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Information Literacy and the Future of Digital Information Services at the University of Jos Library

Vicki Lawal
ladilaw@gmail.com

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Table of contents

1. Introduction

1.1 Information Literacy (IL): Definition and context

1.2. IL and the current digital environment

2. University of Jos Library: Digital context

2.1. Literature review

3. Research design and methodology

3.1. Data presentation

3.2. Discussion of findings

4. Conclusion and recommendations

Information Literacy and the Future of Digital Information Services at the University of Jos Library

Abstract

This paper highlights current developments in digital information resources at the University of Jos Library. It examines some of the new opportunities and challenges in digital information services presented by the changing context with respect to Information Literacy and the need for digital information literacy skills training. A case study method was employed for the study; data was collected through the administration of structured questionnaires to the study population. Findings from the study provide relevant policy considerations in digital Information Literacy practices for academic libraries in Nigeria who are going digital in their services.

Keywords: Information literacy, Digital literacy, academic libraries, information services, Nigeria

1. Introduction

Developments in the current information society have increased the value of information as a strategic commodity for the global economy. The exponential growth of information in various formats has also created the need for the ability of the user to critically evaluate diverse forms of information resources. In this regard, the concept of Information Literacy (IL) has received considerable attention particularly in Higher Education Institutions (HEIs). Information literacy constitutes an important framework for developing skills in the use of information resources. In academic libraries, IL instructional programmes have served to inculcate more efficient information retrieval skills among students through an emphasis on critical thinking and problem solving skills (Webber & Johnston, 2003).

In the past few years however, the digital revolution, due in part to the increasing power of the Internet, has accelerated the transition to a digital culture. In the light of this, creating digital information sources has become a focal point of most academic libraries for the purpose of ensuring equitable access to information resources and services by users. Consequently, beyond the concern for developing the needed IL skills to access the Internet, what has become relevant for academic libraries with developments in digital technology is the need to instil digital literacy skills among students in the use of information resources (Khatun, 2013). This paper examines

current IL issues arising from the development of digital resources at the University of Jos Library. It aims to analyse some of the new opportunities and challenges in digital information services presented by the changing context with respect to IL and IL instruction programmes at the institution.

The paper is anchored on the following research questions:

1. What current IL practices are being undertaken at the University of Jos Library?
2. In what ways have programmes of IL instruction encouraged skills development among students?
3. What is the nature of digital resources and services available at the University of Jos Library?
4. How can IL practices be supported through digital literacy instruction at the University of Jos Library?
5. How best can digital literacy be integrated into the learning process at the University of Jos?

1.1 Information Literacy (IL): Definition and context

Information literacy can be viewed as an active problem-solving process; perceptions of the term as an emerging concept have tended to focus more on issues of providing the user with the needed information skills for finding, evaluating and using various forms of information resources (Behrens, 1994). Definitions of the concept have been variously contested and interpreted by different authors (McCrank, 1992; Snaveley & Cooper, 1997; Owusu-Ansah, 2003); however, the Association of College and Research Libraries' (ACRL) Information Literacy Competency Standards, 2000 which outlined the qualities of the information literate person as the ability to determine when information is needed, locate, evaluate and effectively use the accessed information, constituted an important benchmark for establishing goals for lifelong learning in HEIs. This definition also brought to the fore the institutional role HEIs can play in developing intellectual abilities and critical thinking skills among students (Association of College and Research Libraries, 2000).

Other frameworks developed by the Standing Conference of National and University Libraries (SCONUL) in 2011 on information skills in the United Kingdom and the Australian and New

Zealand Information Literacy Framework in 2004, have also served as a guiding principle for implementing IL programmes in HEIs (Bundy, 2004; Bent & Stubbings, 2011). A common element of these frameworks is that they each identify access, acquisition, evaluation and manipulation of information as necessary steps in the information seeking process. Also, each framework discusses the identification of information need as a necessary element of IL and emphasises the value of the ethical use of information resources. The difference between the frameworks, however, is that while the ACRL's definition sets IL within a social scenario, SCONUL's model is more contextualised to the academic environment as it emphasises the recognition of information need and the steps involved in the information seeking process (Lau, 2006; Boon, Johnston & Webber, 2007).

The Australian and New Zealand Framework, 2004 on the other hand, was largely adapted from the ACRL framework, and incorporates two additional standards which include principles that embrace social responsibility through a commitment to lifelong learning and community participation (Andretta & Cutting, 2003; Webber & Johnston, 2003; Boon, Johnston & Webber, 2007). Research studies conducted to examine the efficacy of the integration of these frameworks to course curricula in HEIs have generally indicated varying levels of success on students' information skills. Outcomes from such studies have also influenced policy decisions with respect to the integration of IL to course curricula, assessment of performance and measurement of specific student learning outcomes and the adoption of IL as an institutional policy framework. Through these frameworks also, academic libraries in HEIs have been able to develop learning outcomes, tools, and resources which have been deployed to infuse IL concepts and skills into their course curricula (Underwood, 2002; De Jager & Nassimbeni, 2002; Koltay, Krakowska, Landova, & Prokai, 2010; Lockhart, 2013; Simon, 2013; Agbo & Igwebuike, 2014; Anyaoku, Ezeani & Osuigwe, 2015).

The emergence of information literacy from what seemed to have been a general concern to address issues of using information tools and other primary sources is today being experienced in different ways leading to the evolution of new related concepts such as digital literacy and media literacy among others (Tuominen, Savolainen & Talja, 2005). Livingstone (2004) defines media literacy as "the ability to access, analyse, evaluate and create mess ages across a variety of

contexts”. Digital literacy on the other hand is defined as the ability to use digital technology, communication tools or networks to locate, evaluate, use and create information (University of Illinois, 2008). Definitions of these concepts seem to overlap with that of IL as the sources of information contained in these aspects of information partially complement or coincide with other forms of information sources. Concern for these concepts of literacy are therefore based on the premise that the expanded medium of ICT require an ability for a higher level of literacy by the user to be able to critically engage meaningfully with new technologies in the digital environment. Consequently, the influence and status of IL on the development of other literacy concepts has been remarkable particularly in ways that have encouraged greater public participation with ICT and other information sources (Shapiro & Hughes, 1996; Bawden, 2001).

1.2. IL and the current digital environment

In the past few years however, increasing advances in electronic communication have created critical concerns for academic libraries in HEIs with respect to IL practices. New developments occasioned by technological innovations have introduced different challenges in the provision of information services to users. The application of web-based services, known as Web 2.0, to library services has created the potential for meeting the needs of a variety of users irrespective of time and space. Services using these medium include social networking sites such as Facebook, YouTube, MySpace, Flickr, Twitter, Wiki, Blogs, Bookmarking, federated searching, Chat, Instant Messaging, Skype, and so on which encourage online collaboration, participation and sharing of information and services (Burke, 2013). With these changes in the information environment and the increasing scope of digital information sources, academic libraries are forced to re-invent themselves by determining more versatile approaches to IL instruction programmes in order to remain relevant in information provision.

In the light of these transformations, researchers in IL have observed that even though traditional definitions of information literacy from earlier frameworks and models were designed in response to technological developments, the ACRL Information Literacy Competency Standards, 2000 definition of IL is insufficient for the revolutionary social technologies currently prevalent online (Cordell, 2013). The Standards would therefore need to be revised to reflect the use of emerging technologies in the digital environment particularly in HEIs. Consequently, it has been advocated

that the rise of social media and other collaborative online communities require a re-framing of information literacy as a Meta-literacy, a concept that supports multiple literacy types (Mackey & Jacobson, 2011). Following these recommendations, in 2014, the ACRL Task Force was set up to review the Standards in this regard. In the new Framework, Information Literacy is defined as:

“The set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning” (ACRL Framework for information literacy for higher education, 2015, p. 3).

Among other things, the new Framework reflects the current thinking on such issues as the creation and dissemination of knowledge, the changing global higher education and learning environment and the shift from Information Literacy to Information Fluency (ACRL Framework for information literacy for higher education, 2015). According to Cordell, (2013) this current Framework is an expanded definition of IL that includes multiple literacies such as trans-literacy, media literacy, digital literacy, and so on and envisions the concept of IL as extending the arc of learning throughout a student’s academic career and as converging with other academic and social learning goals. It also draws significantly upon the concept of Meta-literacy which, as advocated by Mackey and Jacobson (2011), is an expanded scope of IL beyond a discrete set of skills required for effectively accessing information to a unified construct that supports and promotes the production and distribution of knowledge in collaborative online communities. It recognises related literacy concepts particularly those emanating from social technologies and digitally networked environments.

The importance of the new IL Framework within the context of the growing digital information landscape is that it provides the opportunity for academic libraries to imbue users with the latest IL skills to actively engage with multiple information formats produced through different media. The Framework also emphasizes student participation and creativity, highlighting the importance of these contributions particularly through web-based platforms (ACRL Framework for information literacy for higher education, 2015). Academic librarians in HEIs can now redesign programmes of IL library instruction and collaborate better with faculty on assessment of student learning

outcomes through this Framework. It would also help librarians contextualize and integrate concepts of digital literacy for their institutions by encouraging a deeper understanding of knowledge practices in the digital environment.

2. University of Jos Library: Digital context

The University of Jos Library was established in 1975 and serves a population of over 26, 000 students. Through its diverse information services, it has helped to support staff and students of the institution by encouraging excellence in teaching, learning and research. In the past few years, the University of Jos Library has made significant progress in developing digital content of its information resources which has encouraged new ways of delivering library services. The digitization of its library collection to electronic formats began in the early 1990s (Akintunde, 1999). The Library's Online Public Access Catalogue (OPAC) was first launched in 2010 using the Virtua application as the Library Management System. From 2014 however, the retrospective conversion of its catalogue records was undertaken using the web-based Integrated Library Software known as KOHA. Currently, over 50% of the Library's holdings are available through the Online Public Library Access Catalogue (OPAC). The adoption of the KOHA software has also facilitated the integration of other modules for circulation, acquisition and serials systems. Other digital transformations of library resources were also undertaken in the following areas:

1. **The e-Granary Digital Library:** The e-Granary, also known as "The Internet in a Box", is an initiative of the WiderNet Project which uses an off-line technology deployed over 400 sites in developing countries. It includes millions of Open Educational Resources (OERs) including Wikipedia, MIT's Courseware, Khan Academy and over 200 open source journals in various disciplinary fields. The e-Granary provides millions of digital educational resources and contains built-in tools for subscribers to upload and edit local materials as well as create and edit their own websites which are stored locally. The e-Granary Digital Library represents the collective efforts of hundreds of authors, publishers, programmers, librarians, instructors and students around the globe (Patten, 2012). The e-Granary Digital Library can be accessed anywhere on the University campus.
2. **Electronic databases:** Electronic databases are information sources that can be accessed online from a network, including the Internet. They are usually delivered primarily via a

web browser and often purchased for a specific period of subscription. The University of Jos Library has subscription to online databases in various disciplinary fields most of which provide access to a variety of full-text journals and other materials. Examples include JSTOR, Ebsco Host, Science Direct, Compulaw, Legalpedia Pro, Oxford Journals, African Digital Library, Medline, Hein Online, Electronic Information for Libraries (eIFL.net), African Journals Online, as well as other databases from the United Nations agencies for health, agricultural and environmental research (HINARI, AGORA and OARE). Access to these databases has helped the institution preserve the scholarly record and advance research and teaching in more sustainable ways.

3. **Institutional Repository (IR):** Institutional Repositories (IRs) generally contain digital contents of their institutions. IRs have gained more popularity in recent years and globally, the creation and deployment of IRs has become one of the major factors for institutional visibility of quality research output on the Internet which also influences their global ranking on the world scale. In June 2009, the University of Jos Library became the first institution in Nigeria and the second in West Africa after the University of Science & Technology, Ghana to establish an Institutional Repository (IR) using D-space, an open source self-archiving software (Akintunde, 1999). With the deployment of the University of Jos Institutional Repository - (<http://dspace.unijos.edu.ng>), full texts of theses and dissertations as well as other research outputs have consistently been uploaded to the University's website (Akintunde & Anjo, 2010). This service has brought about transformation in the delivery of library services in terms of networking of digital access, preservation of digital content and access to current research outputs. It has also increased the possibility of sharing resources and collaborating with other institutions globally.
4. **Open access resources:** Open access resources refer to information materials that provide free, immediate, permanent online access to the full text of research articles to users. The rising cost of journal subscriptions in academic libraries has led to sustained efforts in providing more free access to scholarly information online for researchers particularly in developing countries on the condition that the copyright of the authors are recognised and acknowledged. At the University of Jos Library, digitization and open access initiatives

were simultaneously undertaken which has encouraged resource sharing in the public domain. The benefits have been the increase in scholarly research output by users and the opportunity for researchers within the University community to also publish their own findings through self-archiving (Akintunde & Anjo, 2010).

5. **Open Educational Resources (OERs):** Open Educational Resources (OERs) refer to any educational resource including curriculum maps, course materials, textbooks, streaming videos, multimedia applications, podcasts, and other materials that have been designed for use in teaching and learning (Educause, 2010). They are usually available freely for use by educators and students, without an accompanying need to pay royalties or license fees. The use of OERs have also been promoted by the University of Jos Library to support faculties for Massive Open Online Courses (MOOCs), using such resources as MIT Courseware, MERLOT, Khan Academy and so on in providing educational resources that are useful for e-learning in the various faculties.
6. **Online Information Literacy tutorials:** As part of the efforts towards developing students' information skills, librarians in various subject disciplines have designed online information skills tutorials aimed at assisting students in the use of information resources in their respective fields. These IL modules which are available from the webpage of the University Library are used to ensure accessibility and easy provision of information resources for students. Subject librarians continuously undertake IL skills training and user awareness programmes on available resources in collaboration with faculties and departments as a way of encouraging student learning and research in the institution (Lawal & Akintunde, 2014).
7. **Web-based services:** The integration of Web 2.0 such as blogs, Facebook, Twitter, social book marking sites, and so on into the Library's user information services have also helped to encourage collaborative research especially with the adoption of the e-learning system in the institution.

8. **Cloud computing:** The use of virtual technology has become popular with academic libraries. The limited capacity of libraries to host their own resources in its entirety necessitates opting for alternatives in the cloud. Due to the exponential growth of information resources and challenges of efficient access, cloud computing technology offers great advantages for libraries to connect their services in various formats to clients (Kaushik, & Kumar, 2013). The University of Jos Library has also employed the use of cloud computing in such areas as the development of digital libraries, corporate cataloguing, acquisition and storage of information resources on the Internet rather than having them on local servers. This has facilitated sharing of resources and services, more efficient access to information and resource management in library services.

9. **Library learning spaces:** Academic libraries are central to the teaching and learning processes of their institutions, the concept of library learning spaces help provide access to various learning resources in more convenient ways (Fister, 2015). In 2014, the University of Jos Library initiated a new learning space which re-conceptualised both library physical spaces and virtual spaces in ways that encourage flexible research activities for staff and students. This development has also enabled efficient access to quiet study as well as group work areas within a networked environment thereby fostering independent and collaborative research among students.

Developing its collections into digital formats has thus provided great opportunities for preservation and sharing of resources. It has also increased contents on the Web and enabled more meaningful and fruitful research output through access to relevant data and literature by staff and students. The application of appropriate software to digitisation processes has not only helped to bring contents together but also provided a common platform for better collaboration between the University of Jos Library and other academic libraries globally. However, though the migration to digital sources has increased the level of user engagement with resources, it has also raised important IL issues in the administration of library services particularly with respect to access. The increasing availability of resources on the Internet and other web-based services and the constantly shifting expectation of users due to the convenience of digital resources indicate that librarians would need to provide greater support by integrating concepts of digital literacy and encouraging

a deeper understanding of knowledge practices in the digital environment (Mackey & Jacobson, 2011). This has become necessary for the University of Jos Library in order to ensure a participatory approach in user information services through IL programmes.

2.1. Literature review

Information explosion and the accompanying complexities of information use have compelled libraries to seek more creative ways to support users in information search beyond their physical location. The concept of the digital library, also synonymously known as “electronic library” or “virtual library”, reflects the effort by academic libraries to focus more on ensuring accessibility to library services through electronic means (Dass & Yadav, 2011). According to Seadle and Greifeneder (2007), the digital revolution has affected every aspect of library and museum services in several dimensions by enabling the full range of holdings in various formats to be catalogued, organized and made accessible to audiences in new ways. A digital library according to Arms (2000) refers to “A managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network”. A major characteristic of a digital library is its functionality and accessibility; the fact that it is systematically organised on computers and available over a network with procedures to select the material, organize it and make it accessible to users through a common interface, provides added value to the user (Cleveland, 1998; Trivedi, 2010).

Changing user information preference for faster, more interactive technology has created a greater challenge for competitive services among libraries. A survey of some of the literature on the adoption of the digital library context by academic libraries indicate that such steps were taken in response to the dynamic changes in the information environment which presented both opportunities and challenges for more efficient services (Konnur & Rao, 2009). Kim, Sei-Ching, Sin, and Yoo-Lee (2014) in their study on undergraduates’ use of social media as information sources noted that the prevalent use of social media platforms as information sources by undergraduates is due to its ability to provide current information and serve as a channel for opinions that are not typically conveyed by traditional media outlets. However, they argued that because the quality of information on social media are not often scrutinized, it has become necessary for librarians to recognise the importance of such emerging technologies and use the

opportunity to teach IL skills to students on how to navigate a variety of media platforms by evaluating the information obtained from them.

Findings from the study by Walsh (2012) which investigated user information behaviour within a mobile environment revealed that the desire for context-specific information has encouraged the use of Internet-enabled mobile devices such as iPhones, iPad's and e-book readers. He observed that the current dominance of competency-based IL models do not take into account changes in the information seeking behaviour of users and recommended the need to build new IL models that reflect how people relate to the evolving technology landscape outside of the library environment.

Melcher & Lowe (2014) in their article describe a learning exercise for an English composition IL instruction session using digital cameras as a tool for library instruction. The aim of the instructional strategy was to merge technology with active learning to help students better engage with library resources. Through the use of the digital cameras, students were able to successfully recognize subject headings and locate books on the same topic thereby demonstrating the ability to find a book in the library while filming their experience. The authors concluded that the students' ability to combine digital technology and information seeking enabled them participate actively in learning and gain digital literacy skills.

Aharony (2014) investigated the factors affecting the adoption of Facebook as a learning tool by information professionals and students. The study which adopted the Technology Acceptance Model (TAM) and the Big Five model, highlighted that adopting new technologies such as Facebook to library services and IL instruction is an important avenue for marketing library services and establishing better rapport with students. Facebook can also serve as a good professional instrument for communicating with colleagues and as a platform for providing professional updates on library services and other educational programmes.

The value of YouTube, a popular video-sharing website, was also investigated in a study by Dougan (2014). The contents of YouTube has been found to be of interest to academics and students of music and the performing arts who often consult it for research. YouTube provides

different types of musical materials such as recitals, field recordings, interviews, tutorials, as well as current popular songs from various artists which are useful for personal and professional work. Dugan (2014) in her study explored the pedagogical value of YouTube as an important tool that can be used by librarians for library instruction, collection development, cataloguing, posting podcasts of library instruction sessions, virtual tours of the library, marketing the library and other reference services. Based on the findings, the author concluded that in order to provide such unique services, it is important for librarians to know their patrons and their specific needs. It would therefore be necessary to conduct local surveys of faculty and students which would help determine how such services can be targeted towards patrons through more effective reference services and collection development. Similarly, effective strategies would need to be determined by the library on such issues as user instructions on the best ways to use YouTube, how to find quality content there, copyright issues in using such materials and how to create metadata when uploading music materials through YouTube.

In Nigeria, Oluwaseye and Abraham (2013) observed that though digital library is developing in academic libraries as evidenced by its functions in supplementing printed information resources, lack of effective access, sustainability of the resources, unstable power supply and constraints in building the resources constitute major challenges to its full implementation and recommended more skills training to enable academic librarians contribute to its development in the country.

With the increasing popularity of digital information sources, the concept of IL requires a higher level of expertise in navigating the digital environment. Based on the literature explored, it is clear that an understanding of the concept of IL should not only be limited to merely learning technological skills or following a checklist approach, rather, greater emphasis should be placed on the development of higher order critical thinking skills, including the ability to engage with information in a collaborative digital environment and through different media (Kim et al., 2014). Academic libraries must therefore adopt more innovative strategies in the teaching of IL skills in order to promote and support teaching and learning in the new digital environment.

3. Research design and methodology

The adopted research design for this study is the case study method. The choice of the case study method in conducting this study is based on the consideration that it is found to be more appropriate for exploring contextual influences on user's information seeking behaviour (Punch, 1998; Mabry, 2008). Consequently, investigating the digital library context at the University of Jos through this method would help provide a grounded view of the focus of the study and identify the general patterns, modes or processes of the information seeking behaviour of users in the digital context. The study population constituted registered undergraduate and postgraduate students of the various faculties of University of Jos namely law, medical sciences, pharmaceutical sciences, arts, social sciences, education, management sciences, natural sciences, engineering, agricultural sciences, veterinary sciences and environmental sciences. A simple random sampling technique was employed in selecting the study population; a major advantage of the simple random sample technique is that it provides an equal chance for each member of the population to be selected within the sample (Babbie & Mouton, 2001; Blaxter, Hughes & Tight, 2006). A total of three hundred (300) structured questionnaires were distributed to the students in the various faculties. Out of this number, one hundred and fifty two (152) were completed and returned from the students.

3.1. Data presentation and analysis

The data presented below is a summary of the findings obtained from the administered questionnaires to the study population. Collected data were compiled and coded prior to analysis which was done using the statistical software package SPSS. From the analysis, explanations are given which provide a better insight to the findings based on the outlined research questions. The data is presented using tables; in the presentation, a descriptive analysis was adopted and percentages on the table were rounded to one decimal place for easy comprehension.

Table 1: Gender of respondents

Gender	Number	%
Male	98	64%
Female	52	35%
No response	2	1%

Total	152	100%
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N=152

A summary of the demographic data presented on tables 1 above shows that the study population constituted a higher number of males (64%) than females (35%) indicating a gender imbalance in the study population; the under-representation of females in educational system of Nigeria is considered a national issue requiring urgent government intervention.

Table 2: Age of respondents

Age	Number	%
18-20	3	2%
20-25	81	53%
26-29	28	18%
30-Above	35	23%
No response	5	3%
Total	152	100%

N=152

The age categories of the respondents on table 2 above shows that the largest group were within the age range of 20-25 (53%) and 30 and above (23%). These categories suggest a combination of young and possible older working class age group among the respondents.

Table 3: Academic status of respondents

Status	Number	%
Undergraduate	130	86%
Postgraduate	21	14%
No response	1	0%
Total	152	100%

N=152

The study population constituted both undergraduate and postgraduate students; undergraduates were more at 86% and postgraduate 14% as shown on table 3 above.

Table 4: Faculties of respondents

Faculties	Number	%
1 Medical	9	6%
2 Law	52	34%

3	Environmental science	7	5%
4	Education	20	13%
5	Natural Sciences	39	26%
6	Management Sciences	6	4%
7	Social Sciences	13	9%
8	Arts	4	3 %
9	Pharmaceutical Sciences	1	1%
9	No response	1	1%
Total		152	100%

N=152

Table 4 above shows that the highest response rate obtained from the students was from the Faculties of Law (34%), Natural Sciences (26%), Education (13%) and Social Sciences (9%). The least responses were from Faculties of Medical Sciences (6%), Environmental Sciences (5%), Management Sciences (4%), Arts (3%) and Pharmaceutical Sciences (1%). The importance of this data is that it largely reflects the 12 Faculties of the University of Jos (with the exception of the new Faculties of Agriculture, Veterinary Medicine & Engineering) which is necessary for purposes of representation.

Table 5: Information literacy training received

IL training	Number	%
Yes	71	47%
No	79	52%
No response	2	1%
Total	152	100%

N=152

In section 2 question 1 of the research instrument, respondents were requested to indicate if they had received any IL training in their faculties or departments. Responses provided in table 5 above shows that 47% of the respondents had received training while 52% had not received any training from the Library.

Table 6: Areas of IL training received

Training areas	Number (%)	No response
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Online books and journals in your field	46 (30%)	106 (70%)
Electronic databases	36 (24%)	116 (76%)
E-granary	14 (9%)	138 (91%)
Institutional Repository	19 (12%)	133 (88%)
Online theses and dissertation	22 (14%)	130 (86%)
Open access resources	32 (21%)	120 (79%)
Searching for information on the Internet	52 (34%)	100 (66%)
All of the above	13 (9%)	139 (91%)

N=152

Respondents who answered in the affirmative to question 1 were also requested to identify the areas in which such training was given. From the data in table 6 above, the highest number of training was received in “searching for information on the Internet” (34%), online books and journals in their respective fields (30%), electronic databases (24%) and open access resources (21%). Nine percent (9%) also said they had received training in all of the outlined areas.

Table 7: Useful aspects of IL training received

Useful	Number (%)	No response
Online books and journals in your field	52 (34%)	100 (66%)
Electronic databases	36 (24%)	116 (76%)
E-granary	32 (24%)	115 (76%)
Institutional Repository	41 (27%)	111 (73%)
Online theses and dissertation	24 (16%)	127 (84%)
Open access resources	16 (11%)	136 (90%)
Searching for information on the Internet	3 (2%)	149 (98%)
All of the above	66 (43%)	86 (57%)
None of the above	43 (28%)	109 (72%)

N=152

Further in the questionnaire, respondents were also asked to indicate the areas in which the training was most useful to them. Results shown in table 7 above revealed that 34% indicated online books and journals (27%), institutional repository (27%), and electronic databases and E-granary (24%) respectively as being most useful to them while 43% indicated that all aspects of the training has

been useful to them. The least aspects indicated were Open access resources (11%) and Searching for information on the Internet (2%).

Table 8: Use of digital resources for research

Research	Number (%)	No response
Electronic databases	50 (33%)	102 (67%)
E-granary	27 (18%)	125 (82%)
Institutional Repository	34 (22%)	118 (78%)
Open access resources	50 (33%)	102 (67%)
Open Educational Resources (OERs)	33 (22%)	119 (78%)
Web-based services such as - Face book	75 (49%)	77 (51%)
All of the above	23 (15%)	127 (85%)
None of the above	34 (22%)	118 (78%)

N=152

In section 3 question 1 of the research instrument, respondents were asked to select from the any of listed digital library resources which they had used in their research. Findings as shown on table 8 above reveal that Web-based services (49%) constituted the highest followed by electronic databases and open access resources (33%) respectively. Fifteen percent (15%) indicated that they had used all of the digital resources for research, while 22% said they had not used any of the identified resources.

Table 9: Areas for needed help in IL skills training

No	Number (%)	No response
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Online books and journals in your field	130 (86%)	22 (14%)
Electronic databases	111(73%)	41 (27%)
E-granary	120 (79%)	32 (21%)
Institutional Repository	80 (53%)	72 (47%)
Online theses and dissertation	59 (39%)	93 (61%)
Open access resources	117 (77%)	35 (23%)
Searching for information on the Internet	110 (72%)	42 (28%)
All of the above	140 (92%)	12 (8%)
None of the above	5 (3%)	147 (97%)

N=152

Table 9 above shows responses to the question which required students to identify the areas in which they would need more assistance from the Library with respect to IL digital skills training. The highest response showed that 92% wanted IL training in all of the listed areas, 86% in online books and journals, E-granary 79%, open access resources 77% and electronic databases (73%). The least identified areas were institutional repository (53%) and online theses and dissertation 39%.

Table 10: Students proficiency levels in e-resources

	a. Electronic databases	b. E-Granary digital library	c. Institutional Repository (IR)	d. Open access resources	e. Open Educational Resources (OERs)	f. Web-based services
Very proficient	37 (23%)	13 (9%)	11 (7%)	40 (26%)	36 (24%)	73 (48%)
Least proficient	32 (21%)	27(18%)	25 (16%)	27 (18%)	32 (21%)	32 (21%)
Not proficient	30 (20%)	30 (20%)	30 (20%)	23 (15%)	20 (13%)	13 (9%)
Don't know	25 (16%)	40 (26%)	38 (25%)	25 (16%)	21(14%)	9 (6%)
No response	28 (18%)	42 (28%)	48 (32%)	37 (24%)	43 (28%)	25 (16%)

N=152

In question 2 section 3, respondents were asked to rate their proficiency in the use of e-resources available in the library. The importance of this question is to enable the researcher assess the students level of competence in information search which is essential in a digital context.

Highlights of the data on table 10 above shows 48% indicated that they were “very proficient” in using web-based services, 21% were least proficient in using electronic databases, 30% were not proficient in the use of electronic databases and E-Granary digital library respectively. Further in the responses, 26% indicated that they did not know their level of proficiency in using E-Granary resources while 28% had no response as to their level of proficiency in using the Institutional Repository.

Table 11: Areas for needed help in digital skills

Areas	Number (%)	No response
More awareness on the digital resources and their uses	114 (75%)	38(25%)
More training sessions on how to use digital resources for research	113 (74%)	39 (26%)
Integration of digital literacy skills in every course discipline	104 (68%)	48 (32%)
Integration of digital literacy skills training in GST courses	100 (66%)	52 (34%)
All of the above	83 (55%)	69 (45%)

N=152

Respondents were also requested in question 3 of the research instrument to select from the listed options areas of needed assistance by the Library in developing their digital skills. On table 11 above, 75% wanted “more awareness on digital resources and their uses”, 74% required more training on how to use digital resources for research, 68% indicated that “integration of digital literacy skills in every course discipline” would help them develop digital skills, 66% felt that “integration of digital literacy skills into GST courses” would be more helpful to them while 55% indicated that “all of the above” options would be more helpful. Responses to this question would help direct the Library’s attention on how students can be better assisted in developing more efficient skills in digital information use.

Table 12: Students perception on new learning space

Learning space	Yes (%)	No (%)	No response
The seating arrangement is more comfortable for research	102 (67%)	22 (15%)	28 (18%)

It provides access and linkages to digital resources through available computers	104 (68%)	17 (11%)	31 (20%)
It encourages collaborative learning between students	112 (73%)	11 (7%)	29 (19%)
More computers and wireless access is needed	123 (80%)	4 (3%)	25 (16%)
It is too noisy	65 (43%)	45 (30%)	42 (28%)

N=152

In the final question, respondents' perception was sought with respect to the new digital learning space in the University Library. From the findings on table 12 above, 80% suggested that "more computers and wireless access is needed", 73% agreed that it has "encouraged collaborative learning between students", 68% indicated that it "provides access and linkages to digital resources through available computers", 67% stated that "the seating arrangement is more comfortable for research". However, 43% of the respondents indicated that the new learning space "was too noisy".

Suggestions and comments by the respondents also reflected general commendations to the University Library on the increased availability of electronic resources as well as requests for more bandwidth that would help improve the speed of Internet connectivity in the Library and the University.

3.2. Discussion of findings

As stated in the introduction, this paper aimed to examine some of the new opportunities and challenges in digital information services presented by the changing context with respect to IL and IL instruction programmes at the University of Jos Library. The discussion of the findings in this section therefore analyse outcomes from the data which address the research questions of the study as follows:

1. What current IL practices are being undertaken at the University of Jos Library?

Beyond the general library orientation tours given to new students, IL programmes have variously been undertaken by the University of Jos Library. Most of such instructional programmes are carried out by subject librarians in collaboration with respective faculties. Findings from the data to responses on table 5 have shown that 47% of the students had received IL instructional trainings in their various faculties. This finding is in line with the earlier study by Lawal & Akintunde (2014)

which further indicates the sustained nature of IL practices by the Library which is valuable to information skills development at the institution.

2. In what ways have programmes of IL instruction encouraged skills development among students?

IL instructional programmes at the University of Jos Library are aimed at providing the necessary support to students in developing competences for information search. A level of success has been recorded in this regard; data on table 6 showed that IL training has been received by students in the use of various information sources. Data on table 7 have also shown that 43% of the students have indicated that all of such trainings had been useful to their academic activities. An assessment of the level of proficiency attained by the students in using digital information resources on table 10 also shows that 48% of the students rated themselves as “very proficient” in the use of web based resources. These findings have thus been able to affirm the supportive and instructional role the University Library is playing in encouraging students’ skills development in the use of information sources. Kuh and Gonyea (2011) in their study on the role of the academic library in promoting student learning, observe that IL is a strong predictor of students’ academic success and librarians are well positioned in this regard to provide leadership and expertise to determine positive outcomes associated with IL instruction especially in the digital environment.

3. What is the nature of digital resources and services available at the University of Jos Library?

Advances in electronic communication have created critical concerns for academic libraries with respect to ensuring equal access to information and other learning services. At the University of Jos Library, increasing demand for electronic resources as an option to traditional print materials has led to the need to balance the old and the new in terms of access. Currently, a variety of digital information resources including online books and journals in various disciplinary fields, electronic databases, E-granary digital library, online theses and dissertation and open access resources are available in the Library for use by patrons. Data on table 8 has shown that 49% of the respondents have used web-based resources and 33% have used electronic databases and open educational resources respectively for their research activities. This outcome thus validate previous studies such as Mackey & Jacobson, 2011; Raish & Rimland, 2016 which have emphasised that changes

in the context of information resources due to advances in ICT also necessitate that new competencies (in the form of 21st century information skills) are taught and acquired by students if they are to succeed in the rapidly changing digital environment.

4. How can IL practices be supported through digital literacy instruction at the University of Jos Library?

Issues relating to the use of new media technologies in HEIs by students have re-directed attention to digital literacy skills development. Within the digital context, information sources take various forms, a characteristic that requires a deeper ability by the user to scrutinize and critically evaluate digital information sources. Based on the data obtained on table 9, 92% of the respondents had indicated that they would need assistance in “all of the above” areas listed with respect to the use of information sources. Similarly on table 11, 74% had indicated interest in getting “more training sessions on how to use digital sources” while 55% selected “all of the above” options to help them with their need for more digital skills. The goal of the University of Jos Library therefore in supporting current practices in IL instruction would be to expand the scope of IL programmes to include digital literacy training on how to navigate a variety of media platforms, critically assess digital sources, evaluate the quality and content of such sources and effectively disseminate the information obtained. In this regard, Kumar, Ochoa and Edwards (2012) argued that it is important that a needs assessment of students IL needs in the digital environment be first established in order to be able to provide a structured approach in instructional programmes designed to improve IL skills in the use of digital resources.

5. How best can digital literacy be integrated into the learning process at the University of Jos?

The impact of information explosion is considered as one of the major thrust of IL in HEIs, with the rise of social media platforms, integrating digital literacy has also become an important concern in the design of the curriculum. Curriculum design is often a reflection of the response of HEIs to addressing societal problems. The challenges of digital literacy require that established standards or frameworks which promote the concept should be tightly woven to the mainstream of the academic curricular of the institution. By teaching the conceptual models for handling digital information sources through an integrated and incremental approach, students can be provided

with a broad context for developing mastery of information sources in digitally networked environments. This study has been able to provide the University of Jos Library with reliable data to support their recommendation for the integration of information literacy and digital literacy into the learning objectives of the University's curriculum as a matter of policy. The current IL Framework which recognises the development of new literacies and the emerging IL models in IL instruction within the digital context, can therefore be adopted to help create alternative approaches to engage students in a more participatory and collaborative way (Dubicki, 2013).

From the discussions of the findings, the implications from the study have been able to point out areas that could inform future strategies by the University Jos Library in meeting the challenges and opportunities of IL within the digital context in the institution. Policy implications also suggest the need to address IL and the emerging concept of Digital Literacy as educational objectives that could be systematically integrated in the academic curricular of the institution. This effort would require the establishment of an institution-wide policy that recognises the value of these concepts as important aspects of the educational system.

4. Conclusion and recommendations

The impact of Information literacy in HEIs has been wide-ranging, prominently of which is the fact that more than ever before, librarians have now been thrust into leadership roles in the learning process. This situation has created a lot of challenges and opportunities for academic libraries to ensure that IL programmes do not remain within the margins of the educational process but rather integrated into the curricula of learning. This study has been able to identify the scope of competencies in digital literacy skills needed by students at the University of Jos Library; hence more innovative strategies are needed by librarians in the teaching of IL skills in order to harness the opportunities and support teaching and learning in the new digital environment. The study has also provided helpful insights for academic libraries in Nigeria on the need to stimulate and encourage the implementation of IL programmes as a major goal of university education in Nigeria.

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