 1: OPAC/WEBPAC as a digital library service does not significantly impact blended learning

Table 4: Regression analysis of OPAC/WEBPAC services and blended learning

Model	ANOVA[b]	Sum of squares	df	Model Summary R	R²	Adj.R²	Coefficients[a] B	Beta	p-value
1	Regression	466.356	1	0.964[a]	0.929	0.928	1.225	0.964	0.000
	Residual	35.885	418						
	Total	502.242	419						
	F=5.432E3,Mean-square=446.36, 0.086, sig.=0.000[a]			Std. Error of the estimate= 0.293, sig.=0.000			t=73.703, α-level=0.05		

Table 4 depicts the linear regression analysis of OPAC/WEBPAC as a digital library service and blended learning at Rivers State University. From the model summary, the R-value, which is the relationship between OPAC/WEBPAC and blended learning, has a value of 0.964[a], which implies that the regression model best explains the relationship between OPAC/WEBPAC and blended learning. The total variation of blended learning as a result of the impact of OPAC/WEBPAC is 0.929. The adjusted R² of 0.928 with a standard error of 0.293 implies that OPAC/WEBPAC contributes 92.8% to blended learning at Rivers State University. The ANOVA of Table 4 shows that the relationship between OPAC/WEBPAC and blended learning is significant enough to be represented in the model.

The standardized B coefficient has a positive value of 1.225. This implies that there is a relationship between the variables, and that the OPAC/WEBPAC statistically influences the blended learning in Rivers State University. The null hypothesis was rejected based on the platform that the statistical probability is less than the 0.05 α-level. The findings are consistent with those of Hockly (2018) and Singh (2021), who investigate the development of effective blended learning programs, and Amponsah et al. (2021), who investigate the availability and accessibility of support services in a blended learning environment.

Hypothesis 2: Digital reference as a digital library service does not significantly impact blended learning

Table 5: Regression analysis of digital reference services and blended learning

Model	ANOVA[b]	Sum of squares	df	Model Summary R	R²	Adj.R²	Coefficients[a] B	Beta	p-value
1	Regression	463.301	1	0.960[a]	0.922	0.922	1.090	0.960	0.000
	Residual	38.960	418						
	Total	502.242	419						
	F=4.973E3, Mean-square=463.301, 0.093, sig=0.000[a]			Std. Error of the estimate= 0.305, sig.=0.000			t=70.521, α-level=0.05		

Table 5 depicts the linear regression analysis of digital reference as a digital library service and blended learning in Rivers State University. The R has a value of 0.960[a], which implies that the regression model best explains the relationship between digital reference and

blended learning. The total variation of blended learning as a result of the impact of digital reference is 0.922. The adjusted R^2 of 0.922 with a standard error of 0.305 implies that digital reference contributes 92.2% to blended learning at Rivers State University. The ANOVA of Table 5 indicates that the relationship between digital reference and blended learning is significantly represented by the model. The standardized B coefficient has a positive value of 1.090. This implies that there is a relationship between the variables,

and digital reference statistically influences blended learning at Rivers State University. The null hypothesis was rejected because the statistical probability was less than the 0.05 α-level. The result was in agreement with Borba et al. (2016), Keisling (2018), Adebayo et al. (2019), and Lee et al. (2021), who researched the relationship between blended learning and different digital conditions, such as e-learning and mobile learning, library services, and electronic information.

Hypothesis 3: Internet-based users' education as digital library service does not significantly impact blended learning

Table 6: Regression analysis of digital reference services and blended learning

Model	ANOVAᵇ	Sum of squares	df	Model Summary			Coefficientsª		
				R	R²	Adj.R²	B	Beta	p-value
1	Regression	463.505	1	0.961ª	0.923	0.923	1.147	0.961	0.000
	Residual	38.737	418						
		502.242	419						
	F=5.002E3, Mean-square=463.505, 0.093, sig=0.000ª			Std. Error of the estimate= 0.304, sig.=0.000			t=70.722, α-level=0.05		

Table 6 depicts the linear regression analysis of internet-based users' education as a digital library service and blended learning at Rivers State University. The R was estimated at the value of 0.961ª, which implies that the data on the relationship between internet-based users' education and blended learning were best explained with a regression model. The total variation of blended learning as a result of the impact of internet-based users' education is 0.923. The adjusted R^2 of 0.923 with a standard error of 0.305 implies that internet-based users' education contributes 92.3% to blended learning at Rivers State University. The ANOVA in Table 6 depicts that the relationship between internet-based users' education and blended learning is significantly represented by the model. The standardized B coefficient has a positive value of 1.147. This implies a relationship between internet-based users' education statistically influences blended learning at Rivers State University.

The null hypothesis was rejected on the basis that the statistical probability is less than the 0.05 α-level, the null hypothesis was rejected. The findings corroborate the postulations of Németh and Drótos (2019) who worked on a blended learning-based curriculum on Web archiving; Mohammadimehr and Mirmoghtadaie (2021) who researched exploring the components of a student support system in blended learning; and Tong and Wei (2020) that investigated on teaching design and practice of a project-based blended learning model.

V. CONCLUSION

The study examines the relationship between digital library services and blended learning at Rivers State University. The digital library services investigated were online public access catalog (OPAC), digital reference, and internet-based users' education. The findings reveal that OPAC is capable of making

learners locate documents, retrieve e-resources, and gain more knowledge. In addition, OPAC as a digital library service increases learners' activity in a blended learning strategy. The finding also reveals that digital reference facilitates blended learner information search with online databases, e-books, and e-journals and encourages assimilation at their pace, as well as increases the quality of instruction. From the findings, internet-based user education via blended learning allows learners to search and locate e-resources, update information, and enhance their interests. It is therefore important that universities should do more to connect digital library services and blend learning to develop students' intellectual capacity and produce graduates who can work independently in society.

Recommendations
1. The university management should make an effort to upgrade and enhance the digital library system to be more beneficial to students.
2. The institution should organize training workshops and seminars at least once a semester for the students to enable them to effectively utilize and benefit from digital library services and blended learning.
3. The government of Rivers State should provide more funds and facilities to aid the digitalization of the library and university arena.
4. The library management should provide a feedback system that can reveal users' responses to the performance of each digital library service and their level of satisfaction.

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CONFLICT OF INTEREST
There is no conflict of interest among the authors of this manuscript.

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