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ASSESSMENT OF STUDENTS' AWARENESS AND UTILISATION OF OPEN EDUCATIONAL RESOURCES IN EDUCATION IN SELECTED NIGERIAN UNIVERSITIES

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Abstract
This research examined the level of students' awareness, utilisation and challenges of using open educational resources (OERs) for learning in Nigerian universities. The descriptive survey research design was adopted for the study. Multi-stage sampling technique was used to select two (2) universities (both federal and state-owned) that are running open and distance learning programmes in each of the six (6) geographical zones of Nigeria, and to select a total of two thousand nine hundred and eight-seven (2,987 students). To guide the study, three research questions were raised and answered, while three hypotheses were formulated and tested at 0.05 level of significance. Data obtained were analysed using descriptive statistics of mean, standard deviation and inferential statistics of ANOVA. The main structured research questionnaire used in the study was titled: "Student's Use of OERs Questionnaire" (SUOER; r=0.78). The findings revealed that students had a high level of awareness ($\pi = 2.92; SD = 1.02$) of open educational resources for learning and also aware of the effect ($\pi = 2.58; SD = 0.98$) of the use of OERs on their academic achievements also with a range of identified challenges of the proper use of OERs for education. Findings also established significant institutional affiliation differences in the levels of students' awareness ($F_{(11,2986)} = 14.15$; $p = 0.00 < 0.05$), perceived effect of the use of OERs on academic achievements ($F_{(11,2986)} = 32.97$; $p = 0.00 < 0.05$) and perceived challenges ($F_{(11,2986)} = 15.85$; $p = 0.00 < 0.05$) towards the utilisation of OERs for education. Implications to meeting the global challenges were discussed. It was recommended among others that

modalities to provide free access to data within the campus environments needed to be worked out for the students.

Keywords: Students, OERs, Awareness, Readiness, OERs utilisation

Introduction

Advances in technology worldwide have made it possible for hundreds of thousands of new resources to be published each day on the Internet. Therefore, the world has changed dramatically and the consequent significant impact on education, both in the methods of learning and in the methods of teaching cannot be over-emphasised. Among the consequent impact is the introduction of Open Educational Resources (OERs) which opens and freely gives access to various course contents in many educational programmes to educators as well as learners. OERs seem to have the potential to change the educational landscape on a global scale. Open educational resources (OERs) are teaching and freely available learning materials, openly licensed and housed in platforms known as repositories. Repositories host and facilitate access to the housed materials as resources that are meant for teaching and learning virtually in all modes of education as an outlet of open education practices. OERs include full courses, course materials, modules, textbooks, journals, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge. OERs are important learning materials with the potential to facilitate the expansion of learning worldwide.

Today, several teachers teach and learners learn either at a distance or in conventional institutions because of different innovation, experimentation and the use of technology to provide learning opportunities for a large number of people to have access to it. There is also a lot of research and literature that has developed to address various issues that emanate from its existence and availability. Janani (2017) stated that OERs have the potential to change the educational landscape on a global scale, particularly that of developing nations (Richer and& McPherson, 2012) by offering access to high-quality educational resources without cost (Moore, 2013) and despite a poorly developed educational infrastructure (Richer and McPherson, 2012). At the same time the literature revealed that while open educational resources are becoming increasingly available, there are questions

related to students' perception and effectiveness of the materials. There is a paucity of findings on students' awareness, readiness, and utilisation of OERs materials with a focus on open and distance learning institutions in Nigeria. This study is a humble beginning in this direction. It is against this background that the researchers assessed the level of students' awareness and proper use of OERs in their learning activities.

Statement of the Problem

Despite the large number of available OERs for the teaching and learning, there is no research evidence that students are aware of and use such educational resources in education. This particular educational innovation/development is an avenue that creates the opportunity to openly have access to educational content and effective pedagogical models. Although, such development and inventions always get to the developing countries late, the onus on the people of the developing world is to key into it and derive benefits such portend for their environments. There is a need to investigate the effect of OERs on the students' academic achievements and its consequent challenges that faced the students. It is against this background that the study examine the level of students' awareness, the extent of utilisation and encumbrances in OERs accessibility in Nigerian universities.

Objectives of the Study

The general objectives of this study are to find out the level of awareness and extent of OERs usage and their roles among the students in higher institutions in Nigeria. Specific objectives of the study include to:

(a) establish the level of awareness of students' use of OERs for learning.
(b) ascertain the effects of the use of OERs on students' academic achievements.
(c) Find out the challenges of students towards the utilisation of OER for learning.

Research Questions

The following research questions guided this study:

(a) What is the level of student's awareness of the use of OERs for learning?

(b) What are the effects of the use of OERs on students' academic achievements?

(a) What are the students' perceived challenges towards the utilisation of OERs for teaching?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

Ho_1: There is no significant institutional affiliation difference in the extent of students' awareness of open educational resources for teaching.

Ho_2: There is no significant institutional affiliation difference in the level of student's perception of the use of OERs on students' academic achievement.

Ho_3: There is no significant institutional affiliation difference in students' perceived challenges towards the utilisation of OER for teaching.

Methodology

The descriptive survey research design was adopted for the study to establish the level of students' awareness, readiness, utilisation and challenges of using open education resources (OERs) for learning in Nigerian universities. The population of the study consisted of all students of federal and state dual mode and single mode universities across the federation in Nigeria. Multi-stage sampling technique was used to select two (2) universities (both federal and state-owned) that are running open and distance learning programmes in each of the six (6) geographical zones of Nigeria, and to select a total of 2,987 students, made up of 2040 undergraduate and 947 postgraduate students across 12 faculties. To guide the study, three research questions were raised and three hypotheses were formulated and tested at 0.05 level of significance.

The structured research questionnaire used in the study was named: Students' Use of OERs Questionnaire (SUOERQ). The "SUOERQ" questionnaire was made up of two sections (A and B).

Section A was made up of demographic variables of the respondents such as Institutional Affiliation, Faculty, Department, Level of Programme, and Gender. while Section B contained four different sub-sections with 55 questionnaire items/statements that related to awareness, readiness, utilisation and challenges of the OERs for education. Each of the items has a four-point modified Likert scale ranging from 4– 1. The validity of the questionnaire was established by experts in the areas of Open and Distance Learning and Tests and Measurement. The reliability of the instrument was ensured through test-retest reliability of two weeks intervals after the first administration. The coefficient value was 0.75. The Students' Use of OERs Questionnaire (TSUOERQ) was administered to the sampled students of the selected universities through the google form since the academic staff union of the universities was on industrial action. The collected data were analysed using descriptive statistics of mean and standard deviation for the research questions while inferential statistical tools of ANOVA was used to test the six null hypotheses.

Results

Research Question 1:

What is the students' level of awareness of open educational resources for learning?

Table 1: Descriptive Statistics of Students' Level of Awareness of Open Educational Resources for Learning

		Freq.	%	Mean	Std. Dev.
OER means no need to ask for further permission to use the resources	NA	394	13.20	2.67	1.01
	NFA	991	33.20		
	A	797	26.70		
	FA	805	27.00		
	Total	2987	100.00		
OER means the resources are openly licensed	NA	523	17.50	2.98	1.36
	NFA	397	13.30		
	A	698	23.40		
	FA	1369	45.80		
	Total	2987	100.00		
OER means the learning resources is freely available to be used by anyone	NA	374	12.50	2.99	1.01
	NFA	421	14.10		

	A	1067	35.70		
	FA	1125	37.70		
	Total	2987	100.00		
OERs are digital and non-digital materials that can be reused for teaching-learning and research	NA	247	8.30	3.20	0.92
	NFA	273	9.10		
	A	1097	36.70		
	FA	1370	45.90		
	Total	2987	100.00		
Using educational resources increases my profile amongst peers and others	NA	347	11.60	3.10	1.01
	NFA	350	11.70		
	A	945	31.60		
	FA	1345	45.00		
	Total	2987	100.00		
OER helps me to widen my knowledge in my subject areas	NA	397	13.30	3.02	1.04
	NFA	397	13.30		
	A	948	31.70		
	FA	1245	41.70		
	Total	2987	100.00		
I can use OER easily due to its usability	NA	199	6.70	2.83	0.87
	NFA	820	27.50		
	A	1245	41.70		
	FA	723	24.20		
	Total	2987	100.00		
I use OER at an available and reduced cost	NA	348	11.70	2.59	0.95
	NFA	1168	39.10		
	A	847	28.40		
	FA	624	20.90		
	Total	2987	100.00		
I believe that OERs are good for students as it improves their learning	NA	273	9.10	2.95	0.99
	NFA	741	24.80		
	A	845	28.30		
	FA	1128	37.80		
	Total	2987	100.00		
OER provides access to the best materials and teachers	NA	445	14.90	2.85	1.01
	NFA	469	15.70		
	A	1176	39.40		
	FA	897	30.00		
	Total	2987	100.00		
GRAND MEAN and STANDARD DEVIATION				2.92	1.02

From table 1, 394 (13.20%) of the students were not aware that OERs mean no need to ask for further permission to use the resources, and 991 (33.20%) were not fully aware that OERs mean no need to ask for further permission to use the resources, 797 (26.70%) were aware that OERs mean no need to ask for further permission to use the resources, while the remaining 805 (27.00%) of the students were fully aware that OERs mean no need to ask for further permission to use the resources.
About 523 (17.50%) of the students were not aware that OERs mean the resources are openly licensed, 397 (13.30%) were not fully aware that OERs mean the resources are openly licensed, 698 (23.40%) were aware that OERs mean the resources are openly licensed, while the remaining 1369 (45.80%) of the students were fully aware that OERs mean the resources are openly licensed.

Only 374 (12.50%) of the students were not aware that OERs mean the learning resources is freely available to be used by anyone, 421 (14.10%) were not fully aware that OERs mean the learning resources is freely available to be used by anyone, 1067 (35.70%) were aware that OERs mean the learning resources is freely available to be used by anyone while the remaining 1125 (37.70%) of the students were fully aware that OERs mean the learning resources are freely available to be used by anyone.

A small fraction of 247 (8.30%) of the students were not aware that OERs are digital and non-digital materials that can be reused for teaching-learning and research, 273 (9.10%) were not fully aware that OERs are digital and non-digital materials that can be reused for teaching-learning and research, 1097 (36.70%) were aware that OERs are digital and non-digital materials that can be reused for teaching-learning and research, while the remaining 1370 (45.90%) of the students were fully aware that OERs are digital and non-digital materials that can be reused for teaching-learning and research.
Just 347 (11.60%) of the students were not aware that using educational resources increases their profile amongst peers and others, 350 (11.70%) were not fully aware that using educational resources increases their profile amongst peers and others, 945 (31.60%) were aware that using of educational resources increase their profile amongst peers and others, while the remaining 1345 (45.00%) of the students were fully aware that using of educational resources increase their profile amongst peers and others.

Also, 397 (13.30%) of the students were not aware that OERs help them to widen their knowledge in their subject areas, 397 (13.30%) were not fully aware that OERs help them to widen their knowledge in their subject areas, 948 (31.70%) were aware that OERs help them to widen their knowledge in their subject areas, while the remaining 1245 (41.70%) of the students were fully aware that OER helps them to widen their knowledge in their subject areas.

A small fraction of 199 (6.70%) of the students were not aware that they can use OER easily due to its usability, 820 (27.50%) were not fully aware that they can use OER easily due to its usability, 1245 (41.70%) were aware that they can use OERs easily due to its usability, while the remaining 723 (24.20%) of the students were fully aware that they can use OERs easily due to its usability. 348 (11.70%) of the students were not aware that they use OER at an available and reduced cost, 1168 (39.10%) were not fully aware that they use OER at an available and reduced cost, 847 (28.40%) were aware that they use OER at an available and reduced cost while the remaining 624 (20.90%) of the students were fully aware that they use OER at an available and reduced cost.

Only, 273 (9.10%) of the students were not aware that OERs are good for students as it improves their learning, 741 (24.80%) were not fully aware that OERs are good for students as improve their learning, 845 (28.30%) were aware that OERs are good for students as it improves their learning while the remaining 1128 (37.80%) of the students were fully aware that OERs are good for students as it improved their learning.

Also, 445 (14.90%) of the students were not aware that OER provided access to the best materials and teachers, 469 (15.70%) were not fully aware that OER provided access to the best materials and teachers, 1176 (39.40%) were aware that OER providedaccess to the best materials and teachers, while the remaining 897 (30.00%) of the students were fully aware that OER provided access to the best materials and teachers. Averagely, students were aware (Grand mean = 2.92) of the proper use of OERs for education.

Research Question 2: What are the effects of the use of OERs on students' academic achievements?

Table 2: Descriptive Statistics of the Effects of the use of OERs on Students' Academic Achievements

		Freq.	%	Mean	Std. Dev.
My usage of OERs has improved my academic results	SD	496	16.60	2.84	1.08
	D	523	17.50		
	A	926	31.00		
	SA	1042	34.90		
	Total	2987	100.00		
OERs usage has negatively impacted my academic results	SD	1318	44.10	1.78	0.86
	D	1172	39.20		
	A	322	10.80		
	SA	175	5.90		
	Total	2987	100.00		
I regret my late awareness of the availability of OERs as a way of improving my academic achievement	SD	445	14.90	2.95	1.07
	D	446	14.90		
	A	924	30.90		
	SA	1172	39.20		
	Total	2987	100.00		
Academic achievement has nothing to do with accessibility to OERs	SD	1569	52.50	1.72	0.93
	D	922	30.90		
	A	249	8.30		
	SA	247	8.30		
	Total	2987	100.00		
OERs awareness provides one opportunity to prepare ahead of the class	SD	351	11.80	3.07	1.07
	D	547	18.30		
	A	620	20.80		
	SA	1469	49.20		
	Total	2987	100.00		
I can successfully study and pass my courses independent of my teachers' intervention with the use of OERs	SD	1097	36.70	1.98	0.97
	D	1167	39.10		
	A	400	13.40		
	SA	323	10.80		
	Total	2987	100.00		
OERs provide a sure alternative to having higher grades/ scores for students	SD	250	8.40	3.04	0.97
	D	595	19.90		
	A	925	31.00		
	SA	1217	40.70		
	Total	2987	100.00		
Enhancement of higher scores in my examination compensates for the stress of usage of OERs	SD	298	10.00	2.96	0.98
	D	597	20.00		
	A	1021	34.20		
	SA	1071	35.90		

	Total	2987	100.00		
I am better informed as a student about the usage of OERs	SD	346	11.60	2.55	0.94
	D	1248	41.80		
	A	801	26.80		
	SA	592	19.80		
	Total	2987	100.00		
I recommend OERs as a means of improving students' academic performance generally	SD	221	7.40	2.92	0.93
	D	747	25.00		
	A	1070	35.80		
	SA	949	31.80		
	Total	2987	100.00		
GRAND MEAN and STANDARD DEVIATION				2.58	0.98

From table 2, larger number of students 1968 (65.90%) with mean and standard deviation of 2.84 and 1.08 respectively agreed to the fact that their usage of OERs improved their academic results, 2490 (83.30%) with mean and standard deviation of 1.78 and 0.86 respectively disagreed to the fact that OERs usage has negatively impacted their academic results, 2096 (70.10%) with mean and standard deviation of 2.95 and 1.07 respectively agreed to the fact that they regretted their late awareness of availability of OERs as a way of improving their academic achievement, 2491 (83.40%) with mean and standard deviation of 1.72 and 0.93 respectively disagreed to the fact that academic achievement has nothing to do with accessibility to OERs, 2089 (70.00%) with mean and standard deviation of 3.07 and 1.07 respectively agreed to the fact that OERs awareness provided one opportunity to prepare ahead of the class, 2264 (75.80%) with mean and standard deviation of 1.98 and 0.97 respectively disagreed that they can successfully study and pass their courses independent of their teachers' intervention with the use of OERs, 2142 (71.70%) with mean and standard deviation of 3.04 and 0.97 respectively agreed to the fact that OERs provided a sure alternative to having higher grades/ scores for students, 2092 (70.10%) with mean and standard deviation of 2.96 and 0.98 respectively agreed to the fact that enhancement of higher scores in their examination compensates for the stress of usage of OERs, 1594 (53.40%) with mean and standard deviation of 2.55 and 0.94 respectively disagreed to the fact that they were better informed as students with the usage of OERs, while 2019 (67.60%) with mean and standard deviation of 2.92 and 0.93 respectively agreed to the fact

that they recommend OERs as a means of improving students' academic performance generally.

Research Question 3:
What are the students' perceived challenges of using OERs?

Table 3: Descriptive Statistics of Students' Perceived Challenges of Using OERs

	Freq.	%	Mean	Std. Dev.	
Cost of data and other consumables	SD	199	6.70	3.05	0.90
	D	544	18.20		
	A	1145	38.30		
	SA	1099	36.80		
	Total	2987	100.00		
Bandwidth / Internet Facilities	SD	373	12.50	2.69	0.87
	D	621	20.80		
	A	1545	51.70		
	SA	448	15.00		
	Total	2987	100.00		
Unavailability of computer systems/laptops	SD	398	13.30	2.98	1.04
	D	473	15.80		
	A	944	31.60		
	SA	1172	39.20		
	Total	2987	100.00		
Lack of enough time	SD	1215	40.70	1.93	0.99
	D	1119	37.50		
	A	303	10.10		
	SA	350	11.70		
	Total	2987	100.00		
Unawareness of OERs' availability	SD	1440	48.20	1.75	0.91
	D	1093	36.60		
	A	205	6.90		
	SA	249	8.30		
	Total	2987	100.00		
Lack of adequate competencies in searching for OERs	SD	346	11.60	2.99	1.03
	D	549	18.40		
	A	870	29.10		
	SA	1222	40.90		
	Total	2987	100.00		
Lack of encouragement from teachers	SD	1564	52.40	1.69	0.88
	D	998	33.40		

	A	226	7.60		
	SA	199	6.70		
	Total	2987	100.00		
No provision for enough systems in the University Libraries	SD	524	17.50	2.91	1.11
	D	423	14.20		
	A	848	28.40		
	SA	1192	39.90		
	Total	2987	100.00		
Incessant power supply	SD	300	10.00	3.28	1.03
	D	371	12.40		
	A	521	17.40		
	SA	1795	60.10		
	Total	2987	100.00		
I do not face any challenge(s) in using OERs	SD	444	14.90	2.92	1.11
	D	621	20.80		
	A	648	21.70		
	SA	1274	42.70		
	Total	2987	100.00		
GRAND MEAN and STANDARD DEVIATION		2.62	0.99		

From table 3, larger number of students 2244 (75.10%) with mean and standard deviation of 3.05 and 0.90 respectively agreed to the fact that cost of data and other consumables posed significant challenge to the use of OERs, 1993 (66.70%) with mean and standard deviation of 2.69 and 0.87 respectively agreed to the fact that bandwidth / internet facilities posed significant challenge to the use of OERs, 2116 (70.80%) with mean and standard deviation of 2.98 and 1.04 respectively agreed that unavailability of computer system/laptops posed significant challenge to the use of OERs, 2334 (78.20%) with mean and standard deviation of 1.93 and 0.99 respectively disagreed that lack of enough time posed significant challenge to the use of OERs, 2533 (84.80%) with mean and standard deviation of 1.75 and 0.91 respectively disagreed to the fact that unawareness of OERs' availability posed significant challenge to the use of OERs, 2095 (70.00%) with mean and standard deviation of 2.99 and 1.03 respectively agreed to the fact that lack of adequate competences of searching for OERs posed significant challenge to the use of OERs, 2562 (85.80%) with mean and standard deviation of 1.69 and 0.88 respectively agreed to the fact that lack of encouragement from teachers posed significant challenge to the use of OERs, 2040 (68.30%) with mean and standard deviation of 2.91 and

1.11 respectively agreed to the fact that no provision for enough systems in the university libraries posed significant challenge to the use of OERs, 2316 (77.50%) with mean and standard deviation of 3.28 and 1.03 respectively agreed to the fact that incessant power supply posed significant challenge to the use of OERs, 1922 (64.40%) with mean and standard deviation of 2.92 and 1.11 respectively agreed to the fact that they do not face any challenge in using OERs.

Testing of Hypotheses

H_{01} There is no significant institutional affiliation difference in students' level of awareness of open educational resources for learning.

H_{02} There is no significant institutional affiliation difference in students' perception of the effects of the use of OERs on students' academic achievements.

H_{03} There is no significant institutional affiliation difference in students' perceived challenges of using OERs.

Table 4: Descriptive Statistics of Students' Variables

		N	Mean	Std. Dev.	Std. Err.
Students' awareness of OER for Learning	SW FEDERAL	254	29.25	2.44	*0.15
	SW STATE	253	29.22	2.88	0.18
	SE FEDERAL	246	31.08	2.64	0.17
	SE STATE	242	29.13	2.49	0.16
	SS FEDERAL	256	28.76	2.86	0.18
	SS STATE	242	29.52	2.67	0.17
	NW FEDERAL	246	29.09	4.49	0.29
	NW STATE	242	28.08	4.08	0.26
	NE FEDERAL	265	29.83	2.48	0.15
	NE STATE	261	28.49	4.55	0.28
	NC FEDERAL	240	28.40	3.51	0.23
	NC STATE	240	29.10	2.85	0.18
	Total	2987	29.17	3.33	0.06
Students' Achievement and OER	SW FEDERAL	254	24.58	3.51	0.22
	SW STATE	253	27.81	2.17	0.14
	SE FEDERAL	246	24.24	2.12	0.13
	SE STATE	242	26.77	3.58	0.23
	SS FEDERAL	256	26.21	3.38	0.21
	SS STATE	242	26.77	2.97	0.19
	NW FEDERAL	246	25.90	1.54	0.10

	NW STATE	242	25.10	1.64	0.11
	NE FEDERAL	265	25.90	2.65	0.16
	NE STATE	261	26.27	3.66	0.23
	NC FEDERAL	240	24.30	4.25	0.27
	NC STATE	240	25.90	2.92	0.19
	Total	2987	25.82	3.15	0.06
Students' Challenges towards Utilization of OER for Education	SW FEDERAL	254	26.72	3.08	0.19
	SW STATE	253	26.12	1.23	0.08
	SE FEDERAL	246	25.88	3.23	0.21
	SE STATE	242	25.90	2.54	0.16
	SS FEDERAL	256	26.98	3.19	0.20
	SS STATE	242	25.82	3.22	0.21
	NW FEDERAL	246	24.57	3.34	0.21
	NW STATE	242	26.02	3.34	0.22
	NE FEDERAL	265	27.09	3.01	0.18
	NE STATE	261	26.39	3.83	0.24
	NC FEDERAL	240	25.30	3.26	0.21
	NC STATE	240	27.20	2.57	0.17
	Total	2987	26.18	3.14	0.06

Table 5: ANOVA of Students' Variables on Institutional Affiliation

		Sum of Squares	Df	Mean Square	F	Sig.
Students' awareness of OER for Learning	Between Groups	1645.01	11	149.55	14.15	0.00
	Within Groups	31447.30	2975	10.57		
	Total	33092.31	2986			
Students' Achievement and OER	Between Groups	3224.00	11	293.09	32.97	0.00
	Within Groups	26445.05	2975	8.89		
	Total	29669.02	2986			
Students' Challenges towards Utilization of OER for Education	Between Groups	1624.90	11	147.72	15.85	0.00
	Within Groups	27731.06	2975	9.32		
	Total	29355.96	2986			

Results in tables 4 and 5 show that there were statistically significant differences in students' level of awareness of open educational resources for learning ($f_{(11,2986)} = 14.15$; $p = 0.00 < 0.05$); students'

perception of the effects of the use of OERs on students' academic achievements ($f_{(11,2986)} = 32.97$; $p = 0.00 < 0.05$) and students' perceived challenges of using OERs ($f_{(11,2986)} = 15.85$; $p = 0.00 < 0.05$) based on institutional affiliation. The mean and standard deviation values also showed statistically significant differences in students' level of awareness of open educational resources for learning, student's perception of the effects of the use of OERs on students' academic achievements and students' perceived challenges of using OERs. Therefore, the null hypotheses that say that there is no significant institutional affiliation difference in students' level of awareness of open educational resources for learning; there is no significant institutional affiliation difference in students' perception of the effects of the use of OERs on students' academic achievements and there is no significant institutional affiliation difference in students' perceived challenges of using OERs were not accepted.

To determine the actual sources of significant differences observed in table 5, the Scheffe post hoc test was employed and the result is presented in table 6. Results in able 6, showed that the significant differences in students' level of awareness of open education resources for learning; students' perception of the effects of the use of OERs on students' academic achievements and students' perceived challenges of using OERs was as a result of significant difference between the institutions as shown on the table (as an appendix).

Discussion of Findings

The results from data analysis on students' level of awareness of OERs for learning showed that students were aware of the proper use of OERs for education. The current research demonstrates that two third of students claimed to have gotten links to the best materials and teachers that helped to widen their knowledge in their subject areas. This implied that students had a clear understanding of OER as an open resource that needed to be accessible, minimized restrictions, fee-free and reusability. The finding was consistent with the finding of Nagaiah and Thanuskodi (2021) in their study on the utilisation of open educational resources (OERs) among college students affiliated with Alagappa University in India who found that students are aware and

received free access to online learning materials and at the same time supported direct online learning.

The findings on the effects of the use of OERs on students' academic achievements revealed that students agreed that their usage of OERs has improved their academic results, and expressed their displeasure with late awareness of the availability of OERs as a way of improving their academic achievement. The findings could be a result of their exposure to social networking which became popular for some years now. However, the students exhibited a slight dispersion regarding the awareness and proper use of OERs that they were better informed about the usage of OERs. These findings conformed to the earlier finding of Harsasi (2015) that the use of OER was perceived by students as something interesting because it was new for them and could help them to have a better understanding of a topic.

The results on the students' perceived challenges of using OERs revealed that students agreed that; the cost of data, unavailability of computer systems/laptops, and incessant power supply posed significant challenges to the use of OERs. The findings of this study are in support of the Hewlett Foundation 2011 White Paper on OERs with the summarized challenges facing OERs mainstream adoption in educational institutions as a limited supply of OERs materials, incompatible policies and lack of incentives for staff, lack of standards and limited proof of effectiveness.

Testing of Hypotheses

Findings in respect of hypotheses one and two revealed that there were statistically significant differences in students' level of awareness of OERs for learning ($F_{(11,2986)} = 14.15$; $p = 0.00 < 0.05$), and student's perception of the effects of the use of OERs on students' academic achievements ($F_{(11,2986)} = 32.97$; $p = 0.00 < 0.05$) based on institutional affiliation. The mean and standard deviation also showed statistically significant differences in students' level of awareness of OERs for learning and students' perception of the effects of the use of OERs on students' academic achievements. Therefore, the null hypotheses that state that there is no significant institutional affiliation difference in students' level of awareness of open educational resources for learning and there is no significant institutional affiliation difference in students' perception of the effects of the use of OERs on students' academic

achievements were not accepted. With the outcomes of these findings, one could draw a positive relationship between students' acknowledgement that their universities provided the official permanent unit with their positive assertive corresponding influence on their improved academic achievement across the sampled institutions. Also in line with the earlier finding is Hu, Li, Li, and Huang's (2015) study that was designed to examine 1239 Chinese college students' OERs usage and perceived barriers impacting OERs diffusion. The results showed that a significant number of university students have experienced OERs, but there are challenges involved with student, content, interface, and environment-related factors that impacted the rapid diffusion of OERs. This result corroborated the findings of Akomolafe et al. (2014), who in their study on the utilisation of OERs and quality assurance in universities in Nigeria found that ignorance of OERs online facilities, poor internet network, erratic electricity and unfamiliarity with OERs websites are significant challenges of using OERs among undergraduate students in South-western Nigeria. Also, Danmusa and Aliyu (2017) reported in their study that delays in internet connectivity, power outage and difficulties in locating relevant materials in browsing OERs are challenges students in colleges of education in Nigeria face using OERs.

The third hypothesis examined if there is a significant institutional affiliation difference in students' perceived challenges of using OERs. There were statistically significant institutional affiliation differences in students' perceived challenges of using OERs ($F_{(11,2986)} = 15.85$; $p = 0.00 < 0.05$). The mean and standard deviation values also showed statistically significant differences in students' perceived challenges of using OERs. Therefore, the null hypothesis that states that there is no significant institutional affiliation difference in students' perceived challenges using OERs for learning was not accepted. The finding buttressed the finding of Nagaiah, and Thanuskodi (2021) that the students are ready to adopt OERs but the content-related factor, internet-related factor, and environmental factors are not reliable to adopt OER, because they do not know the specific factors, students can learn if the organization contact the orientation programme and then consider how to progress with an OER for those factors. The findings were not in line with Arcebuche and Arcebuche's (2020) position on the students' perceived institutional affiliation challenges of using OERs

that the main reason as to why they refrained from using OERs was that they are not that knowledgeable as to where they can access such resources or internet speed to sustain the use of OERs.

Conclusion

This study contributed to our understanding of how university students perceived and utilized the available OERs as only this could justify the resources expended on their acquisition. There was the basis to conclude that several and varied factors abound testifying to it that students in Nigerian universities are at various degrees of awareness level, utilisation, and readiness to adopt OERs. The level of students readiness for, and awareness of OERs is very highly encouraging and could be further improved upon by attending to few prevailing challenges.

Recommendations

In line with the findings of this study, the following recommendations were made:

(i) The National Universities Commission may need to include availability, feasibility and use of the OERs as additional accreditation of programmes of the universities.

(ii) Modalities to provide free access to data within the campus environments need to be worked out for the students.

(iii) University students may need to be adopting instructional strategies that will encourage further usage of OERs across universities and faculties.

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