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Lecturers' Level of Knowledge and Challenges to the Use of Online Access to Research in Environment (OARE) Database in Federal Universities, in South East Nigeria

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ABSTRACT

Purpose – The paper examined lecturers' level of knowledge and challenges to the use of Online Access to Research in Environment (OARE) database in Federal Universities, in South East Nigeria.

Design/methodology/approach – The design adopted for the study was the descriptive survey design. This research was done in Federal Universities in South East of Nigeria. The population of the study is 185 comprising all the environmental science lecturers in Federal Universities in South East Nigeria. The data was collected using self-design questionnaire titled "Online Access to Research in Environment Knowledge Test (OAREKT)" and structured questionnaire titled "OARE Use Challenges by Environmental Science Lecturers Questionnaire (OUCESLQ)". 185 copies of questionnaire were distributed, while 160 were correctly filled and used for data analysis. The knowledge tests were given to 70 senior lecturers and 90 junior lecturers. Percentages, and arithmetic mean were used to analyze data obtained from the achievement test to answer research question number one for both the junior and senior lecturers; arithmetic mean was used to answer research questions two for the challenges to the use of OARE; while the hypotheses were tested using the Two Independent Samples T-Test for comparing the means.

Findings- The lecturers understood the meaning of OARE, the use process of OARE, and the requirements of OARE, hence are knowledgeable. Concerning the ranks, the findings also revealed that the junior environmental science lecturers were more knowledgeable of OARE, as they understood more, the meaning of OARE than their senior counterpart; Internet issues in their universities, power outages, need to filter results from OARE database, and lack of time due to tight academic task limits the lecturers' use of OARE database. There is also a significant difference in the mean achievement scores of senior and junior lecturers on their level of knowledge of OARE in Federal Universities in South East Nigeria.

Originality/value – Research studies centring on lecturers' level of knowledge and challenges to the use of Online Access to Research in Environment (OARE) database in Nigerian federal universities. The research will test the lecturers' knowledge on OARE use, seek their challenges, and prove if there is a significant difference between the OARE knowledge of senior lecturers and junior lecturers in environmental sciences.

Keywords: Online Access to Research in Environment; OARE; Database; Environmental Science Lecturers; Database Knowledge; Database Challenges; Nigeria

Introduction

Use of ICT has proved to assist university libraries survive the torments of information explosion. ICT has made possible the accessibility and availability of electronic information resources. Such resources as

electronic journals, electronic books, and CD-ROMs are now accessible to hosts of library users around the world. Millions of journals and e-books are available online through such databases as EBSCOHOST (Elton B. Stephens Co Host), Journal Storage (JSTOR), African Journal Online (AJOL), SCOPUS, etc. Hence, to effectively put under control these resources,

and to improve its accessibility and usability; electronic databases were established.

Database according to Ojedokun and Owolabi (2003) is a computer programme specifically designed for storing and organizing information. While online database can be defined as computerized store for information, that is accessible through the host computer or across computer networks (Akporido, 2005). A database “is an organized collection of electronic, digitized information that can be searched in a variety of ways. Databases typically include information from magazines, journals, newspapers, and electronic books. Since most of the information found in a database have previously appeared in print form, they are likely to have undergone editorial process. As a result, there is the expectation that the information included in a database is credible and reliable” (College Library Services (ND). From another perception, Reynold’s Library (2015) described a library database is an “organized collection of electronic information that allows a user to search for a particular topic, article, or book in a variety of ways (e.g., keyword, subject, author, title)”. Articles from Some journals, books, magazines, and newspapers, are all components of a database.

Online Access to Research in the Environment (OARE) as stated in their website is an online database led by the United Nations Environment Programme (UNEP) in conjunction with key publishers. It is one of the five components of the Research4Life initiative. This is to say that Research4Life is the combined name for five programmes: Hinari, ARDI, AGORA, OARE, and GOALI; that offer developing countries free or low-cost access to academic peer-reviewed resources online. The programme facilitates access to one of the world’s largest collections of environmental science research for developing countries. Launched in October 2006, OARE’s mission is to improve the efficacy and quality of researches in environmental sciences, as well as education and training in developing and low-income countries. Today, many organizations are benefiting and participating in the OARE consortium, including academic libraries.

Academic libraries today are aware of the trending information dynamism in content and access; hence they can only catch up by

adopting any of these library databases. However, most libraries seem financially weak and reluctant to go for the fee based databases, reasons are that they are often costly to subscribe to and renewed. Hence, the libraries will well rely on the provisions of those quality databases that are on open access, which OARE is among.

In an academic institutions and universities, lecturers want to keep updated with trending discoveries in their disciplines of study. They have academic and research works to do, and lectures to deliver to students. Students on their own also have quests for research breakthroughs and academic excellence. All these require proper support of information resources. Adequately meeting such information needs is a challenge for the university libraries (Ifijeh, 2010) and can be solved by subscribing to electronic databases. Lecturers in the environmental sciences have great stock of wealth in the resources domiciled in the OARE database.

Kwadzo (2015) stated that “there are sometimes a gap between awareness and usage of digital resources. Either users are aware of the resources and use them, users are aware and do not use them, or users are unaware of them and therefore do not use them”. As it concerns the present study, lecturers in the environmental sciences of Federal Universities in South East Nigeria might not have adequate knowledge of OARE and what it can do in offering more resources in their various disciplines. They may or may not use them even when they have the knowledge of its existence and free access. However, knowing that the database has the most supportive resources for environmental sciences is an important goal of this study.

Although there will always be hitches and challenges in every progressive development, conscious efforts should be made to avoid them and move with the trend of time, especially when the university has made the take-off palatable. To this end, the National Universities Commission (NUC) accreditation teams seem to always frown seriously at libraries that are not able to subscribe to electronic databases, and would want to see the librarians practically demonstrate to them that there are available electronic databases subscribed to by the university in their e-library. There might be a probability also that

the lecturers and general users seem reluctant to tap into the privileged resources made available by the university. Libraries spend huge amount of money in subscription of databases, so that users will find different and better information resources to what is available in general Google search. If Universities have invested funds on e-resources and internet infrastructure, it is anticipated and expected that those resources are fully utilized. On this premise, the researcher investigates if lecturers in faculties of environmental sciences in South East Nigerian Universities are making adequate use of the OARE Database by investigating their knowledge and use of the database

Objectives of the Study

The general objective of the study is to carry out a study on lecturers' level of knowledge and challenges to the use of Online Access to Research in Environment (OARE) database in federal universities, in South East Nigeria. The specific objectives are to:

1. Find out the level of knowledge possessed by Senior and Junior Environmental Science Lecturers in the use of OARE database in South East Nigerian Universities.
2. Ascertain the challenges in the use of OARE by Environmental Science Lecturers
3. Find the significant difference in the mean achievement scores of senior and junior lecturers on their level of knowledge of OARE in Federal Universities in South East Nigeria.

Brief Review of Related Literatures

Environmental Science Lecturers' knowledge on OARE Database

The knowledge of OARE database by lecturers in the environmental sciences has become a main factor that influences the patronization rate of the database in recent years. Knowledge itself is an "awareness, familiarity, or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or

education by perceiving, discovering, or learning" (Wikipedia, 2018). Knowledge can also mean a practical or theoretical understanding of a subject. It can be implicit (like practical skills or expertise) or explicit (like theoretical understanding of a subject); it can also be formal or systematic. Knowledge and awareness are always used interchangeably from some reviewed literatures. Akpojotor (2016) also described knowledge as "perception of a situation, fact, consciousness, recognition, realization, grasp and acknowledgement concern about and well-informed interest or familiarity in a particular situation or development". As opined by Aina (2014), being aware of electronic resources means that the library users have information and knowledge of the electronic resources been subscribed to. When library clients have sufficient information on what resources are available in the library, they are encouraged to patronize and engage these resources to satisfy their information needs.

Lecturers from the environmental sciences might not have enough knowledge of the OARE database in their university libraries because they may be much occupied with the teaching aspect of their job. While it is expected that these lecturers also engage in research, the need for OARE database becomes imperative, as it contains materials very supportive of the environmental sciences field. Hence, one will begin to wonder if the non-usage of OARE is because of unawareness. Angello (2010) reported a low rate of awareness of electronic resources among livestock researchers in Tanzania; stating that only a few of them were aware of AGORA and HINARI databases, while just 6% of the researchers knew about INFORM and OARE.

The capacity to efficiently use electronic resources according to Renwick (2005), depends largely on basic computer skills, knowledge of what is available and how to use it, and ability to define a research problem. Attaining these skills by faculties depends on many factors like their respective disciplines, academic ranks and status, ages, access (including hardware and location) to electronic resources, and training. Madondo, Sithole, and Chisita (2017) opined that in maximising the potentials of databases and electronic

resources, the skills required are much greater than those required for searching printed sources. These skills involve having knowledge of the database structure and the commands to be put into the computer by the searcher, as well as the interrelationships amongst the commands. Knowledge of OARE database can also be facilitated strongly when the librarians are also knowledgeable about it to be able to guide lecturers. Olajide and Fabunmi (2011) opined that to effectively provide tailored information, fit for users' information needs, modern librarians must be knowledgeable in "library automation, networking, Internet surfing, database management, processing software, statistical software".

Knowledge and use of electronic information resources are essential stimulants keeping postgraduate students (and lecturers) alert of the various accessible media through which they can satisfy their information needs (Akpojotor, 2016). As apparent as it seems, the use of these electronic information resources and databases require special skills in ICTs that will help researchers and students "navigate the maze of resources at their disposal via telecommunications channels" (Balogun, 2008). This can only be possible when the client is aware of the existence of such databases. Awareness of the phenomenal changes in technology over the years has vividly altered how information is stored, accessed, and disseminated (Tsakomas & Papatheodorou, 2006). In fact, it is now increasingly obvious that academic libraries are moving into the virtual arena. Also the nature of the changing dynamics of the fields of environmental science and the need to keep track of the changes, keep lecturers on their feet in awareness of such databases as OARE. Lecturers in their reaction to such changes should intensify awareness of such resources to support them effectively in their academic pursuits. With advances in technology in the forms of: e-books and journals, online text, virtual libraries, online public access catalogue (OPAC), and full-text databases covering a variety of subjects, and major bibliographic databases like OARE, and AGORA etc., "access to information on a local, regional, national and international basis has overcome the traditional barriers of time, ease of

accessibility and space" (Prangya & Rabindra, 2013; Sharma, 2009). Therefore, knowledge of OARE is paramount if environmental science lecturers are to harness these resources.

Challenges in the use of OARE by Environmental Science Lecturers

As much as OARE resources have lots of benefits, there are some challenges to maximizing its use which is similar to that of other electronic resources. A particular problem electronic resources users face, according to Velmurugan (2013) is slow internet access; which often results to wastage of time required to retrieve needed information. Others may include lack of constant electricity supply and access to electronic resources. According to Aina (2014) observed that there was no coherence between the rate at which users were aware of electronic resources and the way they use it. Also, challenges of effective use of electronic resources were "unavailability of the internet facilities in their offices and at home, lack of constant internet network and inconsistency of electricity supply" (Aina, 2014).

In addition, various factors influence the satisfaction derived from the usage of databases. Ahmed (2013a) pointed out that users are unsatisfied with these subscribed databases because of issues like: "limited access to back issues; poor IT infrastructure; difficulty in finding required information; inability to access from home, slow download speed and online access problems". Mbabu, Bertram and Varnum (2013) also listed limited number of titles available to the users as a problem. Generally, Zabed Ahmed (2013) established that students are not satisfied with the nature of their university's subscribed online resources; identifying limited access to ICT gadgets and slow download speed as major challenges. Edem (2016) attributed challenges in the use of electronic databases to: "awareness, ease of access, efficiency, currency, cost effectiveness among others in developing countries; and the inability of universities and library management to keep up with the tasks of regular subscriptions of electronic journals, online databases due to general financial constraints.

Kasalu and Ojiambo (2015) discussed some challenges to use of electronic resources as: poor ICT infrastructure, slow adoption of modern ICTs by universities, copyright issues, delay in payment of e-resources by university thus prompting publishers to disconnect some universities from access, disinclination by some libraries to sharing their information resources, poor funding and support for libraries. Other challenges are poor location and discovery of resources as a result of low automation levels, and lack of centralized automation system; librarians' lack of technological know-how, acquisition of new resource delays due to time taking consultations. These findings were also similar to Radjeng (2007)'s technical report, namely: "lack of infrastructure, inadequate computer literacy, limited printers and printing opportunities, computer phobia, irrelevancy of contents to local needs, economic problems and, problems associated with electronic resources access". Bhardwaj and Madhusudan (2013) further identified "lack of proper arrangement of legal information resources, poor description on legal information sources, lack of online help, poor website design, too many login requirements, lack of expertise in using the databases, lack of printing provision, and confusing search screens" as challenges to the use of electronic resources and databases. To Musa, Ahmad, Yunusa, Hamisu (2015) the challenges were slow Internet connectivity, insufficient computer skill, erratic power supply, inadequate ICTs facilities and low information literacy skills.

Method

Descriptive survey design was adopted for the study. This study was carried out in Federal Universities in South East Nigeria. The population of the study is 185 lecturers in environmental science departments in Federal Universities in South East Nigeria. With respect to the participants of the study, this research focused on environmental science lecturers as they are extensively into environmental research and tutoring; and as OARE database is basically created to support their field. The data for this research was collected using of researcher's designed achievement test titled "Online Access to

Research in Environment Knowledge Test (OAREKT)" and structured questionnaire titled "OARE Use Challenges by Environmental Science Lecturers Questionnaire (OUCESLQ). 185 copies of questionnaire were distributed, while 160 were correctly filled and used for data analysis. The knowledge tests were given to 70 senior lecturers and 90 junior lecturers. Percentages, and arithmetic mean were used to analyze data obtained from the achievement test to answer research question number one for both the junior and senior lecturers; arithmetic mean was used to answer research questions two for the challenges to the use of OARE; while the hypotheses were tested using the Two Independent Samples T-Test for comparing the means. The pass mark for achievement test is 48 percent, which was derived by awarding eight (8) marks to each question with correct answer and the response scores converted to percentages. Items to the values of 48% and above is given positive interpretation (passed). The questionnaire was weighted thus; Strongly Agree (3.50 - 4.00), Agree (2.50 - 3.49), Disagree (2.00 - 2.49), Strongly Disagree (1.00 - 1.99). The midpoints for responses in the four-points scale is 2.50, which was calculated as follows: $4+3+2+1 = \frac{10}{4} = 2.50$. Items to the values of 2.50 and above were interpreted as "agree" while items with the values below 2.50 were interpreted as "disagree". The hypothesis was tested with the aid of t-test at 0.05 significance level because the data is interval and only two mean groups was compared. The null hypothesis is rejected when the t-calculated is greater than the t-critical value.

Presentation and Discussion of Findings

Research Question 1

How knowledgeable are senior and junior environmental science lecturers in the use of OARE database?

The senior and junior environmental science lecturers were required to answer questions on the achievement test to indicate the Online Access to Research in Environment Knowledge they possessed. The OARE knowledge they possessed is measured based on their understanding of the meaning, the use process; and the requirements of OARE.

Table 1 shows senior and junior environmental science lecturers' scores based on 12 achievement test questions (see Appendix B section B, Page 116) in which they were tested in order to ascertain their understanding of the meaning of OARE, the use process of OARE, and the requirements of OARE.

The test marking guide and lecturer's score on each question for the achievement test is attached as Appendices D and E for the senior and junior lecturers (see Appendices D and E at pages 129 and 130 respectively). From the results in Table 1, items 1 to 4 cover questions on understanding the meaning of OARE with an average percentage score of 76% for senior lecturers and 80% for junior lecturers. With an aggregate of 78%, environmental science lecturers understand the meaning of OARE. Items 5 to 8 cover questions on understanding the use process of OARE with an average percentage score of 58% for senior lecturers and 71% for junior lecturers. With an aggregate of 64%, environmental science lecturers understand the use process of OARE. Items 9 to 12 covers questions on understanding the requirements of OARE with an average percentage score of 89% for senior lecturers and 74% for junior lecturers. With an aggregate of 82%, environmental science lecturers understand the requirements of OARE.

Table 1: Senior and Junior Lecturers' Response to Test on their Understanding of the meaning of OARE, the use process, and the requirements of OARE

Questions	Frequency (No. of lecturers (Senior & Junior) that Passed the Test)		Percentage (%) Scores
Understanding the Meaning of OARE			
	Senior Lecturers	Junior Lecturers	
1.	40(100%)	58(96.7%)	
2.	21(52.5%)	33(55%)	
3.	20(50%)	42(70%)	
4.	40(100%)	60(100%)	
Average Percentage	30(76%)	48(80%)	78%
Understanding the Use Process of OARE			
	Senior Lecturers	Junior Lecturers	
5.	5(12.5%)	39(65%)	
6.	28(70%)	40(66.7%)	
7.	35(87.5%)	50(83.3%)	
8.	24(60%)	41(68.3%)	
Average Percentage	23(58%)	43(71%)	64%
Understanding the Requirements of OARE			
	Senior Lecturers	Junior Lecturers	
9.	40(100%)	14(23.3%)	
10.	33(82.5%)	60(100%)	
11.	40(100%)	44(73.3%)	
12.	29(72.5%)	60(100%)	
Average Percentage	36(89%)	45(74%)	82%

**Check the Appendix for the contents of the items 1-12*

The average percentage scores of senior and junior environmental science lecturers as measured based on understanding of the meaning of OARE, the use process of OARE, and the requirements of OARE is presented in Figure 1 below.

use of OARE (3.20). Power outages limits the time they have for research with OARE database (3.04); and the need to filter results from OARE database poses serious problem for them when they use it (2.63).

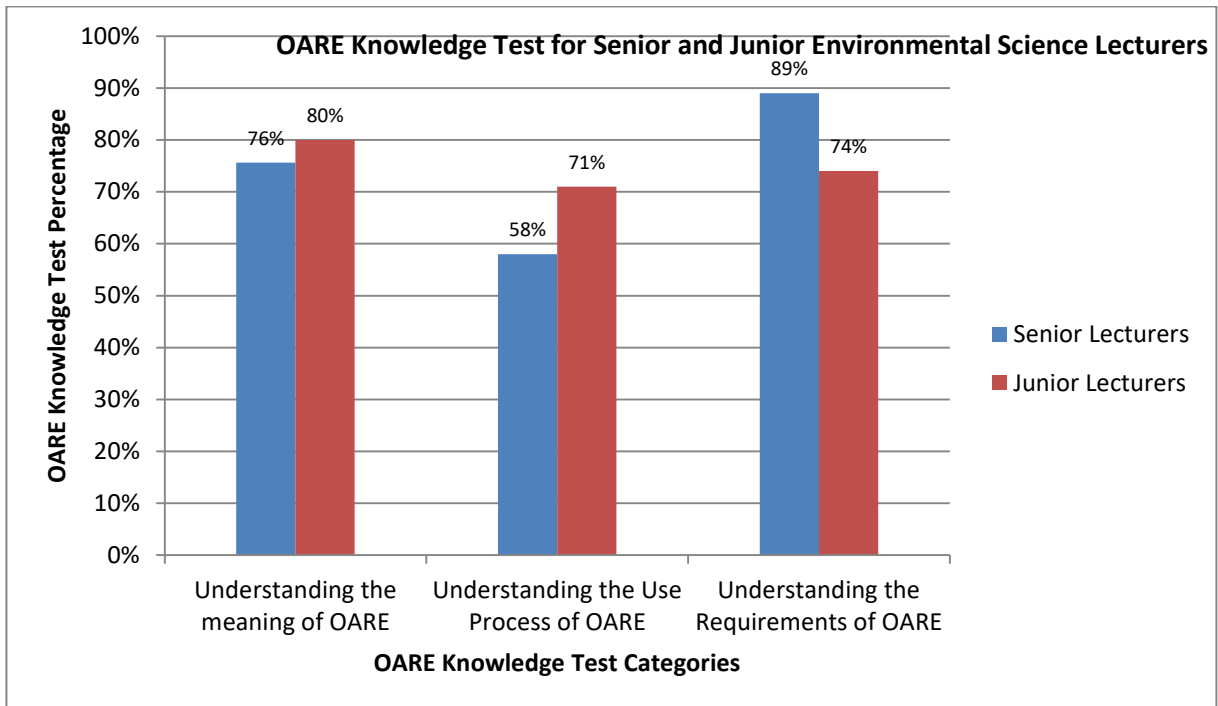


Figure 1. Bar Chart Showing Average Percentage (%) Scores of the Senior and Junior Environmental Science Lecturers on OARE Knowledge Test

From Figure 1, junior environmental science lecturers understood more, the meaning of OARE (80%) than their senior counterpart (76%); the junior lecturers also understood more (71%) the use process of OARE than their senior counterpart (58%). In the test of understanding the requirements of OARE, the senior lecturers had better knowledge (89%) than their junior counterpart (74%). However, the aggregate average of all the lecturers' responses visible from the bar chart are all above the pass mark of 48%, hence, the lecturers (senior and junior) are knowledgeable in the use of OARE database.

Furthermore, lack of time due to tight academic task limits their use of OARE (2.50); and they disagreed about not having the search skills needed to research with OARE (2.26). It was also disagreed that lack of user education on access and use of relevant online resources debars them from using OARE (1.91), while Inadequate technical support during database search does not affect their use of OARE (2.44).

Research Question 2

What are the challenges faced by Environmental Science Lecturers in the use of OARE?

The mean responses of the environmental lecturers as seen in Table 2 shows that Internet issues in their Universities hinder the lecturers'

Table 2: Challenges faced by Environmental Science Lecturers in the Use of OARE

	N	Mean	Decision
The need to filter results from OARE database poses serious problem for me when I use it	160	2.63	Agree
Delays in downloading of articles scares me from using OARE		2.05	Disagree
I do not have the search skills needed to research with OARE		2.26	Disagree
The rigid process of accessing OARE demoralizes me from its use		2.63	Agree
Power outages limits the time I have for research with OARE database		3.04	Agree
Internet issues in my University hinders my use of OARE		3.20	Agree
Lack of user education on access and use of relevant online resources debars me from using OARE		1.91	Disagree
Inadequate technical support during database search affects my use of OARE		2.44	Reject
Low level of local contents in OARE database inhibits my use of the database		2.38	Reject
Lack of time due to tight academic task limits my use of OARE		2.50	Agree

Test of Hypothesis

The research hypothesis was tested at 0.05 level of significance using paired sample t-test statistical tool

Null Hypothesis 1

There is no significant difference in the mean achievement scores of senior and junior lecturers on their level of knowledge of OARE in Federal Universities in South East Nigeria.

From table 5, the t-calculated is 1.00 while the t-critical is 0.00. Hence at a 0.05 level of significance and 39 degree of freedom; the t-calculated value is greater than the t-critical

value. Therefore since the t-calculated value of 1.00 is greater than the t-critical value of 0.00, the null hypothesis is rejected. Conclusively, there is a significant difference in the mean achievement scores of senior and junior lecturers on their level of knowledge of OARE in Federal Universities in South Eastern Nigeria.

Table 3: Summary of t-test Analysis on Difference in the Mean Achievement Scores of Senior and Junior Lecturers on their Level of Knowledge of OARE in Federal Universities in South East Nigeria.

		Paired Differences					t-critical value	df	Sig. (2-tailed) t-calculated
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Junior Lecturers Mean - Senior Lecturers Mean	.00000	.27518	.04351	-.08801	.08801	.000	39	1.000

Discussion of Findings

The level of knowledge possessed by Senior and Junior Environmental Science Lecturers in the use of OARE database

The result for research question one reveals that the lecturers are knowledgeable in the use of OARE database. The lecturers understood the meaning of OARE, the use process of OARE, and the requirements of OARE, hence are knowledgeable. They identified the full meaning of the acronym OARE (Online Access to Research Enterprises), what it contains, and what it is used for. Though this do not look much a surprise, as they are into academics and always in need of electronic resources, unlike Angello (2010)'s findings which revealed that the level of awareness of electronic resources among researchers very low, with only a few of them were aware of AGORA and HINARI databases, while just 6% of the researchers knew about INFORM and OARE. It also contradicts Nwokedi, Nwokedi, Chollom, and Adah (2017)'s findings, which revealed among others that very few lecturers were aware and knowledgeable of the subscribed Elsevier online database.

Knowledgeability and use of electronic databases and resources has been found to be very imperative in to keeping lecturers and students abreast and alert of the various available media through which they can satisfy their information needs. From the findings of the study, the majority of environmental science lecturers had heard of the OARE database before, which concurred with the findings of Kwafoa, Osman, and Afful Arthur (2014), Chirra and Madhusudhan (2009), and Nisha and Ali (2012) that recorded over 90% awareness of the databases in their institutions. This indicates that the lecturers benefited from the library information literacy programs organized periodically to improve their awareness of these available resources. It is apparent that the use of OARE databases does not require much of a skill in ICT to enable lecturers navigate these resources effectively. This can only be possible when the client is knowledgeable and aware of the existence of such databases. Awareness and knowledge of "the changes in technology in recent years, has

dramatically altered how information is accessed, stored and disseminated"(Tsakomas & Papatheodorou, 2006).

The lecturers were able to know which faculty of knowledge OARE database supports, how to get connected to the database, and what is required to get access to the resources it contains. This is supported by Madondo, Sithole, and Chisita (2017) who stated that skills required to maximise the potential of electronic databases and resources are far higher than those required for searching printed sources. These skills can involve having knowledge of the database structure and the search commands and combinations. To Renwick (2005), the ability to use databases efficiently depends on knowledge of what is available and how to use it, ICT skills and the ability to define a research problem. A lot of factors influence knowledgeability of these databases, which includes disciplines, academic status and ranks, and ages.

Concerning the ranks, the findings also revealed that the junior environmental science lecturers were more knowledgeable of OARE, as they understood more, the meaning of OARE than their senior counterpart; the junior lecturers also understood more the use process of OARE than their senior counterpart. In the test of understanding the requirements of OARE, the senior lecturers had better knowledge than their junior counterpart. However, the aggregate average of all the lecturers' responses visible from the bar chart are all above the pass mark of 48%, hence, the lecturers (senior and junior) are knowledgeable in the use of OARE database; with the junior more knowledgeable. In support, it was found out that there is significant difference in the mean achievement scores of senior and junior lecturers on their level of knowledge of OARE in Federal Universities in South East Nigeria. This might be due to the fact that the junior lecturers are more online and work mostly with online resources and databases

The challenges in the use of OARE by Environmental Science Lecturers

From the findings on the challenges faced by Environmental Science Lecturers in the use of OARE, Internet issues in their universities, power outages, need to filter results from

OARE database, and lack of time due to tight academic task limits the lecturers' use of OARE. In support of this finding, Velmurugan (2013) stated that slow internet speed results into wastage of time required in retrieving other relevant information. In addition, lack of constant power supply and access to electronic resources. According to Aina (2014) observed that the awareness level of electronic resources was not the same way these resources were used. Other challenges included lack of internet access at both homes and offices and epileptic power supply.

The study further found out that lecturers: not having the search skills needed to research with OARE, and lacking user education on access/ use of relevant online resources debar them from using OARE; while inadequate technical support during database search do not constitute challenges in their use of OARE. To this, Ahmed (2013a) pointed out that users are not satisfied with the subscribed resources "because of difficulty in finding required information; inability to access from home, slow download speed and online access problems". These challenges can take the form of poor ICT infrastructure, lack of adoption strategies for new and trending technologies, copyright issues as it concerns use of electronic resources, poor attitude to embracing and learning technologies for easier work process, among others. Others can be poor funding and support for libraries especially as it hinders the progress of resource sharing activities, poor resource discovery strategies, lack of technological know-how among librarians, delays in acquiring new e-resources because consortia members have to hold consultations before decisions are made.

Significance of the level of knowledge of OARE between Senior and Junior Lecturers
The researchers then concluded that there is a significant difference in the mean achievement scores of senior and junior lecturers on their level of knowledge of OARE in Federal Universities in South East Nigeria. This shows the varying strengths in the knowledge of these two sets of lecturers, showing that different approaches to teaching the use of these databases should be adopted distinctly, depending on which method works best for either the senior or the junior lecturers.

Recommendations

The following recommendations have been made based on the findings and conclusions made in this study.

1. It should be included as part of librarians' duties to give orientations at least annually to lecturers on helpful databases like OARE, that can aid their research and academic work; this will no doubt update their knowledge on recent researches and trends in their field.
2. NUC should emphasize on the stability of internet and power issues in universities, as it forms one of the major challenges to the use of OARE established by the present research.
3. Most times lecturers complain of having busy academic schedule and tasks that exploring these database options like OARE becomes huge task. This can be ameliorated by reducing and redistributing lecturers' workloads to ensure equity and fairness to themselves, their duties, and their research lives through databases.

Conclusions

The study has shown that environmental science lecturers in South East Nigeria possessed knowledge on the use of OARE database. This is because they understood the meaning of OARE, the use process, and the requirements of OARE. However, junior environmental science lecturers possessed more knowledge about OARE than their senior counterpart. Furthermore, the aggregate average of all the lecturers' responses visible from the bar chart are all above the pass mark of 48%, hence, the lecturers (senior and junior) are knowledgeable in the use of OARE database; with the junior more knowledgeable. This being said, there is significant difference in the mean achievement scores of senior and junior lecturers on their level of knowledge of OARE in Federal Universities in South East Nigeria.

Furthermore, environmental science lecturers faced many challenges emanating from different places which opposed their acquisition of OARE database use competencies. They include: Internet issues in their universities, power outages, and lack of time due to tight academic task, and not having enough search skills.

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APPENDICES

ACHIEVEMENT TEST

Online Access to Research in Environment Knowledge Test (OAREKT)

Instruction: Please read carefully and tick () on the right option.

Section A: Personal Data (tick as appropriate)

1. **Name of Institution**.....
2. **Rank/ Designation:** Graduate Assistant () Assistant Lecturer ()
Lecturer2 () Lecturer1 () Senior Lecturer ()
Associate Professor () Professor ()
3. **Gender:** Male () Female ()

Section B: OARE Knowledge

Please from the under listed questions circle the letter corresponding to the correct answer

1. I know that OARE means.....
 - a. Online Agricultural Resources Establishment
 - b. Online Access to Research Enterprises
 - c. Online Access to Research in Environment
 - d. Online Agricultural Research Environment
 - e. All of the above

2. How is one more likely to learn of OARE database?.....
 - a. During an Online Research Activity
 - b. During a Disciplinary Panel
 - c. When conducting an Examination
 - d. When marking Scripts
 - e. All of the above

3. Having online access to resources means?.....
 - a. Being able to view and download needed resources from databases through the internet
 - b. Being able to connect my computer to the internet
 - c. Being able to get information resources I need from a colleague online
 - d. None of the above
 - e. All of the above

4. What do you think NUC mean whenever they request for databases you have in your field?
 - a. Electronic Journals and Books in my field
 - b. Downloaded information Resources in my field
 - c. Locally Published Thesis and Dissertations in my field
 - d. Websites Containing a Host of Information Resources in my field
 - e. All of the above

5. OARE database is mainly used by researchers in which faculty?.....
 - a. Agricultural Sciences
 - b. Social Sciences

- c. Physical Sciences
 - d. Environmental Sciences
 - e. All of the above
6. How does one know he is using OARE database?.....
- a. When he accesses works in the document section of his computer
 - b. When he sees OARE displayed on his computer screen
 - c. When he is accessing resources with a web address of <http://oare.oaresciences.org>
 - d. None of the above
 - e. All of the above
7. Which of these steps do you take in sequence when looking for resources in OARE database?
- a. Put on my internet, put on computer, then insert keywords, then log on to OARE website
 - b. Log on to OARE website, put on my internet, put on my computer, then insert keywords
 - c. Put on my computer, put on my internet, log on to OARE website, then insert keywords
 - d. Insert keywords, put on my computer, put on my internet, then log on to OARE website
 - e. All of the above
8. When is the only time you usually have something to do with OARE?
- a. Lecture Preparation
 - b. NUC Accreditation
 - c. Research Writing
 - d. None of the Above
 - e. All of the Above
9. What do you think OARE database is used for?
- a. Statistical Computation
 - b. Bibliographic Compilation
 - c. Information Search
 - d. Encyclopaedia Knowledge
 - e. All of the above
10. What is required to have access to OARE resources?.....
- a. Subscription Code
 - b. Username and Password
 - c. ATM Card Number
 - d. Nothing
 - e. All of the above
11. What is your reaction when a website requires password to get information material?.....
- a. I quickly leave the sight and look for a free one
 - b. I continue with the process to obtain the password
 - c. I seek for help on how to get the password and have access
 - d. None of the above

- e. All of the above
12. Which of these is not required to have access to an online material?.....
- a. Computer
 - b. Internet Connection
 - c. Electricity
 - d. Scanner
 - e. All of the above

APPENDIX K

Test Marking Guide

- 1. C
- 2. A
- 3. A
- 4. D
- 5. D
- 6. C
- 7. C
- 8. C
- 9. C
- 10. B
- 11. C
- 12. D

APPENDIX L
ENVIRONMENTAL SCIENCE LECTURERS' OARE KNOWLEDGE SCORES
ON ACHIEVEMENT TEST
QUESTIONS/ ITEMS

OAREKT: Senior Lecturers

Respondents	Meaning of OARE				Use Process of OARE				Requirements of OARE			
	1	2	3	4	5	6	7	8	9	10	11	12
1	8	8	8	8	8	8	8	8	8	8	8	8
2	8	8	0	8	0	8	8	8	8	8	8	8
3	8	0	8	8	8	8	8	0	8	8	8	8
4	8	8	0	8	0	8	8	8	8	8	8	0
5	8	8	8	8	8	8	8	8	8	8	8	8
6	8	0	8	8	0	8	8	8	8	8	8	8
7	8	8	0	8	0	8	8	8	8	8	8	0
8	8	8	8	8	8	8	8	0	8	8	8	8
9	8	8	8	8	0	8	8	8	8	8	8	8
10	8	0	8	8	0	8	8	8	8	0	8	8
11	8	8	8	8	0	8	8	8	8	8	8	0
12	8	8	8	8	0	8	8	0	8	0	8	8
13	8	8	0	8	0	8	8	8	8	8	8	8
14	8	8	8	8	0	8	8	8	8	8	8	8
15	8	0	8	8	8	0	8	8	8	8	8	0
16	8	8	0	8	0	8	8	0	8	0	8	8
17	8	8	8	8	0	0	8	8	8	8	8	8
18	8	8	8	8	0	8	8	8	8	8	8	8
19	8	8	8	8	0	8	8	8	8	8	8	8
20	8	0	0	8	0	8	8	0	8	8	8	8
21	8	8	8	8	0	8	8	0	8	8	8	8
22	8	0	0	8	0	8	8	8	8	8	8	8
23	8	8	8	8	0	0	8	8	8	8	8	8
24	8	0	0	8	0	8	8	8	8	8	8	8
25	8	8	8	8	0	8	8	8	8	8	8	8
26	8	8	0	8	0	8	8	0	8	8	8	8
27	8	0	0	8	0	0	8	0	8	8	8	8
28	8	0	8	8	0	8	8	8	8	8	8	8
29	8	8	8	8	0	0	8	0	8	8	8	8
30	8	0	8	8	0	0	8	0	8	8	8	0
31	8	0	8	8	0	8	8	8	8	8	8	0
32	8	0	0	8	0	0	8	0	8	8	8	8
33	8	0	0	8	0	0	8	0	8	8	8	0
34	8	8	0	8	0	8	8	0	8	0	8	8
35	8	0	0	8	0	0	8	8	8	0	8	0
36	8	0	8	8	0	0	0	0	8	8	8	0
37	8	0	0	8	0	8	0	8	8	8	8	8
38	8	0	0	8	0	8	0	8	8	0	8	0
39	8	0	0	8	0	0	0	0	8	8	8	8
40	8	0	0	8	0	0	0	0	8	0	8	0
41	8	8	8	8	8	8	8	8	8	8	8	8
42	8	8	0	8	0	8	8	8	8	8	8	8
43	8	0	8	8	8	8	8	0	8	8	8	8
44	8	8	0	8	0	8	8	8	8	8	8	0
45	8	8	8	8	8	8	8	8	8	8	8	8
46	8	0	8	8	0	8	8	8	8	8	8	8
47	8	8	0	8	0	8	8	8	8	8	8	0
48	8	8	8	8	8	8	8	0	8	8	8	8
49	8	8	8	8	0	8	8	8	8	8	8	8
50	8	0	8	8	0	8	8	8	8	0	8	8

51	8	8	8	8	0	8	8	8	8	8	8	0
52	8	8	8	8	0	8	8	0	8	0	8	8
53	8	8	0	8	0	8	8	8	8	8	8	8
54	8	8	8	8	0	8	8	8	8	8	8	8
55	8	0	8	8	8	0	8	8	8	8	8	0
56	8	8	0	8	0	8	8	0	8	0	8	8
57	8	8	8	8	0	0	8	8	8	8	8	8
58	8	8	8	8	0	8	8	8	8	8	8	8
59	8	8	8	8	0	8	8	8	8	8	8	8
60	8	0	0	8	0	8	8	0	8	8	8	8
61	8	8	8	8	0	8	8	0	8	8	8	8
62	8	0	0	8	0	8	8	8	8	8	8	8
63	8	8	8	8	0	0	8	8	8	8	8	8
64	8	0	0	8	0	8	8	8	8	8	8	8
65	8	8	8	8	0	8	8	8	8	8	8	8
66	8	8	0	8	0	8	8	0	8	8	8	8
67	8	0	0	8	0	0	8	0	8	8	8	8
68	8	0	8	8	0	8	8	8	8	8	8	8
69	8	8	8	8	0	0	8	0	8	8	8	8
70	8	0	8	8	0	0	8	0	8	8	8	0

OAREKT- Junior Lecturers

Respondents	Meaning of OARE				Use Process of OARE				Requirements of OARE			
	1	2	3	4	5	6	7	8	9	10	11	12
1	8	8	8	8	8	8	8	8	8	8	8	8
2	8	8	8	8	8	8	8	8	8	8	8	8
3	8	0	8	8	8	8	8	8	0	8	8	8
4	8	8	0	8	0	8	8	8	8	8	8	8
5	8	0	8	8	8	8	8	8	8	8	8	8
6	8	8	8	8	8	8	8	8	0	8	8	8
7	8	0	8	8	8	8	8	8	8	8	8	8
8	8	8	0	8	8	8	8	8	8	8	8	8
9	8	8	8	8	8	8	8	8	8	8	8	8
10	8	8	8	8	0	8	8	8	0	8	8	8
11	8	0	8	8	8	8	8	8	8	8	8	8
12	8	8	8	8	8	8	8	8	8	8	8	8
13	8	8	8	8	8	8	8	8	0	8	8	8
14	8	0	0	8	8	8	8	8	0	8	8	8
15	8	8	8	8	8	8	8	8	0	8	8	8
16	8	8	8	8	8	8	8	8	0	8	8	8
17	8	0	8	8	0	0	8	8	0	8	8	8
18	8	8	8	8	8	8	8	8	8	8	8	8
19	8	8	8	8	8	8	8	8	0	8	8	8
20	8	8	8	8	8	8	8	8	0	8	8	8
21	8	8	8	8	0	0	8	8	8	8	8	8
22	8	0	8	8	8	8	8	8	0	8	8	8
23	8	8	8	8	8	8	8	8	0	8	8	8
24	8	8	8	8	8	0	8	8	0	8	8	8
25	8	8	8	8	8	8	8	8	0	8	8	8
26	8	8	8	8	0	8	8	8	0	8	8	8
27	8	8	8	8	8	8	8	8	8	8	8	8
28	8	8	8	8	8	8	8	8	0	8	8	8
29	8	8	8	8	8	8	8	8	0	8	8	8
30	8	8	8	8	8	8	8	8	0	8	8	8
31	8	0	8	8	0	8	8	8	0	8	8	8
32	8	0	8	8	8	8	8	8	0	8	8	8
33	8	8	8	8	8	8	8	8	0	8	8	8
34	8	0	8	8	8	8	8	8	0	8	8	8
35	8	0	8	8	8	8	8	8	0	8	8	8
36	8	8	8	8	8	8	8	8	0	8	8	8

37	8	0	8	8	8	8	8	8	0	8	8	8
38	8	0	8	8	8	8	8	8	0	8	8	8
39	8	8	8	8	0	8	8	0	0	8	8	8
40	8	0	8	8	8	8	8	0	0	8	8	8
41	8	0	8	8	0	0	8	0	0	8	8	8
42	8	0	8	8	0	0	8	0	0	8	8	8
43	8	8	0	8	8	0	8	8	0	8	8	8
44	8	0	0	8	0	8	8	0	0	8	8	8
45	8	0	8	8	8	0	8	0	0	8	0	8
46	0	8	0	8	0	0	8	0	0	8	0	8
47	8	0	0	8	8	0	8	8	0	8	0	8
48	8	0	8	8	0	8	8	0	0	8	0	8
49	8	8	0	8	8	0	8	0	0	8	0	8
50	8	0	0	8	0	0	8	0	0	8	0	8
51	8	0	8	8	6	0	0	0	0	8	0	8
52	8	0	0	8	0	8	0	0	0	8	0	8
53	8	8	0	8	0	0	0	0	0	8	0	8
54	0	0	0	8	0	0	0	0	0	8	0	8
55	8	0	0	8	0	0	0	0	0	8	0	8
56	8	0	0	8	0	0	0	0	0	8	0	8
57	8	0	0	8	0	0	0	0	0	8	0	8
58	8	8	0	8	0	0	0	8	0	8	0	8
59	8	0	0	8	0	0	0	0	0	8	0	8
60	8	0	0	8	0	0	0	0	0	8	0	8
61	8	8	8	8	8	8	8	8	8	8	8	8
62	8	8	8	8	8	8	8	8	8	8	8	8
63	8	0	8	8	8	8	8	8	0	8	8	8
64	8	8	0	8	0	8	8	8	8	8	8	8
65	8	0	8	8	8	8	8	8	8	8	8	8
66	8	8	8	8	8	8	8	8	0	8	8	8
67	8	0	8	8	8	8	8	8	8	8	8	8
68	8	8	0	8	8	8	8	8	8	8	8	8
69	8	8	8	8	8	8	8	8	8	8	8	8
70	8	8	8	8	0	8	8	8	0	8	8	8
71	8	0	8	8	8	8	8	8	8	8	8	8
72	8	8	8	8	8	8	8	8	8	8	8	8
73	8	8	8	8	8	8	8	8	0	8	8	8
74	8	0	0	8	8	8	8	8	0	8	8	8
75	8	8	8	8	8	8	8	8	0	8	8	8
76	8	8	8	8	8	8	8	8	0	8	8	8
77	8	0	8	8	0	0	8	8	0	8	8	8
78	8	8	8	8	8	8	8	8	8	8	8	8
79	8	8	8	8	8	8	8	8	0	8	8	8
80	8	8	8	8	8	8	8	8	0	8	8	8
81	8	8	8	8	0	0	8	8	8	8	8	8
82	8	0	8	8	8	8	8	8	0	8	8	8
83	8	8	8	8	8	8	8	8	0	8	8	8
84	8	8	8	8	8	0	8	8	0	8	8	8
85	8	8	8	8	8	8	8	8	0	8	8	8
86	8	8	8	8	0	8	8	8	0	8	8	8
87	8	8	8	8	8	8	8	8	8	8	8	8
88	8	8	8	8	8	8	8	8	0	8	8	8
89	8	8	8	8	8	8	8	8	0	8	8	8
90	8	8	8	8	8	8	8	8	0	8	8	8

APPENDIX C

RELIABILITY
OAREKT

Online Access to Research in Environment Knowledge Test (OAREKT)

Kudder Richardson Formular for Reliability Test

$$R_t = \frac{K}{K-1} \left\{ 1 - \frac{\sum p_i q_i}{S_t^2} \right\}$$

Computation of Reliability Coefficient of the Instruments using Kudder Richardson (K-R20) formula

OARE Knowledge Test

$$K=12, \sum p_i q_i = 10.043, S_t^2 = 100.043$$

$$R_t = \frac{k}{k-1} \left(1 - \frac{\sum p_i q_i}{S_t^2} \right)$$

$$R_t = \frac{12}{12-1} \left(1 - \frac{10.04}{100.043} \right)$$

$$R_t = \frac{12}{11} (1 - 0.1003)$$

$$R_t = 1.09 * (0.899)$$

$$R_t = \mathbf{0.989}$$

Note: K = Number of items

Pi = Proportion who scored the item correct

qi = Proportion who scored the item wrongly

S_t² = Variance of the whole item

∑p_iq_i = sum of the variance of the individual items