

## UTILIZATION OF OPEN EDUCATIONAL RESOURCES FOR LEARNING IN UNIVERSITIES IN KWARA STATE

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### ABSTRACT

Open Educational Resources (OER) give users the benefit to; retain, reuse, revise, remix and redistribute. Despite the increasing awareness of these OERs among institutions and faculties, there is a low utilization among undergraduates. Hence, this study investigated the level of utilization of OER for learning among undergraduates. The study adopted a descriptive method of the quantitative research. 398 respondents were randomly sampled from 3 purposively selected area of specializations. Hypotheses 1 was tested using independent t-test while hypotheses 2 was tested using ANOVA. The findings of the study were: (i) A percentage of undergraduates do not make use of many of the listed OER; and There was a significance difference among undergraduates based on Gender and Area of Specialization in their Utilization of OER for learning. The study concluded that there is low adoption of many of the identified OER sites and the others being used has an average level of utilization. Thus, more awareness and utilization of OER among undergraduates would improve their learning process and also the quality of conducted studies. The research recommends that lecturers should encourage students to make use of OER to assist their learning process and improve their research.

**Keywords:** Undergraduates, Utilization, Open Educational Resources, Learning

### INTRODUCTION

Information and Communication Technologies connected to the internet gives its user a wide range of information to pick from. In addition, Oye, Iahad, and Ab. Rahim (2012), noted that ICTs can also be used to enhance and support distance learning and that it is considered to be the digital application equipment to all aspects of education. The internet has become an essential tool in the global educational dispensation and has eliminated distance as the barrier to access of information. The use of the internet connects millions of users of hundreds of nationalities through the interconnectivity of thousands of networks. The ocean of information on the internet in a variety of formats with relative ease of access are among the reasons that brought the technology academic patronage, especially on Open Educational Resources (OER) sites.

OER reflects those resources that attract no fees, subscriptions, tuitions, registrations, obligations, and so on, to the consumer or user of the said resources. OER is not the same as open courseware but a mix of three components: content, tools, and capacity; all of which are aimed at ensuring resource usability, durability, accessibility, and effectiveness. Thus, OER should be measured against the four quality factors of usability, accessibility, durability, and effectiveness (Stephen, 2009). OER contents can be retained, reused, revised, remixed and repurposed without restrictions which signifies the 5Rs of OER. (Grodecka & Sliwowski, 2014).

Akomolafe and Olajire (2014) noted that there is a moderate use of OER among undergraduates as a large number of students make use of the internet to access learning resources in various forms such as video, audio and texts to support learning activities. However, there is seems to be a low percent of level of usage of Open Educational Resources as revealed in Komineas & Tassopoulou, (2016). Similarly, Nwana, Egbe, and Ugwuda, (2017) revealed that even though there seems to be high awareness of educational resources among undergraduates, there is a very low utilization of these resources for learning. They further that it may have occurred due to students' attitude toward e-resources.

However, it was revealed by Ljubojevic, Vaskovic, Stankovic, and Vaskovic, (2014) that students are more motivated to learn when they enrolled in a course that makes use of technology where its course content is systematically delivered using technology. Similarly, Afolabi, (2017) revealed that students who are exposed to the use of Open educational resources have a positive attitude toward its use and this showed in their academic performance as there was a significant difference in performance between their pre-test and post-test scores. Similarly, Venegas-Muggli and Westerman, (2019) revealed an improved academic performance from students that are exposed to the use of Open Educational Resources than those who relied on traditional textbooks alone.

Bassi and Camble (2011), reported that there exists a statistical difference between males and females using electronic resources as females have more difficulty in finding information online than males. However, in another research, it was revealed that females use the internet more than males in a study on gender differences in computer literacy among medical students in selected Southern Nigerian Universities (Ikolo & Okiyi, 2012). Sivathaasan, Murugathas, and Chandrasekar, (2014) revealed an even utilization of educational resources between male and female users. This shows a 50/50 utilization of educational resources from both gender.

Undergraduates' area of specialization has a lot to do with their adoption of e-resources for learning. For example: undergraduates who are studying courses that make use of ICTs more may be more used to using e-resources than those who rarely uses ICT for their activities. Tunkun, Nordin, and Bello, (2013) revealed that area of specialization has a significant influence on both perceived and objective knowledge in favor of ICT related courses than others. This means students who are engaged in courses like computer studies, computer engineering, educational technology and many more are more likely to have a better good perception and knowledge on the use of ICT resources as they make use of these resources more than others who are engaged in courses that make use of ICT less compared to the previous mentioned students.

### **Statement of the Problem**

The free and open sharing of educational resources is essential for promoting the building of global learning networks as well as reducing the knowledge divide that separates and partitions societies. Educators worldwide continue to face significant challenges related to providing increased access to high-quality learning while containing or reducing costs. New developments in information and communication technology highlighted the shortcomings and challenges of the traditional education community, as well as those of more flexible providers such as open universities. Such developments, including accessible repositories, Internet access, wireless networks, and mobile devices, have the potential to increase access and flexibility in education by rendering it ubiquitous.

Researches on students' use of OER have been minimal. This is in line with Akomolafe and Olajire, (2014) where it was observed that despite all the uprising in the understanding of OER among developed nations, its use among developing nation such as Nigeria have recorded low utilization among students. It is also in line with findings from Hu, Li, Li, & Huang, (2015) which revealed that not much have been researched on students' use of open educational resources. As most literature on OER have been focused on general benefits, faculty adoption and teachers' perception towards it. Al Abri & Dabragh, (2018) also revealed a minimal adoption of Open Educational resources among students. This may be due to the area of study as it was conducted in Virginia in the United State of America. Overall, from the studies that are available to the researcher on the use of Open Educational Resources, conclusions can be drawn that OER in Africa is new and not common as most of the reviewed literatures are foreign authors. The ones that are available have focused more on faculty and educators' adoption of OER for teaching. This study therefore, examined the Undergraduate utilization of Open Educational Resources for learning in Universities in Kwara State.

### **Purpose of the Study**

The main purpose of this study was to examine Undergraduates' Utilization of Open Educational Resources for Learning in Universities in Kwara State. Precisely, this study:

- i. investigated the available OER sites commonly used for learning by undergraduates
- ii. determined undergraduates' level of utilization of OER for learning
- iii. examined the differences in gender of undergraduates on the utilization OER for learning
- iv. examined the influence of undergraduates' area of specialization on the utilization of OER for learning.

### Research Questions

The following research questions were formulated and answered in this study:

- i. What are the available OER sites commonly for learning used by undergraduates?
- ii. What is the level of utilization of OER for learning among undergraduates in Universities in Kwara State?
- iii. What are the differences in undergraduates' utilization of OER for learning in Universities in Kwara State based on gender?
- iv. What is the influence of undergraduates' area of specialization on the utilization of OER for learning in Universities in Kwara State?

### Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

**H<sub>01</sub>:** there is no significant difference between male and female undergraduates' utilization of OER for Learning in Universities in Kwara State

**H<sub>02</sub>:** there are no significance differences among undergraduates based on area of specialization in their utilization of OER for learning in Universities in Kwara State

## METHODOLOGY

### Research Design

This research was a descriptive method of the quantitative research. Descriptive method would best suit this study as a large sample can be selected from the total population to describe a characteristic of that population. Questionnaire was used to gather information on utilization of OER in universities in Kwara State which is the focus of this study.

The population for this study covered all the undergraduates in Kwara state. There are six (6) Universities in the State and from the six universities, three were randomly selected. The target population was made of all undergraduate students from the three selected universities. Three faculties namely faculty of Natural Science, faculty of Management Sciences and faculty of Human and Social Sciences was selected purposively as these are the three common faculties among the three universities. Distribution of samples per university were done using proportionate sampling technique using Isreal model. 398 Samples were randomly drawn across the selected faculties.

### Research Instrument

Data was collected using a researcher designed questionnaire titled "Undergraduates Utilization of Open Educational Resources for Learning in Universities in Kwara State (UOERL). It is divided into three parts, part A elicited for demographic information from the respondents, part B contained a list of commonly used Open Educational Resources (OER) where respondents picked which ones they have had an encounter with using a two scale of used and not used. Part C checked the utilization of OER for learning with four option scale of Always- A, Occasionally – O, Rarely- R and Never – N to answer questions on utilization.

### Validation of the Research Instrument

The questionnaire was subjected to both face and content validity to check the arrangement of items and also questionnaire items if they are in-line with the major purposes of the research by three lecturers from the Department of Educational Technology after the they deemed it fit to be validated. Their advice and suggestions which includes; merging of some items together, reconstruction of some items, removal of few items that are not in line with the purpose and a few more others were all used to modify the questionnaire to produce a final draft.

The questionnaire was tested for reliability on forty (40) randomly selected students from Department of Educational Technology in the University of Ilorin, Ilorin using independent sampling technique as it allows for selection of sample from the same population to be used for the study for pilot testing. Educational technology department from the faculty of education was selected as it is not one of targeted faculties. The data gathered from the pilot study was analyzed to check for internal consistency of reliability and the Cronbach alpha value was 0.77 on Availability and 0.69 on Utilization of OERs. This indicated that the research instrument was highly reliable.

**Procedure for Data Collection**

The researchers drafted a letter of Introduction from the Head of Department of Educational Technology, University of Ilorin, Ilorin. The letter was taken to the selected universities. The researchers visited the faculties chosen for the study to administer copies of the questionnaire to the students having sought for permission from the various authorities involved. Once the questionnaires have been distributed and they have been filled, they were collected back immediately and further analysed. The researchers ensured strict confidentiality and anonymity with the information retrieved from the respondents, also the respondents was made fully aware of what the research is all about and was not be forced to fill the questionnaire. Information gathered was used for the purpose of this research only.

**Data Analysis Techniques**

The data gathered from the sampled population was analyzed using descriptive statistics (frequency counts, percentage and mean) to provide answers to research questions 1, 2 and 3. Hypotheses 1 was tested using the inferential statistics (independent t-test) while hypotheses 2 was tested using ANOVA with the aid of Statistical Product for Service Solution at 0.05 level of significance. Hypothesis 3 was further analyzed using Duncan Multiple Range test.

**Results and Findings**

**Table 1:**

**Distribution of Respondents Based on Return rate**

Estimated Sample	Authentic Sample	Return Rate
398	385	97%

Table 1 shows that 398 respondents were sampled but 385 responses were adequately filled and returned with a return rate of 97%. This was thus used for the analysis.

**Table 2:**

**Distribution of Respondents according to Gender**

Gender	Frequency	Percentage
Male	183	47.53
Female	202	52.47
<b>Total</b>	<b>385</b>	<b>100</b>

Table 2 shows that (47.53%) of the respondent were male and (52.47%) were female. This simply indicates that more female participated in the study than male.

**Table 3:**

**Distribution of Respondents based on Area of Specialization**

Area of Specialization	Frequency	Percentage
Natural Science	125	32.5
Management Science	133	34.5
Humanities and Social Science	127	33.0
<b>Total</b>	<b>385</b>	<b>100</b>

Results from table 3 indicates an almost even distribution of questionnaire based on area of specialization. Management science has the highest percentage of 34.5 and it is closely followed by Humanities and Social Science with 33.0% and Natural Sciences is not far behind with percentage of 32.5.

**Research Question One: What are the available OER sites for learning commonly used by undergraduates?**

**Table 4:**

**Commonly Used OER sites for Learning among Undergraduates**

S/N	OER Sites	Used freq	%	Not used freq	%
1.	National Open University Open Education Resource (NOUNOER)	242	62.9	143	37.1
2.	African Virtual University	231	60.0	154	40.0
3.	Covenant university open educational resource	145	37.7	240	62.3

S/N	OER Sites	Used freq	%	Not used freq	%
4.	MIT Open courseware	116	30.1	269	69.9
5.	Learningpod	166	43.1	219	56.9
6.	Teacher Education in Sub-Saharan Africa (TESSA)	187	48.6	198	51.4
7.	EbscoHost	183	47.5	202	52.5
8.	Harvard Open source	169	43.9	216	56.1
9.	OER commons	201	52.2	184	47.8
10.	Google Scholar	260	67.5	125	32.5
11.	Slideshare	265	68.8	120	31.2
12.	Wikipedia	323	83.9	62	16.1
13.	Virtual Library	193	50.1	192	49.9
14.	Nnamdi Azikwe University Open Educational Resource	148	38.4	237	61.6
15.	Wikimedia Commons	183	47.5	202	52.5
16.	Open2study	155	40.3	230	59.7
17.	Coursera	196	50.9	189	49.1
18.	Academic Earth	189	49.1	196	50.9
19.	Edx Courses	150	39.0	235	61.0
20.	Lumen learning	133	34.5	252	65.5
21.	MERLOT II	115	29.9	270	70.1
22.	Open Course library	129	33.5	256	66.5
23.	OpenStax CNX	115	29.9	270	70.1
24.	Education Resources Information Center (ERIC)	203	52.7	182	47.3
25.	OER KnowledgeCloud	170	44.2	215	55.8
26.	Cuny Academy	129	33.5	256	66.5
<b>Total</b>		<b>4696</b>	<b>46.9</b>	<b>5314</b>	<b>53.1</b>

Table 4, shows the frequency count and percentage distribution of commonly used OER sites for learning by undergraduates. The table revealed that the majority of the respondent have used Wikipedia as it has the highest used frequency of 323 and percentage of 83.9. Others with highly used frequency and percentage distribution are Slideshare (265 and 68.8%), Google Scholar (260 and 67.5%), National Open University Open Education Resource (242 and 62.9%) and African Virtual University (231 and 60.0%). The likes of OER Commons (201 and 52.2% used), Education Resources Information Center (ERIC) (203 and 52.7% used), Coursera (196 and 50.9% used) and Virtual library (193 and 50.1% used) falls in the average.

However, MERLOT II (115 and 29.9% used) and OpenStax CNX (115 and 29.9% used) both records the lowest frequency and percentage used. Others with very low frequency and percentage used are, MIT Open Courseware (116 and 30.1% used), Open Course Library (129 and 33.5% used), Cuny Academy (129 and 33.5% used), Lumen learning (133 and 34.5% used) and Covenant University (145 and 37.7% used). From the survey instrument other OER sites students claimed to have used includes, Academia, Quora, Science Direct, Investopedia, Google, Pdf drive, Manchester University e-library, Management study guide, Alison online courses and Lexisnexis. In summary, it can be concluded from the table that high percentage of the respondents

do not make use of many of the listed OER sites as it has a higher cumulative frequency count of 5314 and percentage of 53.1 while frequency of used is 4696 with percentage of 46.9.

**Research Question Two: *What is the level of utilization of OER sites for learning among Undergraduates***

**Table 5:**  
**Mean and Rank Order analysis of Undergraduates based on the level of Utilization of OER for learning**

S/N	Questionnaire Items	Mean ( $\bar{x}$ )	Rank Order
1.	I download OER materials for learning and research purposes	3.00	2 <sup>nd</sup>
2.	I make use OERs to supplement my learning	3.06	1 <sup>st</sup>
3.	I use Slideshare for learning purposes	2.86	5 <sup>th</sup>
4.	I make use of National Open University Open Educational Resource to supplement my learning process	2.74	8 <sup>th</sup>
5.	Google scholar resources helps to enrich my research reports	2.90	3 <sup>rd</sup>
6.	OER helps to complete my assignments	2.70	9 <sup>th</sup>
7.	OER enable me to prepare for my tests and exams	2.85	6 <sup>th</sup>
8.	The use of OER help me to learn from other learned scholars	2.89	4 <sup>th</sup>
9.	OER enables me to get access to quality materials	2.82	7 <sup>th</sup>
10	I make use of OER for other purposes	2.30	10 <sup>th</sup>
<b>Grand Mean (<math>\bar{x}</math>)</b>		<b>2.81</b>	

Table 5 indicates that the mean of Undergraduates based on the level of utilization of OER for learning. Using a modified Likert 4-point Likert scale of a 2.50 benchmark, the table revealed that all the items were above the benchmark except for item 10 which sought to check if undergraduate make use of OER for other purposes with a mean score of 2.30. Item 2 which sought to know if undergraduates make use of OERs to supplement their learning process has the highest mean of 3.06 with a rank order of 1<sup>st</sup> and it is followed by item 1 which asked undergraduates if they download OER materials for learning and research purposes has a mean score of 3.00 with a rank order of 2<sup>nd</sup>. The grand mean score for undergraduates' use of OER for learning is 2.81. Using a decision rule of: low (1-2), average (2-3) and high (3-4), hence it can be concluded that grand mean score of 2.81 which falls between 2 – 3 for level of utilization of OERs for learning by undergraduates is average.

**Hypothesis 1:**

**H<sub>01</sub>: *there is no significance differences between male and female undergraduates' utilization of OER for learning***

**Table 6:**  
**t-test Analysis of Male and Female Undergraduates' Utilization of OER for learning**

Gender	N	$\bar{x}$	SD	Df	t	Sig(2-tailed)	Remark
Male	183	2.92	.79	383	2.34	.02	Rejected
Female	202	2.72	.85				

Table 6 revealed that there was a significance difference between male and female in their use of OER for learning. This is seen in the analysis of the hypothesis tested df (383), t = 2.34, p = 0.02. Thus, the null hypothesis which states that “there is no significance differences between male and female undergraduates' use of OER for learning in universities in Kwara State” was rejected. It was revealed that male undergraduates with a mean score of 2.92 make use of Open Educational Resources more than the female undergraduates that has a mean score of 2.72.



**Hypothesis 2:**

**H<sub>02</sub>: there are no significance differences among undergraduates based on area of specialization in their use of OER for learning**

**Table 7:**

**Analysis of Variance of Undergraduates' Utilization of OER for Learning based on Area of Specialization**

Groups	Sum of Squares	df	Mean Square	F	Sig.
<b>Between Groups</b>	7.30	2	3.65	5.52	.004
<b>Within Groups</b>	252.67	382	.66		
<b>Total</b>	<b>259.97</b>	<b>384</b>			

Table 7 showed a significance differences in undergraduates' use of OER based on area of specialization. Thus,  $F(2, 382) = 5.52$   $p = 0.004$ ). This means that the null hypothesis was rejected because the significance value of 0.004 is less than the alpha value 0.05. From the table, it can be deduced that there is variation in use of OER based on area of specialization and to further examine the differences, a Duncan' Multiple Range Test was used.

**Table 8:**

**Duncan Multiple Range Test showing the Magnitude of Differences in Undergraduates' Utilization of OER for Learning based on Area of Specialization**

Area of Specialization	Mean ( $\bar{x}$ )	Number of samples	Group	Duncan's Grouping
Natural Science	2.74	125	1	A
Management Science	3.00	133	2	B
Humanities and Social Science	2.69	127	3	A

Table 8 indicated that the magnitude of differences in undergraduates' use of OER for learning based on area of specialization. Making inference from table 8, it is revealed that Management Sciences have a slightly higher mean than Natural Sciences and Humanities and Social Sciences. This means that undergraduates from Management sciences make use of OERs more than the other two Area of specialization sampled.

**Discussions**

This study investigated undergraduates' utilization of Open Educational Resources for learning in universities in Kwara State. The commonly used Open Educational Resources sites for learning among undergraduates were investigated, some of the commonly used OERs were listed and from the data gathered and analyzed, it was revealed that majority of undergraduates have not used many of the sites. This is in line with findings from (Akomolafe & Olajire, 2014; Nwana, Egbe, & Ugwuda, 2017). Akomolafe & Olajire, (2014), revealed that OER have not really been utilized by students especially in the developing Nations. Also, Nwana, Egbe, and Ugwuda, (2017) revealed a low utilization of OER among students despite their high level of its awareness. However, from the analyzed data, it can be deduced that many of the undergraduates have made use of Wikipedia as it has the highest percentage of use. Others OERs sites commonly used with high percentages are Google Scholar, Slideshare, National Open University Open Educational Resources and African Virtual University.

The level of utilization of OER among undergraduates was determined, from the data gathered and analyzed it was revealed that the level of utilization of OER among undergraduate is average. It was gathered that undergraduates make use of OERs mostly for learning and research purposes. Also, some agreed to the use of OER to enhance their preparation for exams and to learn from other learned scholars. This conforms with Cooney, (2017). Cooney, (2017) revealed that students expressed their satisfaction in the use of OER compared to traditional textbooks as it allows for portability and easy access anytime and anywhere. This has led to more frequent use of OER for learning.

The influence of undergraduates' gender on the utilization of OER was determined. From the analyzed data, it was deduced that there was a significance difference between male and female in their use of OER for learning. It showed that male undergraduates utilize OERs more than female undergraduates. This conforms with (Yusuf & Balogun, 2011; Bassi and Camble, 2011; Achampong, 2012; Akinlade, 2014). Finding from these studies revealed a gender bias in the use of OER as male children enjoy the luxury of attending schools more than the

female children who are expected to stay at home and help the mother. Thus, male children may have been more exposed to OER use due to this advantage.

Influence of area of specialization on the utilization of OER by undergraduates was also investigated. From the analyzed data, it was revealed that there was a significance differences among undergraduates based on area of specialization. Further analysis showed that Management sciences undergraduates make use of OERs more than the other area of specializations (Natural sciences & Humanities and Social Sciences). This conforms with Tunkun Ahmad, Nordin, and Bello, (2013), who stated that area of specialization have a significant influence on undergraduates adoption and use of e-resources. Students who are enrolled in courses that requires high ICT skills would tend to be familiar with the use of e-resources more than those that are enrolled in courses that does not require same level of skills.

### Conclusion

This finding revealed a low awareness of majority of highlighted commonly used open educational resources among undergraduates which has led to the average use of these open educational resources. Thus, comparing the percentage of use and not used, it can be concluded that that the rate of use of OERs is still minimal and this can be improved on. This problem may have been down to low awareness of the sites as some of the respondents have claimed. Others listed some of the OER site they have used and these include: Quora, Academia, Investopedia, PDF drive, Alison online course and so on. Male children may have been more exposed to OER use due to this advantage. In addition, it was also revealed in the study that there was significance difference between male and female undergraduates based on their utilization of Open Educational Resources for learning. E-resources have become indispensable in learning due to its availability and ease of use. Through the use of ICTs such as mobile phones, tablets and laptops, learners have the opportunity to explore ocean of information and this help to improve the quality of knowledge acquired and also quality of conducted studies.

### Limitation of Findings

The following limitations were observed during the course carrying out the study: the study is limited to only three Universities in Kwara State and should not be used to generalize utilization of students from other universities not used. The study focuses only on utilization and attitude. The findings of this study should not be used to make conclusions on other area of specialization not used. The study was only conducted on 398 respondents across the three universities. Some of the respondents had to be persuaded to fill the survey instrument. Thus, the findings from this study may not be generalized to other undergraduates in other states in Nigeria, Africa and around the globe.

### Recommendations

Based on the findings of this study, the following recommendations were made: Undergraduates should be encouraged by their lecturers to use Open Educational Resources because of the numerous benefits it possesses towards learning and research purposes; Institutions should endeavor to expose their students to paid Open Resources Sites through faculties or departments to improve its level of Utilization; and institutions could also create their own repository where conducted researches within the institution can be uploaded by various departments. Students and another user would benefit from it.

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