

Assessing the Utilization of Open Educational Resources in Delivering TVET Programmes in Nigerian Universities

by

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Abstract

In a bid to make educational resources available at no cost for an effective and sustainable teaching-learning process, the Nigeria Universities Commission provided Nigeria University System Open Educational Resources (NUSOER) for all Universities. This study therefore sought to assess the extent of the utilization of Open Educational Resources (OER) in delivering Technical Vocational Education Training (TVET) programmes in Universities. Two research questions and two hypotheses guided the study. The study adopted descriptive survey research design. The population for the study was 224 comprising of 150 lecturers and 74 instructors in the two Universities offering TVET programmes in Enugu State. No sampling was done as the population was of manageable size. A structured questionnaire of 31 items was used to elicit information from the respondents on four-point rating scale. The internal consistency of the instrument was computed using Cronbach Alpha reliability formula and it yielded a value of 0.86. The research questions were answered using mean while the null hypotheses were tested using t-test at 0.05 level of significance. The study revealed that TVET teachers utilize some OER to foster effective transmission of knowledge. However, it was found that the extent to which OER are utilized are still very low. The study therefore recommends that TVET teachers should be encouraged to utilize OER in their classroom in line with world best practices among others

Keywords: Nigeria Universities, Technical Vocational Education and Training Programmes, Open Educational Resources, Utilization

Introduction

The desire of Nigeria to equip her citizens with skills and knowledge necessary for a better socio-economic development of the nation is one of the major reasons for the establishment of Universities in Nigeria. University is a post-secondary educational training institution (Federal Republic of Nigeria (FRN), 2013). Ajayi and Oguntamu (2014) stated that, 'no country can grow beyond the degree of the education it offers' as well as manpower development which are the major factors that has characterised growth in the socio-economic status of Nigeria through university education. It is on these grounds that universities are established for the provision of

higher education in Nigeria. Higher education according to Omomia, Omomia and Babalola (2014) is the fulcrum for a sustainable national growth and development. The author further stated that for any nation to enjoy sustainable progress, the citizens must acquire the needed education for national development. United Nations Educational Scientific and Cultural Organization (UNESCO) (2005) stated that the higher education is the key to developing a sound economy in any nation. The goal of university education as stated in the National Policy on Education is to; contribute to national development through high level manpower training, provide accessible and affordable

quality learning opportunities in formal and informal education in response to the needs and interests of all Nigerians and reduce skill shortages through the production of skilled manpower relevant to the needs of the labour market among others (FRN, 2013).

The above stated goals were set out as part of the developmental needs of every individual in the society and in strict pursuance of these goals, universities have been mandated to ensure quality student intake, quality teaching and learning of all programmes as well as provision of high standards in facilities, services and resources for training programmes among others at both the undergraduate and post graduate levels respectively (FRN, 2013). Enahoro and Adeyinka (2013) stated that university as an institution provides training for manpower development and award degrees in different disciplines related to socioeconomic development. This implies that, Universities run specialized programmes that are necessary for the development of human capital needs for economic development and advancement of a nation. One of such programme that provides skills and knowledge in the University is Technical Vocational Education and Training (TVET) programmes.

Technical Vocational Education and Training (TVET) has continued to gain more global recognition. This is because of its viability in sprouting sustainable economic development in any country through equipping citizens with knowledge and skills necessary for starting or securing, sustaining, and advancing in the world of work leading to self-sustainability. TVET refers to those aspects of education process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various aspects of life (FRN, 2013). The United Nations Educational, Science and Cultural Organization (UNESCO) and International Centre for Technical and Vocational Education and Training (2012) stated that TVET is concerned with the acquisition of knowledge and skills for the world of work and national development. TVET in the context of this study refer to a formal and non-formal educational training programme in

Universities that a student receives which equips him or her with functional and relevant knowledge, skills and aptitudes necessary for creating/entering, sustaining and advancing in an occupation in different training areas.

There are different training areas available for TVET students to exploit in Universities depending on individual's interest and ability. These training areas are geared towards production of skilled manpower that will support the development of the Nations' economy (Akpotohwo, 2016). They include; Agricultural, Business, Computer, Industrial (Auto-Mechanics, Building, Electrical/Electronics, Metal-Work and Woodwork), Home-Economics and Entrepreneurial Trainings. These training areas are further broken down into different occupational trade areas as contained in the NPE document. They include; Auto Electrical Work, Auto Mechanical Work, Air Conditioning and Refrigeration, Electrical Installation and Maintenance Work, Radio, TV and Electronic Servicing, Block Laying, Brick Laying and Concrete Work, Painting and Decoration, Machine Woodworking, Carpentry and Joinery, Furniture Making, Upholstery, Catering Craft Practice, Garment Making, Cosmetology, Photography, Data processing, Store Keeping, GSM Maintenance and Repairs, Marketing among others (FRN, 2013). The delivery of the contents of these trades is structured to prepare trainees for direct entry into the world of work. Delivery in the context of this study refers to the teaching and learning of TVET programmes by TVET teachers and students respectively. This is because teaching cannot be said to have taken place if there is no learning. However, an effective teaching-learning transaction is easily achieved if the resources needed are available and accessible at no cost to both teachers and learners. This will lead to greater achievement and a successful teaching-learning process. It is in the light of this, that there has been a constant yearning for the use of Open Educational Resources (OER) in the delivery of TVET programmes in Nigeria Universities.

Open Educational Resources (OER) is a new approach to teaching and learning that is developing globally. Mossley (2013) affirmed

that an OER definition has continue to evolve in line with technological advancement globally. Pawlowski and Hoel (2012) defined OER as materials that are available for teaching and learning purposes at no cost to the users. According to UNESCO declaration in Paris in 2012, OER is any educational materials in any medium (digital or otherwise) that are made available to the public under an open licence policy at no cost for use, re-use, adaptation and adoption by the user. This implies that the use of OER is permissible without limitation. OER can be in any form either digital or non-digital. It includes materials such as digital learning resources, multimedia documents, software tools, simulations, animations, electronic textbooks, lesson plans, articles, printed books, journals, full courses, modules, instructional designs, streaming videos, tests, pictures and web links (Atkins, Brown, & Hammond, 2007; Pawlowski & Hoel, 2012). OER in the context of this study refers to web and non-web based tools that are freely available for use by TVET teachers in delivering TVET Programmes in the Universities.

TVET teachers in the Universities comprised of lecturers and instructors who are responsible for impartation of relevant knowledge and skills to students based on the curriculum. Olelewe, Nzeadibe, and Nzeadibe (2014) stated that impartation of knowledge to learners by teachers must be done in relation to learner's learning diversities ranging from interest, attitudes, aptitudes and experience. This impartation can be made much easier through the use of OER. This is because OER has a lot of distinct characteristics ranging from retain, reuse, revise, remix and redistribute under intellectual property license at no cost. These characteristics make OER unique in the educational process and have made case for its inclusion in the universities among other reasons. Hoosen (2012) stated that in a bid to maintain the standard of University education in the face of shortfall in government revenue which has drastically reduced allocation to education, OER has been adopted to help teachers and students get access to resources needed for teaching and learning. Wiley, Green and Soares, (2012) further noted that the drive to provide equal opportunities to citizens has

given rise to the educational resources that are freely available for people desirous of quality education. This implies that the quest for sustainability in University education is the hallmark of the inclusion of OER.

OER has wide range of importance and implications for sustainable University education in Nigeria and in a bid to make OER available to teachers and students in the Universities, National University Commission (NUC) established a website (www.nusoer.org) for Nigeria University System Open Education Resources (**NUSOER**) in August 17, 2017 which was made mandatory to be linked to all Universities nationwide. In line with this giant stride in education, most Universities including Enugu State Universities has made OER available on the homepage of their websites for teachers and students to access these resources for teaching and learning purposes. However, the extent to which TVET teachers in Universities make use of these availed resources is yet to be determined. It is therefore against this backdrop that this study aims at assessing the utilization of OER in the delivering of TVET Programmes in Nigeria Universities.

Statement of the Problem

There has been an increasing yearning for improvement and advancement in the quality of teaching and learning in tertiary institutions through adequate provision of necessary resources needed for effective teaching-learning process. This demand for access to relevant teaching and learning resources has brought about the emergence and inclusion of OER which has today paved the way for increase in access to teaching and learning resources at no cost to both teachers and students in line with global best practices, thus, improving the quality of education.

However, in spite of the integration and acceptance of the use of OER in the delivery of programmes in Universities, many TVET teachers and students still complain of inadequate teaching and learning resources needed for the smooth conveyance of knowledge and skills thus, hampering an effective teaching-learning transaction. This was observed during preliminary investigation by the researcher. TVET students further claimed that inadequate resources for learning

are the major factor responsible for their low achievement in TVET programmes. This is unconnected to the fact that OER are not readily available but its effective usage needs to be ascertained. It is therefore against this backdrop that this study was initiated to find out the extent to which TVET teachers make use of OER in the delivery of TVET programmes.

Purpose of the Study

The general purpose of this study was to assess the extent of the utilization of Open Educational Resources in the delivery of TVET programmes in Nigeria Universities. Specifically, the study sought to;

1. Identify the Open Educational Resources that are utilized in the delivery of TVET programmes
2. Determine the extent to which Open Educational Resources are utilized in the delivery of TVET programmes

Research Questions

The following research questions are posed to guide the study:

1. What are the Open Educational Resources that are utilized in the delivery of TVET programmes?
2. What is the extent to which Open Educational Resources are utilized in the delivery TVET programmes?

Hypotheses

The following null hypotheses were tested at 0.05%;

- i. There will be no significance difference in the mean responses of TVET lecturers and instructors on the Open Educational Resources that are utilized in the delivery of TVET programmes
- ii. Significant difference does not exist in the mean responses of TVET lecturers and instructors on the extent to which OER are utilized in the delivery of TVET programmes

Results

Table 1: Mean and t-test analysis of the Open Educational Resources that are Utilized in the Delivery of TVET Programmes

Item Statements	X	Decision	t-cal	Df	Sig.	H ₀
Video podcast	2.25	NU	.64	209	.53	NS

Methodology

The study adopted descriptive survey research design. Descriptive survey design was necessary as the study sought opinions of lecturers and instructors on the extent of utilization of Open Educational Resources in delivering TVET programmes in Nigeria Universities. The area of study was Enugu State, Nigeria; involving the Universities offering TVET programmes. The institutions include; Enugu State University of Science and Technology (ESUT) and University of Nigeria, Nsukka (UNN). The population for the study was 211; made up of 96 lecturers, 115 instructors. No sampling was done as the population was of a manageable size. The instrument used for the study was a structured questionnaire with two sections A & B. Section A elicited demographic information of the respondents while Section B had 38-item statements that sought information to answer research questions 1 and 2. The responses in section B were designed based on 4-point scale which ranges from 4 to 1. The responses to research question 1 comprised of the following - Highly Utilized (HU) = 4, Utilized (U) = 3, Not Utilized (NU) = 2 and Highly Not Utilized (HNU) = 1; while Research question 2 had responses of: Very High Extent (VHE) =4, High Extent (HE) =3, Low Extent (LE) =2 and Very Low Extent (VLE) =1. The questionnaire was face validated by three experts in the Faculty of Vocational and Technical Education, University of Nigeria, Nsukka. The research questions were answered using mean while the null hypothesis was tested using t-test at 0.05 level of significance. The data was analyzed using IBM Statistical Package for Social Sciences (SPSS). The decision rule was based on a mean benchmark of 2.50; where items with mean response of 2.50 and above implied utilized or agreed, while items with mean value below 2.50 was considered not utilized or disagreed.

Audio podcast	2.28	NU	1.63	209	.11	NS
Infographics	2.44	NU	.63	209	.54	NS
Learning Tools	2.85	U	.71	209	.49	NS
Ebooks	2.67	U	.56	209	.59	NS
Modules	2.54	U	1.03	209	.32	NS
Streaming videos	2.44	NU	.54	209	.59	NS
Textbooks	3.48	U	.84	209	.42	NS
Maps	2.42	NU	.76	209	.46	NS
Games	1.94	NU	.97	209	.34	NS
Images	2.42	NU	2.08	209	.05	S
Tutorials	3.52	U	.52	209	.62	NS
Quiz	3.38	U	.97	209	.35	NS
Scenarios case studies	2.98	U	1.28	209	.21	NS
Software	2.63	U	.07	209	.96	NS
Animation	2.69	U	.11	209	.92	NS
Online articles	3.15	U	1.41	209	.17	NS
Instructional design	3.02	U	1.48	209	.15	NS
Learning experiences	3.21	U	.23	209	.83	NS

Note; X = Grand Mean, t-cal = t-calculated, H₀ = Null Hypothesis, NS = Not Significant, S = Significant, df = degree of freedom, NU = Not Utilized, U = Utilized

Data presented in Table 1 shows that the respondents agreed that Open Educational Resources (OER) with mean values from 2.50 above are utilized in the delivery of TVET programmes in Nigeria Universities while they disagreed that Open Educational Resources (OER) with mean values less than 2.50 such as video podcast, audio podcast, infographics,

streaming videos, maps are not utilized in the delivery of TVET programmes. The Table also shows that 18 items on OER had a significant value greater than .05 while one item had significant values less than .05. This indicated that, there was no significant difference between the mean responses of TVET lecturers and instructors on the 18 items on OER that are utilized in the delivery of TVET programmes while there was a significant difference on the mean responses of TVET lecturers and instructors in relation to the use of images as OER that can be utilized in the delivery of TVET programmes.

Table 2: Mean and t-test Analysis on the Extent to which Open Educational Resources are Utilized in the Delivery of TVET Programmes

Item statements	X	Decision	t-cal	df	Sig.	H ₀
I use video podcast to make lectures available to my students	2.00	LE	1.57	209	.13	NS
I use audio podcast such as radio programmes available in podcast series around the world to make lectures available to my students	1.92	LE	.14	209	.90	NS
I use infographics from OER as instructional materials to spur classroom debate and to enhance creative ability of my students	1.98	LE	1.23	209	.24	NS
I use online classrooms and assistive technologies to enhance effective instructional delivery	2.46	LE	.20	209	.85	NS
I use lecture notes, study materials, course assignments etc from E-books through Open Course Ware to prepare my teaching materials	2.83	HE	.60	209	.56	NS
I use online course modules for instructional delivery	2.48	LE	.44	209	.67	NS
I use streaming video for out-of-class viewing to concretized students understanding of TVET concepts	2.29	LE	1.70	209	.10	NS
I consult Open textbooks to prepare my lecture notes and materials	3.13	HE	2.03	209	.06	NS
I use Open Street Maps data for urban planning and architecture as instructional material while delivering lectures.	2.10	LE	1.69	209	.11	NS
I use OER games to engage my students actively, thus, facilitating further learning of TVET concepts	2.04	LE	.99	209	.33	NS
I use images such as diagrams and technical drawings from OER to show the evolutions of various designs in construction works	2.67	HE	1.55	209	.14	NS

I make use of intelligent tutoring systems and virtual laboratories for assessment of students and provision of feedback	3.12	HE	1.56	209	.13	NS
I make use of OER pre-made quizzes during class sessions	2.88	HE	1.14	209	.27	NS
I use scenarios case studies and simulations from OER to instill problem solving, decision making and analytical skills in my students	2.65	HE	.18	209	.87	NS
I use software in producing authoring and learning resources for instructional delivery	2.96	HE	1.59	209	.13	NS
I use online animation such as crossword puzzles and flashcards from OER as supplementary tools for learning	2.25	LE	1.11	209	.28	NS
I use articles, books and journals from electronic libraries in developing my teaching materials	3.27	HE	1.76	209	.10	NS
I assess instructional designs online for use during instructional delivery	3.12	HE	.54	209	.60	NS
I share experiences about materials and lessons with colleagues online	3.17	HE	.67	209	.52	NS

Note; X = Grand Mean, t-cal = t-calculated, H₀ = Null Hypothesis, NS = Not Significant, S = Significant, df = degree of freedom, HE = High Extent, LE = Low Extent

The data in table 2 as shown above revealed that the respondents agreed that OER items with mean values from 2.50 and above are utilized to a high extent in the delivery of TVET programmes in Nigeria Universities while the response of the respondents on OER items with mean values less than 2.50 indicates that the OER items are utilized to a low extent in the delivery of TVET programmes. The Table also shows that all the 19 items on Open Educational Resources (OER) had a significant value greater than .05. This indicated that, there was no significant difference between the mean responses of TVET lecturers and instructors on the extent of utilization of Open Educational Resources (OER) in delivering TVET programmes in Nigeria Universities.

Discussion of Findings

The findings of this study in Table 1 show that lecturers and instructors are yet to fully exploit the use of OER in the delivery of TVET programmes in Nigerian Universities. This is because the result from the table indicated that lecturers and instructors are still not utilizing some OER in the classroom despite their availability for use. The implication of this therefore is that lecturers and instructors negligence of the adequate use of OER will not encourage stakeholders advocating for constant provision of OER in the Universities, thus, government at all levels will have reason as to

why they are still failing in the provision of more OER for the Universities. The findings of this study is in line with Hoosen (2012) who stated that in a bid to maintain the standard of University education in the face of shortfall in government revenue which has drastically reduced allocation to education, OER has been adopted to help teachers and students get access to resources needed for teaching and learning. Olelewe, Nzeadibe, and Nzeadibe, (2014) stated that impartation of knowledge to learners by teachers must be done in relation to learner's learning diversities ranging from interest, attitudes, aptitudes and experience. This can however be done if lecturers and instructors maximize the use of OER in the classroom.

The study also found as reported in Table 2 that the utilization of the OER lecturers and instructors use in delivering TVET programmes is very low. Although, TVET teachers utilize some OER to a high extent as found in the study. Nevertheless, their low extent in the utilization of most of the OER is very alarming. The attitude of TVET teachers therefore in the low utilization of OER will continue to diminish to a great extent the standard of education in Nigeria when compared to global best practices. This is in line with Wiley, Green and Soares (2012) who posited that the drive to provide quality and equal opportunities to citizens has given rise to the educational resources that are freely made available for people desirous of quality education.

Conclusion

Based on the findings of this study, it was concluded that OER are not fully utilized in the delivery of TVET programmes in Nigeria Universities. This is because the study found that to a great extent, the utilization of OER in delivery TVET programmes in Nigeria Universities is still very low. The respondents fully agreed that significant items raised for their observations and comment are utilized and only insignificants number of respondents disagree with the information given on the items raised in the questionnaire.

Recommendations

Based on the findings of this study, the following recommendations were made:

- i. The National University Commission (NUC) should enforce the use of OER by TVET teachers in the delivery of TVET programmes to enhance best performance.
- ii. Adequate OER should be provided by the Universities to suit the lecturers and instructors needs for effective outcomes in TVET programmes.
- iii. TVET teachers should be trained on how to effectively utilize OER in the delivery of TVET programmes in the Universities.
- iv. Sensitization workshop should be organized for TVET teachers by NUC on the importance and usage of OER for effective instructional delivery.

References

- Agba, J. O. (2017). *Open Educational Resources Policy for Higher Education in Nigeria*. COL. Retrieved on May 28, 2018 from www.oerknowledgecloud.org.
- Ajayi, O.A & Oguntamu, O.A. (2014). Perceived Dysfunctional University Education in Nigeria: Need for a Paradigm Shift. *JORIND* 12(2)
- Akpotohwo, F.C. (2016). New Dimensions in Sourcing and Utilization of Resource Materials for Effective Teaching and Instruction in Technical Vocational Education and Training (TVET) in Nigeria. *Education Journal*. Special Issue: New Dimensions in Vocational Business Education Teaching and Learning. 4(6-1) 24-30.
- Atkins, D. E., Brown, J. S., & Hammond, A. L. (2007). *A review of the Open Educational resources (OER) movement: Achievements, challenges, and new opportunities*. 1- 84. Creative common.
- Centre for Technical Vocational Education Training and Research (CETVETAR)-University of Nigeria, Nsukka (UNN) (n.d). <http://cetvetar.unn.edu.ng/history/> Retrieved 30th May, 2018
- Enahoro, J. A. & Adeyinka, B. Emergence of Private Universities in Nigeria and Monitoring Standards between 2002 and 2012. *American Journal of Business and Management* 2(1) 59-64 DOI: 10.11634/216796061302258
- Federal Government of Nigeria, (2013). *National policy on Education*. Lagos: NERDC
- Hoosen, S. (2012). *Survey on governments' Open Educational Resources (OER) policies*. Vancouver, Canada: Commonwealth of Learning. Retrieved January 15, 2018, from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/themes/Surve_y_On_Government_OER_Policies.pdf

- Mossley, D. (2013). *Open educational resources and open education*. Heslington, United Kingdom: The Higher Education Academy. Retrieved January 15, 2019, from http://ils.unc.edu/courses/2014_fall/inls690_109/Readings/Mossely2013-OERandOpenEducation.pdf
- NUSOER, (2018). *Browse Repository by Institution*. Retrieved on June 1 2018 from www.nusoer.org.
- NUSOER, (2018). Draft OER Policy. Retrieved on June 1, 2018 from www.nusoer.org-draft-oer-policy.
- Olelewe, C. J., & Nzeadibe, C. A. (2015). Challenges facing the availability and utilization of ICT resources in post primary schools in Nsukka educational zone of Enugu State, Nigeria In Nwaokeafor, CU (Ed). *Information Communication Technology (ICT) Integration to Educational Curricula: A New Direction for Africa*. *Information Communication Technology (ICT) Integration to Educational Curricula: A New Direction for Africa*, 82.
- Omomia, O. A., Omomia, T. A. & Babalola, J. A (2014). The History of Private Sector Participation in University Education in Nigeria (1989-2012). *Research on Humanities and Social Sciences* 4(18)
- Pawlowski, J. M. & Hoel, T. (2012). *Towards a global policy for open educational resources: The Paris OER declaration and its Implications*. White Paper, Version 0.2, Jyväskylä, Finland.
- Schuwer, R. & Janssen B. (September 28, 2017). *OER in TVET, an overview of the state of affairs and harnessing the potentialities of OER for TVET*. Retrieved on June 4, 2018 from https://unevoc.unesco.org/up/Summary_OER-in-TVET-study.pdf
- Stout, K. A. (July 25, 2016). *Reflections on OER's Role in the Student Success Agenda*. Huffington post blog. Retrieved on 4th June 2018 from <http://www.achievingthedream.org/blog/16081/the-role-of-open-educational-resources-in-the-student-success-agenda-huffington-post-blog>
- The United Nations Educational, Science and Cultural Organization (UNESCO) and International Centre for Technical and Vocational Education and Training (2012). *Technical and Vocational Education and Training*. <http://www.unesco.org/new/en/education/themes/education-building>. Retrieved on 10/06/2017.
- UNESCO (2005). *United Nations Decade for Education for Sustainable Development*. Paris: UNESCO Publication.
- UNESCO (2012). 2012 Paris OER Declaration. World OER Congress, Paris, June 2012. http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/Paris%20OER%20Declaration_01.pdf.
- Wiley, D., Green, C., & Soares, L. (2012). *Dramatically bringing down the cost of education with OER: How open education resources unlock the door to free learning*. Washington, DC: Center for American Progress. (ED535639). Retrieved January 15, 2015, from <http://files.eric.ed.gov/fulltext/ED535639.pdf>