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Information Literacy Skills in using Electronic Information Resources

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Abstract

Introduction: *The study focussed on the various dimensional constructs of information literacy in using electronic information resources. The research aimed to unravel the relationship between information literacy skills and the use of electronic information resources. The complexity of electronic information resources requires that one possesses information literacy skills to effectively and efficiently use electronic information resources.*

Methodology: *A descriptive survey approach was employed for this study using quantitative method of data collection. The data were analysed using SPSS. The targeted population for this study is 115 postgraduate students in three universities. The postgraduate students comprise Masters and PhD students only. The study is guided by the Kuhlthau's (2004) information search process model.*

Results: *The findings revealed that the use of electronic information resources is determined by competency in the various dimensional constructs of information literacy. Findings further indicated that tool literacy, critical literacy, social-structural literacy, emerging technology literacy, and publishing literacy skills are required in using electronic information resources.*

Conclusion: *The results suggest that there is a link between information literacy skills and the use of electronic information resources. Therefore, there is the need for universities to introduce programmes such as information literacy certificate programmes, workshops, seminars and others that would increase information literacy skills of students to ensure effective and efficient utilisation of electronic information resources.*

Originality/value: *The present study provides new insight into dimensional constructs of information literacy required in using electronic information resources. The dimensional constructs of information literacy are of utmost importance in the use of electronic information resources. In this new information and media environments such as the web, numerous electronic resources are available, however, a basic requirement to effectively use these resources, is the possession of information literacy with regards to the dimensional constructs as established in this study.*

Keywords: *Information literacy, skills, electronic information resources, students*

Introduction

Information literacy is essentially an indispensable skill as technology is rapidly evolving and so is advancement in electronic information resources. As the use of electronic information resources continues to rise especially within higher institutions of learning, students are expected to develop the required information literacy skills. In the fast-growing knowledge society, information literacy skills have become one of the most important skills. This is because students with research information needs will most likely use electronic resources if they have the skills required for their effective use. Whilst information literacy seems to be a term that is mostly associated with LIS discipline, its application to electronic information resources is yet to be widely exploited.

Information literacy is much more than computer literacy, although having basic computer skills is an aspect of information literacy skills. Amalahu, Oluwasina and Laoye (2009) noted that information literacy encompass library literacy, computer literacy, publishing literacy, and tool literacy. According to the University of Idaho Information Literacy Portal (2011) information literacy is the capability to identify needed information, understand organisation of information, identify appropriate information sources, locate these sources, critically evaluate the sources, and disseminate such information. Other authors also think that information literacy goes beyond locating and using information but includes holistic knowledge of information and information evaluation (Banta and Mzumara, 2004; Livingstone *et al.*, 2005; Murray, 2003). Californian University Information Literacy Fact Sheet (2000) and Shapiro and Hughes (1996) outlined a prototype curriculum that encompassed the concepts of computer literacy, library skills as well as an extensive and critical conception of a holistic approach to information literacy. The proposed and operationalised seven-dimensional constructs of Information Literacy are:

- Tool literacy: This refers to the ability to understand and use practical and conceptual information technology tools in their respective professional life.
- Resource literacy: This means the ability to understand the form, location, access methods, and formats of information resources.
- Social-structural literacy: This reveals the understanding of how information is socially situated and produced.

- Research literacy: This indicates the ability to understand and use relevant information technology tools for research.
- Publishing literacy: This reflects the ability to format and publish research and ideas in textual and multimedia formats.
- Emergent technology literacy: This refers to the awareness and the ability to adapt to, understand, evaluate, and make use of emerging information technology.
- Critical literacy: This reveals the ability to critically evaluate the strengths and weaknesses, capabilities and limits, of information technologies (Farmer and Henri, 2008).

These seven-dimensional constructs of Information Literacy are important in the use of electronic information resources because of the proliferation of digital information presently experienced due to series of developmental activities in our world. The complexity of electronic information resources which requires that one possesses information literacy may pose a great challenge to its effective utilisation by students if they lack the skills required for its usage. In other words, successful search and retrieval of electronic information could be dependent on one's level of information literacy skills. "Information literacy skills are imperative for accessing information in this generation of technology advancement that most of the information needed for research can be retrieved from electronic sources" (Adeleke & Emeahara, 2016). Students must show a tendency for lifelong learning by acquiring information literacy skills to contend with the rapid information growth in the information society and advance themselves. This is because students' efforts to complement their work with electronic information resources may be limited due to lack of information literacy skills (Ekenna & Iyabo, 2013:6) since there is a positive correlation between both variables. A study by Oyeniyi (2013) on information retrieval skills and use of electronic resources among information professionals in South-Western Nigeria revealed a significant positive correlation between the information professionals' retrieval skills and their utilization of online resources. According to Singh *et al.* (2011:10), the main reasons for low usage of e-resources by postgraduate students in university libraries includes a lack of language proficiency and information literacy. Therefore, information literacy skills are basic in selecting and retrieving pertinent and current information in an online environment. Information literacy skills acquisition is absolutely essential in using online resources since most information is available in electronic format that could exclusively be used when students are information

literate. These skills are compulsory due to the proliferation of electronic information resources as well as the numerous mediums of access and the different formats in which information is available. Muhia (2015:20) noted that “abundance of information and technology will not in itself create more informed citizens without a complimentary understanding of and capacity to use information effectively”. Therefore, information literacy skills will enable the students to make impressive and dynamic use of digital information.

According to Gui (2007), information literacy skills incorporate navigation skills, selection and evaluation skills as well as the ability to use information. These skills enable individuals to handle the changing contents of computer and information resources and knowing where and how to look for the resources. Hence, the concept of information literacy presupposes that an information user knows when information is needed, accesses, evaluates, uses and disseminates information, especially in an electronic environment to solve particular problems for research purposes. In recent times, students of higher education are facing the problem of using multiple formats of information resources efficiently (Dalvi, 2010:117). In addition, the tremendous growth in e-resources has changed the entire scenario of education and information industry. Consequently, there is urgent need for students to be information literate as this would guarantee their effective use of electronic information resources. Students must not only have knowledge about just the technology, but the domain of the application and the skills needed to determine what they need and how they use it. Librarians must realise that students will acquire information literacy skills through various users’ education programmes. Therefore, libraries are requested to expand their user’s education programmes. In addition, librarians must reconsider their roles in this new information age characterised by electronic resources that require students to possess information literacy skills by collaborating with faculty members to advocate and support the integration of information literacy courses into curricula.

Theoretical background

There have been deliberate efforts in advancing more suitable theories that can be explored by information professionals. Based on various learning theories a number of information literacy teaching and learning models have been developed across the world. However, Kuhlthau’s Information Search Process remains one of the first models of information literacy with an

emphasis on an instructional team that leads students toward independent learning through skills in the use of a variety of information sources (Kuhlthau *et al.*, 2007:3). It is one of the most outstanding models for understanding and examining in entirety of the information seeking process. Kuhlthau (2004) stated that “The model is located within the constructivist paradigm and addresses complex tasks that require information seeking and interpretation over an extended period of time”. Furthermore, according to (Mctavish, 2007), the model presents information seeking as a process of construction accompanied with uncertainty that decreases as the understanding increases.

The Information Search Process model describes the various experiences that the information seeker goes through from the beginning until the end. Kuhlthau (2010) describes the experiences as a series of thoughts, actions and feelings accompanying the information seeker. Though the process is mitigated by feelings, thoughts, and actions, it is thought to apply equally to individual and group work and has been tailored to different disciplines requiring different epistemologies and methodologies (Hayden *et al.*, 2008:114). Kuhlthau (2004:90) researched and identified the feelings students are likely to experience along with strategies as well as their thoughts and actions that can lead them through a productive search. The model describes the information search process from the perspective of the user and is derived from an intensive study of a group of high school seniors (Kuhlthau, 2004:51). In her research, Kuhlthau (2004:92) also developed a principle of uncertainty, where uncertainty due to lack of skills or limited construction, initiates the process of information seeking.

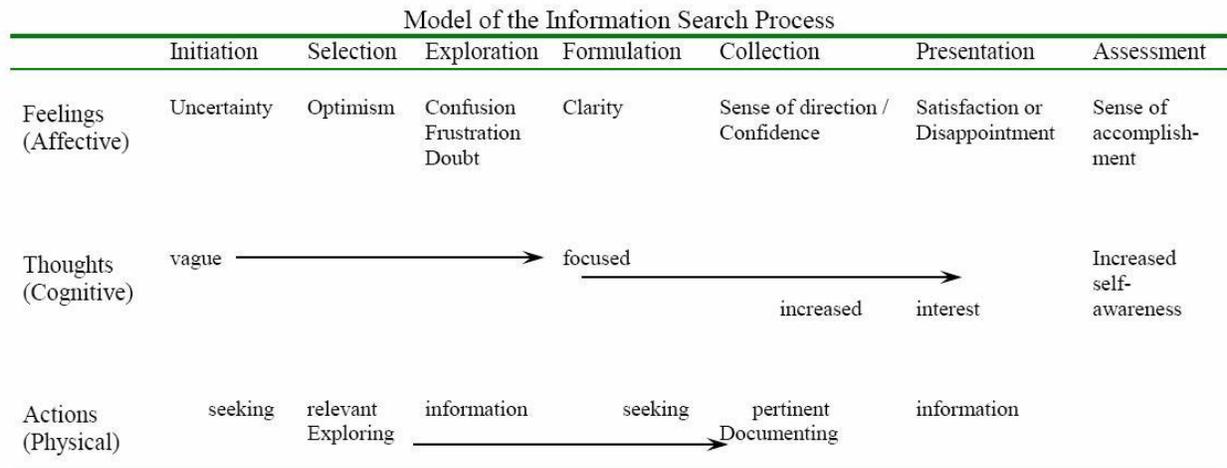


Figure 1: Model of the Information Search Process (Kuhlthau, 2004:82)

According to Lawal (2012), each of the stages of the Information Search Process model indicates a progressive development that would lead the user in attaining a sense of ownership in the area of expertise which constitutes an important component of information literacy and lifelong learning. The Information Search Process as an information-seeking model has the potential to teach students about information literacy itself. Using the model at the beginning in teaching information literacy could assist students understand their own search process and become more successful in searching. Kuhlthau's model has been applied in several studies (Lwehabura, 2007; Lawal, 2012; Idoniboye-Obu, 2013) to explore in more details how students actively search for information so that the process can be informed by infusing information literacy skills throughout (Huston, Krist and Burkhart, 2011:3). Kuhlthau's Information Search Process model is recognised as one of the most frequently studied and cited models of information-seeking behavior in the field of library and information science (Luo *et al.*, 2011:2).

Objective of the study

The objective of this study is to ascertain the contribution of information literacy skills in using electronic information resources.

Methodology

The study applied quantitative method of data collection using the questionnaire as research instrument to solicit data from the respondents. The research design used in this study is descriptive survey. The participants are library and information science postgraduate students admitted for the 2016/2017 academic year. Postgraduate students in the institutions under study comprise Masters and PhD students only. The universities include, Delta State University, Abraka, University of Uyo, Uyo and University of Calabar, Calabar which are the only institutions accredited by the National University Commission (NUC) and the Librarians' Registration Council of Nigeria to offer Library and Information Programmes at postgraduate level in the South-South region of Nigeria.

Study respondents

This section contains the total number of copies of questionnaire administered to the study population in the three institutions under study and the actual number of questionnaires completed and retrieved by the researcher. This is presented in Table 1 below.

Table 1: Response rate from the three institutions

Institutions	Expected Respondents (N=124)	Actual Respondents (N=115)	% of Actual Respondents
DELSU	40	37	92.5
UNICAL	38	36	94.7
UNIUYO	46	42	91.3
TOTAL	124	115	92.7

Table 1 show that 115(92.7%) questionnaires were completed and retrieved by the researcher out of the 124 that were administered. Data analysis revealed that 37(92.5%) were returned from DELSU, 36(94.7%) from UNICAL and 42(91.3%) from UNIUYO. This indicates that UNICAL with 94.7% had the highest response rate.

Result and discussion

This section provides data and discussion on respondents' information literacy skills in the use of electronic information resources. Percentages presented were rounded off to one decimal point. Therefore, some total percentages do not necessarily add up to 100%. The results and discussion are presented in Table 2 below

Table 2: Information literacy skills in using electronic information resources

Tool literacy	Responses						
	Strongly Agree	Agree	Disagree	Strongly disagree	Neutral	Non-response	Total
	%	%	%	%	%	%	%
Locate information in multiple sources	35.7	54.8	2.6	0	5.2	1.7	100
Browse online databases to locate pertinent information	43.5	47	0	0	8.7	0.9	100.1

Recognise different methods of accessing information resources	40.9	46.1	3.5	0	7.8	1.7	100
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Critical literacy

Compare and evaluate critically if the information collected is credible and relevant	32.2	54	1.7	0	11.3	0.9	100.1
Judge critically if the information on websites is authentic and accurate	26.1	58.3	7	0	7	1.7	100.1
Compare and evaluate critically if the information is timely and appropriate	29.6	53.9	7	0.9	7	1.7	100.1

Social-structural literacy

Understand how information is socially situated	21.7	51.3	11.3	1.7	11.3	2.6	99.9
Understand how information is socially produced	25.2	47	13.9	1.7	10.4	1.7	99.9

Publishing literacy

Format and publish ideas electronically in textual form	19.1	46.1	10.4	0.9	20.9	2.6	100
Create content in blogs, YouTube, and personal webpages for different audiences	18.3	33.9	17.4	2.6	26.1	1.7	100
Format and publish ideas electronically in multimedia form (information presented through audio, video and animation, in addition to traditional media)	21.7	34.8	18.3	0.9	22.6	1.7	100

Emerging technology literacy

Decide when to adopt the continually emerging innovations in information technology	19.1	45.2	13.9	1.7	17.4	2.6	99.9
Know when to adopt latest product development in new information technologies	22.6	40	14.8	0.9	19.1	2.6	100

The findings of the present study revealed that the use of electronic information resources is determined by competency in information literacy. This is evident in the information search process model guiding this study. The first three stages namely initiation, selection and

exploration of the information search process model are characterised by the lack of information literacy skills which result to the feeling of uncertainty and ambiguity but gradually develops into competence, confidence and relief in the last three stages namely, formulation, collection and presentation where the student is optimistic and sure that he/she can respond to the information task based on the information literacy skills acquired. The results revealed that the majority 63(54.8%) of respondents agreed that their use of electronic information resources is determined by their ability to locate information in multiple sources, 41(35.7%) strongly agreed with only three (2.6%) who disagreed. The 21st century has witnessed too much information in multiple formats. The ability to locate information in multiple sources such as online databases, websites, social media and other sources promotes the use of electronic information resources. Therefore, becoming information literate is an active process that is required in seeking information from these multiple sources (Ilogho and Nkiko, 2014:9), especially in this era where information is digitised and converted into different formats. Similarly, 54(47%) of the respondents agreed that the use of electronic information resources is determined by their ability to browse online databases, 50(43.5%) strongly agreed, however, none disagreed. This finding corroborates Mwatela (2013) and Adeleke and Emeahara (2016). Both studies found out that students reported browsing online databases as their main method of looking for and using electronic resources in the library. Postgraduate students' ability to browse online databases gives them access to and ability to use variety of electronic information resources. Postgraduate students depend on online databases as an excellent tool for electronic information retrieval, referencing and sharing of data since online databases are widely available and can be accessed from anywhere and by many users at the same time. Hence, they have become important and useful information sources for students. It is interesting that none of the respondents disagreed that their use of electronic information resources is determined by their ability to browse online databases. This is an indication that students' use of electronic information resources is greatly determined by their ability to browse online databases as indicated in this current study.

Also, 53(46.1%) of the respondents agreed that they use electronic information resources due to their ability to recognise different methods of accessing information resources, 47(40.9%) strongly agreed, while only four (3.5%) of the respondents disagreed. This finding is important as the digital revolution has brought different methods of accessing information resources.

Students must be able to recognise different methods of accessing electronic information resources such as online databases, the World Wide Web, digital libraries, archives and others. Electronic information resources have got the beauty of being searchable from more than one approach, and are accessible to users both locally and from remote locations. This is as a result of continued innovation in the information world which has led to a shift in paradigm in information seeking behavior. Therefore, students must be able to recognise the different methods of accessing the increasing array of electronic information resources. The ability to recognise different methods of accessing information resources (e-information) is an important component of accessing electronic information resources for academic activities by students. Therefore, the above findings indicated that tool literacy which has to do with ability to locate information in multiple sources, browse online databases to locate pertinent information as well as recognise different methods of accessing information resources, is rated very high in using electronic information resources.

Findings further indicated that students' use of electronic information resources is determined by their ability to evaluate information critically (critical literacy). Majority 62(54%) of the respondents agreed that they use electronic information resources because they can compare and critically evaluate if the information collected is credible and relevant, 37(32.2%) of the respondents strongly agreed, 62(54%) of the respondents agreed, 13(11.3%) were neutral, while only two (1.7%) disagreed. Similarly, the majority 67(58.3%) of respondents also agreed that they could critically judge if the information on the website is authentic and accurate, 30(26.1%) strongly agreed, eight (7%) of the respondents were neutral and disagreed respectively. Similarly, 62(53.9%) of the respondents agreed that they use electronic information resources as a result of their competency to compare and critically evaluate if the information is timely and appropriate, 34(29.6%) strongly agreed, eight (7%) were neutral and disagreed respectively, while only one (0.9%) strongly disagreed. This is an indication that critical literacy that enables students to evaluate information sources and resources is important, especially in this era of proliferation of electronic information resources. To encourage an increase in students' use of electronic information resources, students must possess critical literacy as indicated in this study. Saunders (2012:230) reiterated this point by stating that most students understand that they must evaluate information they access on the web. This supports the assertion by Mwatela (2013:52-

53) that information literate students can identify the need for information, ascertain the extent of information needed for a task at hand, access information and critically evaluate information sources. Critical evaluation is indispensable in this technologically driven society characterised by the abundance of electronic information resources easily accessible via the internet. Critical literacy is crucial in an environment as the internet where an abundance of information which is also sometimes unreliable and incorrect information, is easily accessible. Students who therefore can critically evaluate the information and find the correct information they are looking for will benefit strongly from this capability (Vanwynsberghe *et al.*, 2011:17-18) and make use of electronic information resources more than those who cannot critically evaluate information sources.

Findings also indicated that social-structural and publishing literacy are also important for students in using electronic information resources. Social-structural and publishing literacy in this information age, is a form of literacy in which researching and communicating information in a digital environment are essential as writing and reading in past decades. The majority 59(51.3%) of the respondents agreed that they understand how information is socially situated with 25(21.7%) who strongly agreed, while 13(11.3%) disagreed and two (1.7%) strongly disagreed. Similarly, 54(47%) of the respondents agreed that they understand how information is socially produced and 29(25.2%) strongly agreed. However, 16(13.9%) disagreed, two (1.7%) strongly disagreed, while 12(10.4%) were neutral. Whilst the internet is essentially used to access information, how information is socially situated and produced has not been fully investigated. The findings revealed that social-structural literacy affects students' interactive nature and use of electronic information resources. Moreover, 53(46.1%) of the respondents agreed that they could format and publish ideas electronically in textual form with 22(19.1%) who strongly agreed, while 12(10.4%) disagreed and one (0.9%) strongly disagreed. Similarly, 40(34.8%) and 25(21.7%) of the respondents agreed and strongly agreed respectively that they could format and publish ideas electronically in multimedia form. The ability to create content in blogs, YouTube, and personal webpages recorded affirmative responses with 39(33.9%) who agreed with this ability and 21(18.3%) strongly agreed respectively. Students are usually involved in academic activities that contribute to knowledge and are expected to publish their research findings. For example, UKZN requires postgraduate students to provide proof of an

article derived from their thesis, either already published or submitted for publication before graduation. Consequently, postgraduate students are to possess information literacy skills which are essentially vital in accessing information for research and publishing the outcome of the research. Derntl (2014:105) noted that “writing up and publishing research results are requisite for progressing scientific view and reaching a wide audience”. In publishing research outcomes, students need to acquire information literacy (publishing literacy) skills. Publishing literacy introduces students especially postgraduate students to the electronic public sphere and the electronic community of scholars. The current study indicated that students use of electronic information resources is also determined by their social-structural and publishing literacy skills.

Findings also indicated that the use of electronic information resources is determined by emerging technology literacy. Fifty-two (45.2%) of the respondents agreed that their use of electronic information resources is determined by their ability to decide to adopt continually emerging innovations in information technology with 22(19.1%) who strongly agreed, 20(17.4%) were neutral, 16(13.9%) disagreed and two (1.7%) strongly disagreed. Similarly, 46(40%) and 26(22.6%) of the respondents agreed and strongly agreed respectively that they know when to adopt the latest product development in new information technologies. This is consistent with Partridge, Lee, and Munro (2010) whose study identified emerging technology literacy as a fundamental competency needed by librarians. Libraries now leverage on emerging technologies such as the Web 2.0 to provide new resources and services. Therefore, librarians and students (users) must be competent to benefit from these emerging technologies employed by libraries. The importance of emerging technology literacy in using electronic information resources cannot be over emphasised as technology continues to rapidly evolve, changing the way people communicate and access information. The emergences of advanced technologies have created new avenues for information like online databases, subject portals, wikis, weblogs, social networking sites and others. These have opened up new forms of literacy; therefore students need to continually improve on their information literacy skills. With the speedy improvement of information and communication technologies (ICTs), electronic information resources and services are continually changing as emerging technology is being introduced into information services. Emerging technology as a social revolution suggests a new version of the World Wide Web which enable and encourages participation through web-based tools and

services that permits easy publication, sharing of ideas and re-use of study content and commentaries and links to relevant information resources. These values associated with emerging technologies could only be exploited by students who possess information literacy skills (emerging technology literacy) as indicated in this current study. This finding is very important as libraries explore novel ways of embracing emerging technologies such as Web 2.0 to attract, retain and satisfy users' modern needs for information. Students' emerging technology literacy skills become very important in order to use the emerging technologies introduced by libraries to further enhance the provision of access to digital information.

The application of Kuhlthau's Information Search Process model to this current study is very important as it emphasise students' independent learning through skills in the use of a variety of information sources. According to Lawal (2012), each of the stages of the information search process model indicates a progressive development that would lead the student in attaining a sense of ownership in the area of expertise which constitutes an important component of information literacy and lifelong learning. Hence, the ultimate goal of the information search process model is to have students who would know how to expand their knowledge and expertise through possessing information literacy skills in the use of a variety of information sources employed both inside and outside the school (Kuhlthau *et al.*, 2007:3). The above results show that information literacy skills are basic requirements in using electronic information resources as well as a reflection of the performance indicators of an information literate student. This view is supported by Mwatela (2013:40) stating that optimal utilisation of electronic information resources is enhanced by users' knowledge of information resources, familiarity with information identification and retrieval tools, skills in online information search strategies and user efficacy. Toyo (2017) also emphasised that students require information literacy skills to use electronic information resources. Hence, the correlation between information literacy skills and the use of electronic information resources is inevitable. Therefore, information literacy skills influence the use of electronic information resources.

Conclusion

From the results, it can be concluded that information literacy skills are essential in the use of electronic information resources. Findings revealed that tool literacy, critical literacy, social-structural literacy, emerging technology literacy and publishing literacy determine students' use of electronic information resources. The importance of information literacy cannot be over emphasised as information literacy skills are important in the use of electronic information resources because of the proliferation of information in the 21st Century. The complexity of the electronic environment requires that one possesses the various dimensional constructs of information literacy for effective and efficient use of electronic information resources. Therefore, there is the need to ensure students possess information literacy skills to be thoroughly grounded in the use of electronic information resources. Furthermore, the study provides important implications both in theory and in practice. First, the findings emphasize the importance of information literacy skills in using electronic information resources. This study brought in a different perspective by examining the importance of the various dimensional constructs of information literacy in the use of electronic information resources. Second, the study presents empirical data on information literacy as necessary skills in using electronic information resources. Therefore, librarians need to re-evaluate their roles in promoting information literacy; they must therefore be more active in the task of inculcating the principles of information literacy and ensuring that students are able to apply the various aspects of information literacy in appropriate situations.

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