Research Paper

Students' Awareness and Use of Open Educational Resources (OERS) in Selected Universities: Implication for Policy Studies

Obinyan, Oluwatoyin O.[1], Okoroafor, Chimezie K.[2], Ezenwuzor Loveth N.[3]

[1]Librarian 11, Ambrose Alli University, Ekpoma, Edo State
[2] University of Agriculture and Environment Sciences, Umuagwo, Imo State
[3] Snr. Asst Registrar (Lib), Ebonyi State University

Corresponding Author: Obinyan, Oluwatoyin O.

ORCID: https://orcid.org/0000-0003-0785-6613

DOI: https://doi.org/10.52403/ijrr.20230618

ABSTRACT

Open Educational Resources are technology-enabled open provisions of educational resources for consultation, use, and adaptation for non-commercial purposes. At the moment in Nigeria, OERs are the reality for an increasing number of universities. They are distinctively made available without restraint over the Internet or the Web. The adoption has been on an increased level; hence, this study presents the key findings of a survey about the awareness and use of OER among students in selected Universities. A structured questionnaire was distributed to 600 respondents. The findings revealed that the majority of the students were males between the ages of 20-25. It was also revealed that students were aware of OER in their universities. Besides, the study established a positive correlation between students' awareness and the use of OER. On the use of the resources, it is revealed that the majority of the students use theses/projects, journal articles, lecture notes, courseware, and books while video contents, inaugural lectures, and Conference proceedings/presentations were among the least used resources as indicated by over 50% of the respondents. 80% of respondents perceived that the resources are useful and improved their retention, and 89.3% find downloading the materials easy the barrier to the use of OER among the population studied includes inadequate skills, little knowledge of the courseware, and power supply. The study recommended, among other things, the need for students and staff training and retraining to guarantee the required threshold in ICT literacy skills and competency for maximum OER use and exploitation. Also recommended was the need for the universities in conjunction with librarians to develop a standard procedure to mainstream OER into teaching, learning, and research processes to promote their practical use

Keywords: Higher education, ICT skills, Learning materials, Open Education, Open Educational Resources, Use of OER, Undergraduate Students.

INTRODUCTION
According to Westermann and Venegas (2017), "education is a pivotal means of promoting development in any country". They further asserted that as countries seek to develop their human capital … there is increased demand on the countries education systems, which invariably requires quality and efficient educational processes and resources.

The technological development has a positive impact on education, given shape to the evolution of digital technology inclusion in the classroom learning activities, and also bringing about open access and open education systems. Open education hinges on widening access to free and licensed content educational resources for education,

research and learning, which offers unprecedented learning opportunities in improving academic quality, access and equity. Open education serves as "a key lever for more effective learning", and the new technologies with the digital content reduced barriers to education (European Commission, 2013).

According to Open Education Consortium (2016), "open education is a system that incorporates free and open learning communities, educational networks, teaching and learning materials, open textbooks, open data, open scholarship". The consortium further asserted that open education gives access to knowledge, creates platforms for sharing, innovation, and communities of like-minded users to eliminate the restrictions to institutionalised education.

Open Educational Resources (OERs) is the "technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes". They are distinctively made freely available without restraints on the Internet or the web. The primary use is to support course development and curriculum. The learning resources that makeup OERs include learning objects such as lecture material, references and readings, simulations, experiments and demonstrations, syllabuses curricula, and teachers' guides (Wiley, 2014). OER by UNESCO is seen as the open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by users for non-commercial purposes (p. 24). The OECD (2007) defined OER as digitised materials offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research.

Open Educational Resources (OERs) can change learning institutions, teaching practices, and learning and knowledge creation processes. With OERs, the educational model is being replaced by active, social and problem-oriented models against knowledge transfer and internalisation of pre-existing knowledge. The content of OERs includes teaching materials, which range from an entire course to an image or an info-graphic.

OER in the educational context is to leverage pedagogical innovation through the purposive use of technology in teaching and learning. Technology in education makes education more flexible and accessible for learners, open a new horizon to learning and teaching.

OER has the potential to humanise and democratise teaching and learning as it provides immense opportunities for learners. OER is essential in stimulating novel education environments where contents are adapted according to users information needs (Keegan & Bell, 2011). Helping humanity to have more knowledge, and to create a platoon of knowledge will raise humanity above the ignorant level; enhance the creative use of scientific research for technological development.

The research on the use of open educational resources are beginning to gain ground with the adoption by students and researchers; studies in the area remain sparse. Importantly, OER research with a focus on students in Edo State is almost non-existent. To this end, the study seeks to understand the awareness and use of OER among students in three purposively selected universities in Edo State, Nigeria.

LITERATURE REVIEW

According to Onaifo (2016), OERs supports pedagogical initiates and the learning needs of students in institutions of higher education. Premo (2017) talked about affordable course materials, which broadly emphasised textbook affordability through mechanisms such as library reserves and alternative course materials using open textbooks.

Morris-Babb and Henderson (2012) studied faculty members and administrations in Colleges and Universities in Florida reported that seven percentage (7%) were very familiar with open access textbooks,

while 52 % were not at all familiar with open access textbooks" (p. 151). A similar study carried out by Allen and Seaman (2014), their investigation revealed that 34% of the respondents were aware of and use OERs.

Feldstein et al. (2012) study revealed that students in courses that used OERs more frequently had better grades, lower failure and withdrawal rates than their counterparts in courses that did not use open textbooks. Pawlyshyn et al. (2013) did a seasonally check on students' performance due to the adoption of OERs in Mathematics course and reported that the pass rate of students increased as a result of adoption and use of OERs. In the study carried out by Westermann and Venega (2017) concerning student and teacher perceptions of the OER adoption process, the study confirmed the assumption that OER can be relevant and useful to Chilean students, i.e. OERs are relevant and useful to students.

Rolfe (2015) investigated students' perception of the quality of OERs and found out that OER is rated with the level of currency, ease of use and the authenticity of the author. This shows that students assessed OERs based on the frequency of updates, navigation and reputation of the author or creator. Also, Hu et al. (2015) study revealed that students' experience, the nature of OER and the available technological platforms for accessing the resources were some of the barriers to usage of OERs among Chinese college students.

Rowell (2015) provide the analysis of factors that contribute to students' perceptions of OERs and found out that factors such as academic discipline, age, gender, and enrollment status and course delivery mode were of no significance to students' perception of courses that incorporated OERs.

Several studies have advocated for the integration of OERs into the educational systems because it can provide inexpensive ways of disseminating knowledge, and it allows for sharing of information to multiple users and the flexibility of access in different locations. These attributes of OER are among the reasons several scholars had advocated for their inclusion in higher education (UNESCO, 2002; Wright & Reju, 2012; Ngimwa & Wilson, 2012; & Diallo, Thuo, and Wright, 2013).

Orr, Rimini & Van Damme (2015) enumerated the potential impacts of OERs as follows:

- "Harnessing the possibilities afforded by digital technology to address common educational challenges;
- act as a catalyst for social innovation and new forms of interaction between teachers and learners in the knowledge-generation process;
- Promoting the idea of an extended lifecycle beyond original design and purpose, where the process of distribution, adaptation and iteration can improve access to high-quality, context-appropriate educational materials for all."

Objectives of the Study

This study's main objective is to survey the use of open educational Resources by students for policy studies in three selected universities in Edo State with the following specific objectives:

➢ ascertain the level of awareness of OER among undergraduate students in three selected universities in Edo State;
➢ identify the frequency of use of OER;
➢ determine the perceived ease of use of OER in the selected universities;
➢ ascertain the problems militating against the use of the platform in the selected universities, and
➢ determine the relationship between awareness and use of OER;

Based on the research objectives, the following research questions and hypotheses were formulated:

1. What is the level of awareness of OER among undergraduate students?
2. What is the frequency of use of OER?
3. What is the perceived ease of use of OER?

4. What are the problems militating against the use of OER by undergraduate students?

Hypothesis

There is no significant relationship between awareness and use of OER among students.

METHODOLOGY

This study adopted a descriptive survey design to examine the awareness and usage of open educational resources by undergraduate students in the three selected universities. The data intended for this study were collected through the application of questionnaires. The questionnaire was administered to the students who use the E-library of the selected institutions for five days to reach a target population of 200 participants in each institution. The population of this study includes all the users of the e-library. The study adopted a purposive random sampling technique to draw a sample size of 600 students in the three universities. The researchers and three trained assistants administered the questionnaire. This was done at E-libraries, mostly when the students were entering the e-library and submission was done after using the facilities. The students that earlier filled the questionnaire were excluded from filling afresh.

The instrument adopted for collecting data was a questionnaire titled "Awareness and Use of Open Educational Resources by students". The data analysis method was the simple percentage (%), frequency counts,

and arithmetic, mean and standard deviation with a mean score of 2.0 or above taken as 'agreed' and any mean score that is less than 2.0 taken as 'disagreed' and Pearson Product Moment Correlation for the hypothesis.

Table 1: Institutions

S/N	Universities	Population sampled
1	Ambrose Alli University	200
2	Benson Idahosa University	200
3	University of Benin, Benin	200

PRESENTATION OF RESULTS

Table 2: Demographic Information of Respondents

Variable	Frequency	Percentage
Gender		
Male	409	68.2
Female	191	31.8
Age		
Below 20 years	196	32.7
20-25 years	298	49.7
26- 30 years	106	17.7

Table 2 presented the analysis of the demographic information of the respondents. It shows that the majority of the respondents were male (68.2%), while females accounted for (31.8%). The majority of the respondents (49.7%) fall under the ages of 20-25 years, below 20years (32.7%), while ages 26-30years accounted for 17.7% of the respondents.

Research Questions Analyses

Research question 1: What is the level of awareness of OER among undergraduate students?

Table 3 show the level of awareness of open education resources.

Table 3: Distribution of respondents based on their awareness of open educational resources (OERs)

OER	Highly aware	Aware	Partially Aware	Not Aware	Mean	Std. dev
Videos	20 (3.3%)	44 (7.3%)	70 (11.7%)	466 (77.7%)	1.36	0.76
Inaugural lectures	04(0.7%)	132 (22.0%)	162 (27.0%)	302 (50.3%)	1.73	0.82
Journal articles	162 (27.0%)	425 (70.8%)	13 (2.2%)	- -	3.3	0.50
Thesis/projects	502 (83.7%)	66 (11.0%)	32 (5.3%)	-	3.79	0.51
Courseware	142 (23.7%)	142 (23.7%)	262 (43.7%)	54 (9.0%)	2.62	0.94
Books	120 (20.0%)	216 (36.0%)	120 (20.0%)	144 (24.0%)	2.23	0.16
Conference proceedings / presentations	144 (19%)	20 (7.3%)	----	466 (77.7%)	1.36	0.76
Lecture notes	86 (14.3%)	323 (53.8%)	120 (20.0%)	71 11.8%)	2.70	0.85
Others	16 (2.7%)	160 (26.7%)	136 (22.7%)	288 (48.0%)	1.77	0.86

out of the listed OER, respondents had the highest level of awareness in Thesis/Projects with a mean score of X 3.79. This was followed by Journal articles 3.3, Lecture Notes 2.70, Courseware 2.62, and Books 2.23. The associated mean for Videos and conference proceedings and presentations are rated the lowest. With a

mean score of less than 2.0, which is a significantly low level of awareness.

Research question 2: What is the frequency of use of OER?
Table 4 show the frequency of use of open education resources.

Table 4: Frequency of use of OER

OER	Never used	Monthly	Weekly	Daily
Videos	318 53.0%	69 11.5%	108 11.0%	105 17.5%
Inaugural Lectures	505 84.2%	66 11.0%	29 4.8%	-
Journal Articles	6 1.0%	120 20.0%	380 63.3%	94 15.7%
Thesis/Projects	12 2.0%	320 53.3%	99 16.5%	169 28.2%
Courseware	192 32.0%	167 27.8%	141 23.5%	100 16.7%
Books	122 20.3%	192 32.0%	250 41.7%	36 6.0%
Conference Proceedings/ Presentations	436 72.7%	20 3.3%	108 18.0%	36 6.05
Lecture Notes	16 2.7%	44 7.3%	420 70.0%	120 20.0%
Others	236 39.3%	106 17.7%	76 12.7%	182 30.3%

It is evident from Table 4 that the frequently used Open Educational Resources by students are lecture Notes 70% and Journal Articles 63.3% used weekly by the students. While Thesis/Projects were reported used on a monthly basis by 53.3% of the students. Videos, Inaugural Lectures, and Conference Proceedings/Presentation have

more than 50% of the sampled population rating them as Never used.

Research question 3: What are the perceived ease of use of OER?
Table 5 showing the perceived ease of use of open education resources

Table 5: Perceived Ease of Use of OER in the selected Nigerian Universities

Statement	SA	A	D	SD
My interaction with OER is clear and understandable	69 11.5%	217 36.2%	126 21%	188 31.3%
I find OER to be flexible to interact with	168 28%	208 34.7%	140 23.3%	84 14%
It is easy for me to use OER for the purpose I want	116 19.3%	262 43.7%	120 20%	102 17%
Learning to use OER is easy for me	87 14.5%	41 6.8%	216 36%	256 42.7%
Materials on OER are adequate to support my learning	87 14.5%	100 16.7%	206 34.3%	207 34.5%
I found the video files very useful to my learning.	38 6.3%	6 1%	460 76.7%	96 16%
The audio is clear and easily understood	42 7%	414 69%	66 11%	78 13%
It improved my retention	200 33.3%	280 46.7%	120 20%	-- --
Downloading materials is easy	416 69.3%	120 20%	- -	64 10.7%
Navigating through the OER platform is easy	226 37.7%	116 19.3%	100 16.7%	158 26.3%

Ten statements were examined under the perceived ease of use of OER. Strongly agreed and agreed response rates were polled together as agreed; also strongly disagreed and disagreed statements are poll together as disagreed rating.

89.3% of the respondents reported that downloading materials is easy on OER, 76% reported that OER improved their retention, 62.9% says it is easy to use for the purpose they want it. In contrast, 92.7% find the video files not useful to their learning, 75.7% reported that learning to use OER is not easy for them, and 68.8% says materials in OER are inadequate to support their learning.

Research Question 4: What are the problems militating against the use of OER by undergraduate students?
Table 6 presented the analysis of the factors militating against the use of OER.

Table 6: Problems militating against the use of OER

Statement	SA	A	D	SD
My level of computer skills affect the effective usage of OER	42 7%	186 31%	336 56%	36 6%
Little knowledge of the courseware	54 9%	426 71%	106 17.7%	14 2.3%
inadequate bandwidth and limited access to the Internet	76 12.7%	101 16.8%	261 43.5%	162 27%
limited access to computers	102 17%	87 14.5%	173 28.8%	238 39.7%
power supply interruption	313 52.2%	200 33.3%	86 14.3%	01 0.2%
inadequate skills to navigate the OER	70 11.7%	426 71%	98 16.3%	06 1%
unavailability of internet facilities	13 2.2%	03 0.5%	377 62.8%	207 34.5%
lack of knowledge of the existence of open educational resources in my institution	50 8.3%	294 49%	208 34.7%	48 8%

Table 6 examined the problems militating against the use of OERs. Above 50% of the respondents strongly agreed/agreed that Power supply interruption, inadequate skills to navigate the OERs, little knowledge of the courseware, and lack of knowledge of the existence of OER in their institution affect their practical use of the resources.

Hypothesis: There is no significant relationship between awareness and use of OER among students

Table 7: The relationship between awareness and use of OER

Variables	N	X	SD	R	P	Remark
Awareness of OER	600	29.59	5.47	0.531	0.00	Significant
Use of OER	600	38.83	15.32			

Correlation is significant at the level of 0.05

As depicted in Table 7, the mean score of awareness of OER among the sampled population is (X= 29.59, SD = 5.47) while the mean score of their use is (X = 38.83, SD =15.32). The result shows a positive correlation between the awareness and use of open educational resources by students. The implication of this is that as the level of awareness increases, the use of the resources will increase significantly. It is therefore imperative for the librarians to promote the use of OER in higher institutions of learning.

DISCUSSION OF THE FINDINGS
Level of awareness of open education resources
The results revealed that the respondents' highest recorded level of awareness was in Thesis/Projects, with a mean score of 3.79. This was followed by Journal article 3.3, Lecture Notes 2.70, Courseware 2.62 and Books 2.23. These findings were inconsonant with Allen and Seaman (2014) that stated that their respondents were aware and used OERs. The associated mean for Videos and conference proceedings and

presentations are rated the lowest. This means that most of the students are not aware of the resources, or the contents are not populated, which could be accounted for not being mindful on the part of the students.

Frequency of use

The investigation revealed that most resources such as lecture notes, journal articles and Thesis/Projects are the most frequently used resources. At the same time, Videos, Inaugural Lectures and Conference Proceedings/Presentation have more than 50% of the sampled population rating them as never used. This could result from a low level of awareness, the contents are not uploaded, or difficulty in navigation and access.

Perceived ease of use

Ten statements were examined under the perceived ease of use of OER. Strongly agreed and agreed response rates were polled together; most respondents agreed that OER is easy, flexible to interact with and easy to download. In contrast, 68.8% disagreed with the statement such as "materials in OER are adequate to support my learning", and 92.7% find the video files not useful, which is in contrast to the findings of Feldstein et al. (2012) that revealed that students in courses that used OERs more frequently had better grades, lower failure and withdrawal rates than their counterparts in courses that did not use open textbooks. And the finding of Pawlyshyn et al. (2013) and Hilton (2016) says students perform better using OERs and are optimistic about the use.

Problem militating against the use of OER

Another important finding of the research is the problems militating against the use of OER; above 50% of the respondents strongly agreed/agreed to the statement that their level of skills to navigate the OER and lack of knowledge of the resources affect their practical use. This is supported by the work of Rolfe (2015) that listed navigation among the factors that affect the use. Also, Hu et al. (2015) study stated that the available technological platforms for accessing the resources were among the barriers to usage of OERs; 85.5% of the respondents attested to power supply interruption being a barrier to their effective use of OERs.

Relationship between awareness and use of OER

Also, the research established a positive correlation between the awareness and use of open educational resources by students (r = 0.531, p <0.00). By implication, as the level of awareness increases, the use of the resources will increase significantly. This study is supported.

CONCLUSION AND RECOMMENDATIONS

Open education resources have been seen as alternative materials to support teaching, learning and research processes; the resources are developed and freely available. However, its use and awareness, despite the usefulness and the directive by National Universities Commission (NUC) that all schools in Nigeria should have open educational resources on their websites, is of great concern.

In summary, the awareness and use of OER among the students in selected universities in Edo state were examined. The study revealed a positive correlation between the awareness and use of OER among students. The majority of the students are aware of the resources; thesis/dissertations, journals, courseware, and books are among the most frequently used open educational resources, while video lectures, inaugural, and so on are the least used resources. It was also reported that students' literacy skill level is low and hinders them in accessing the resources.

Arising from this study, the following recommendations were made

1. It is essential for universities communities to understand the importance of OER and developed a

standard procedure for integration it into learning systems to promote awareness and practical use.

2. The librarians must promote the use of OER in higher institutions of learning.
3. Items upload such as video files, conference proceedings with an easy navigation system should be encouraged.
4. There is a need for continuous ICT training to enhance students and staff's literacy skills and competency in the use of OER.
5. Provision of alternative power sources to enable accessibility to open education resources within the institutions.
6. Items in OER should be constantly populated, especially the video upload, books and conference proceedings.

Declaration by Authors
Acknowledgement: None
Source of Funding: None
Conflict of Interest: The authors declare no conflict of interest.

REFERENCES
1. Allen, I.E., & Seaman, J. (2014). Opening the curriculum: Open educational resources in U.S. higher education. Retrieved from Babson Survey Research Group Website: http://bit.ly/1tlMXXU
2. Diallo, B., Thuo, C.W., & Wright, C.R. (2013). Approaches to the production and use of OERs: The African Virtual University experience. Retrieved from the Commonwealth of Learning Website: http://bit.ly/1b2nxTm
3. European Commission, (2013). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions. Opening up Education: Innovative teaching and learning for all through new technologies and Open Educational Resources. COM (2013) 654 final. Retrieved from: http://ec.europa.eu/education/news/doc/openingcom_en.pdf.
4. Feldstein, A., Martin, M., Hudson, A., Warren, K., Hilton, J., & Wiley, D. (2012). Open textbooks and increased student access and outcomes. *European Journal of Open, Distance and E-Learning,* N2 :1-9. Retrieved from https://eric.ed.gov/?id=EJ992490.
5. Hilton, J. (2016). Open educational resources and college textbook choices: A review of research on efficacy and perceptions. Education Tech Research Dev (2016) 64:573–590 DOI 10.1007/s11423-016-9434-9.
6. Hu, E., Li, Y., Li, J. & Huang, W. (2015). Open educational resources (OER) usage and barriers: a study from Zhejiang University, China. *Educational Technology Research and Development* 63(6). DOI:10.1007/s11423-015-9398-1
7. Keegan, H., & Bell, F. (2011). YouTube as a repository: The creative practice of students as producers of open educational resources. Retrieved from: http://www.eurodl.org/?p=current&article=456.
8. Morris-Babb, M., & Henderson, S. (2012). An experiment in open-access textbook publishing: Changing the world one textbook at a time 1. *Journal of Scholarly Publishing*, 43(2), 148–155.
9. Ngimwa, P., & Wilson, T. (2012). An empirical investigation of the emergent issues around OER adoption in sub-Saharan Africa. Learning, Media and Technology, 37(4), 398–413.
10. OECD (2007). Giving knowledge for free: The emergence of open educational resources, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264032125-en.
11. Onaifo, D. (2016). Alternate academy: Investigating the use of open educational resources by students at the University of Lagos in Nigeria. *Electronic Thesis and Dissertation Repository*. 4086. https://ir.lib.uwo.ca/etd/4086.
12. Open Education Consortium (OEC) (2016). *What is Open Education?,* retrieved from: http://www.oeconsortium.org/about-oec.
13. Orr, D., M. Rimini and D. Van Damme (2015). Open educational resources: A catalyst for innovation, educational research and innovation, OECD Publishing, Paris. Retrieved from: http://dx.doi.org/10.1787/9789264247543-en

14. Pawlyshyn, N., Braddlee, D., Casper, L., & Miller, H. (2013). Adopting OER: A case study of cross-institutional collaboration and innovation. *Educause Review*, http://www.educause.edu/ero/article/adopting-oer-case-study-cross-institutional-collaboration-and-innovation

15. Premo, R. (2018). Affordable course materials: Electronic textbooks and open educational resources [Book Review]. Journal of Librarianship and Scholarly Communication, 6(General Issue), eP2252. https://doi.org/10.7710/2162-3309.2252

16. Rolfe, V. (2015, January 27). Students as evaluators of open educational resources. eLearning Papers, 40. Retrieved from http://bit.ly/1QX0wbV

17. Rowell, J. L. (2015). Student perceptions: Teaching and learning with open educational resources. *Electronic Theses and Dissertations.* Paper 2545. https://dc.etsu.edu/etd/2545

18. United Nations Educational, Scientific, and Cultural Organization (UNESCO). (2002). Forum on the impact of open courseware for higher education in developing countries. Conference Proceedings Final Report (July 1-3). Paris, France: Author. Retrieved January 15, 2015, from http://unesdoc.unesco.org/images/0012/001285/128515e.pdf

19. Westermann J. W. & Venegas, M. J. I (2017). Effectiveness of OER use in first-year higher education students' mathematical course performance: A case study. In C. Hodgkinson-Williams & P.B. Arinto (Eds), Adoption and impact of OER in the global south. (Chapter 6), retrieved from http://dx.doi.org/10.5281/zenodo.161278.

20. Wiley, D. (2014). A response to 'OER and the future of publishing, Iterating Toward Openness. Retrieved from: http://opencontent.org/blog/archives/3462.

21. Wright, C. R., & Reju, S. (2012). Developing and deploying OERs in sub-Saharan Africa: Building on the present. *The International Review of Research in Open and Distributed Learning*, *13*(2), 181-220. https://doi.org/10.19173/irrodl.v13i2.1185

******