

Leveraging e-Learning Resources for Enhanced Computer Education programme in Colleges of Education in Enugu State, Nigeria

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Abstract

The e-study focused on leveraging e-Learning resources for enhanced Computer Education programme in Colleges of Education in Enugu State. To achieve this broad objective, two research questions were developed. A Survey research design was adopted for the study. The population for the study is 1,035 made up of computer education lecturers, instructors and students. A multistage sampling technique was adopted; with the first stage involving purposive sampling technique to select three Colleges of Education out of the seven Colleges of Education that have well-equipped computer labs and other e-learning resources needed for this study. The second stage, involved using simple random sampling technique to select 320 respondents. 40% of all the students from the three selected colleges of education were used. The instrument for data collection was a structured questionnaire made up of 19 questionnaire items. The instrument was subjected to face validation by two experts from the Department Computer and Robotics Education and one from the Department of Measurement and Evaluation at the University of Nigeria Nsukka (UNN). In order to determine the internal consistency of the instrument, Cronbach alpha method was used and an overall reliability coefficient of 0.75 was obtained. The null hypothesis was tested at a 0.05 level of significance using ANOVA. Among the findings are that hypermedia resources were leveraged on teaching and learning of computer education programme in Colleges of Education Enugu State, while e-assessment resources was poorly leveraged on teaching and learning of Computer Education programme. It was recommended that lecturers and instructors should be trained and re-trained on the usage of e-learning resources for teaching and learning of computer education programme in colleges of Education in Enugu State. There is also the need for the Government and National Commission for Colleges of Education to procure E-learning resources in Colleges of Education for effective teaching and learning computer education programme.

Keywords: Leveraging, e-learning resources, teaching and learning

Introduction

Technology is ubiquitous, touching almost every part of the society. The era of 21st century is also branded as an era of technology, which plays an important role in the growth of an economy. According to Raja and Nagasubraman (2018), any economy which is poor in technology can never grow in today's scenario. This is because technology makes work much easier and less time consuming. Guardia et al. (2017) stated that when technology is properly used, it will help individuals and students acquire skills needed to survive in

a complex, highly technological knowledge-based economy. Technology is an enabler in the learning process and learning is a cognitive process for achieving knowledge, hence technology can be used like any other tool in the education praxis. Thus, the continued emergence of technology has given rise to the existing and popularity of platforms such as e-learning.

E-learning has become a valuable technology for teaching, learning and research in higher institutions of learning across the globe (Alruwais et al., 2018).

According to Alonta (2019), e-learning is a learning process that leverages electronic technologies to access educational curriculum outside of a traditional classroom. E-learning systems aggregate various tools such as writing, communication, visualization and storage technologies, respectively. E-learning can occur inside or outside of the classroom. It can be self-paced (asynchronous learning) or it may be instructor-led, (synchronous learning). Vidyadevi (2014), described e-learning as an inclusive term that describes educational technology that electronically or technologically support teaching and learning. Thus, E-learning is a learning process that involves the use of internet and many other E-learning resources. According to Akram and Bushra (2020), e-learning unites two main areas: learning and technology. The author further noted that e-learning is misconstrued by some people as a course delivered via a DVD or CD-ROM, video tape or over a television channel, instead of a learning process that is conducted over the internet which creates an avenue for students/teachers to communicate over a distance. Sometimes it is delivered live, where you can “electronically” raise your hand and interact in real-time and sometimes it is a lecture that has been prerecorded but there will always be a lecturer or Professor interacting/communicating with the students and grading their participation and assignments (Akram & Bushra, 2020). Thus, e-learning is a learning process that involves the use of internet and many other e-learning resources That are used to support teaching and learning

E-learning resources can be seen as those components that facilitate learning over the internet. Maduiké, Constance and Nwazor (2017), see e-learning resources as those electronic learning resources like the Internet, hypermedia resources, and digital

technologies among others, that are used to support the teaching and learning process. E-learning resources are those technologies that enhance teaching and learning using the internet, which include hypermedia resources and e-assessment resources among others (Oluwolola & Awodiji, 2014; Akanbi, 2014; Keng, 2014)

Hypermedia resources in consist of linked media such as videos, sound and images used in E-learning environment. According to Eneja et al. (2020), e-learning resources are increasingly being incorporated into teaching resources in hypertext format that also include multimedia elements. Similarly, Wilson and Zurch (2013), stated that hypermedia teaching resources such as YouTube, Pokitoon, Google map, Vyond, Twitter, Moovly, Instagram, among others, often incorporate various multimedia elements in order to complement or expand on the information given, or to help the students understand the already-existing material. According to Andrew and Jobst (2013), these hypermedia resources have advantages in education such as students having more control over their own learning process and assessment.

Assessment of students in an e-learning environment is done using the e-assessment resources. E-assessment resources are more critical in defining the learning that takes place because the coordinators and deliverers of e-learning have different restrictions and advantages compared to the more traditional forms of delivery (Kerran, 2014),. According to Olaniran (2017) e-assessment resources include CBT, survey, google forms, quizzes among others. All these e-learning resources have an impact in every level of education, such as College of Education.

College of Education, is the unit of tertiary education in Nigeria saddled with the responsibility of training teachers to

obtain non-degree but qualitative professional certificate in education (FRN, 2014). Its basic functions are, training teachers, research and learning, as well as social or community service activities (Ibezim, 2013). According to FRN(2014) the goal of teacher education shall be to: produce highly motivated, conscience and efficient classroom teachers for all levels of our educational system, encourage further the spirit of enquiry and creativity in teachers , help teachers to fit into social life of the community and the society at large and enhance their commitment to national goals, provide teachers with the intellectual and professional background adequate for their assignment and make them adaptable to changing situations and enhance teachers commitment to the teaching profession. In pursuance of the mandate, the federal government of Nigeria established the national Commission for Colleges of Education (NCCE). The commission is charged with the responsibility of laying down the minimum standards for all programmes of teacher education in Nigeria. Isreal and Isreal (2014), noted that the commission in 1993 published the guidelines for academic programmes. Colleges of Education offer all educational programmes including Computer Education programme.

Computer Education programme is a vocational programme recently introduced in Colleges of Education in Nigeria. It includes series of scientific, vocational and educational related subjects and activities to facilitate the students of Computer education programme. However, Suberu (2013) defined Computer education programme as a process of equipping learners with skills that will enable them to make effective use of computer. Suberu (2013), also defined Computer education programme as the broad term that covers teaching about computers or the use of

Computer in teaching other subjects. Computer education programme can also be seen as knowledge and skills in Computer science given in the context of education with inclusive goal of being able to transmit the acquired knowledge and skills gained in studying and practicing the programme to the students. There are specific skills expected to be acquired from Computer education programme, some of which are operation and usage of ICT, use of word processor and programming skills among others.

Statement of the Problem

The importance of technology and E-learning in Colleges of Education cannot be over-emphasised, but the low level of ICT literacy in most Colleges of Education has hindered the leveraging of E-learning resources, lecturers in some Colleges of Education have little or no knowledge of E-learning resources based on the preliminary observation by the researcher and so shy away from utilizing them for teaching and as a result create questions or tasks that are much easier. Some lecturers still go to business centers to have their lecture notes, exams script and Manuals typed for them as they have little or no typing skills

E-learning resources can enhance the teaching and learning of computer education programme in Colleges of Education, It enables the effective storing of information, and can offer new fast ways of communication, it can be integrated into teaching and learning strategies and used to support relative learning theories, it can also be used to create new types of interactive learning media for improved quality, equity and access in higher education. In other words, E-learning resources can enhance quality teaching and learning, by providing better access to relevant articles, teaching and learning materials.

Despite the obvious and enormous advantages that come with using E-learning resources for teaching and learning, some Colleges of Education are yet to properly leverage the few available E-learning resources. This study, therefore, seek to examine the extent of leveraging E-learning resources for teaching and learning of computer education programme in Colleges of Education in Enugu State.

Purpose of the Study

The main purpose of this study is to determine the extent of use e-learning resources for enhanced teaching and learning of computer education programmes in Colleges of Education in Enugu State. Specifically, the study sought to

1. hypermedia resources in teaching and learning of computer education programme
2. e-assessment resources in teaching and learning of computer education programme

Research Questions

The following research questions guided the study:

1. What is the hypermedia resources leveraged in teaching and learning of computer education programme?
2. What is the e-assessment resources leveraged in teaching and learning of computer education programme?

Null Hypotheses

The following null hypotheses was tested at 0.05 level of significance to guide the study:

- H₀₁:** There is no significant difference among the mean responses of lecturers, instructors and students on the hypermedia resources leveraged in teaching and learning
- H₀₂:** There is no significant difference between the mean responses of lecturers, instructors and students on

the e-assessment resources leveraged in teaching and learning

Methodology

The study adopted a descriptive survey design. The study was carried out in Colleges of Education in Enugu State, Nigeria. The population for the study was 1,035 respondents. This comprised 39 computer education lecturers, 5 computer education instructors and 991 NCE students from the seven Colleges of Education in Enugu State. The sample size for this study was 320 respondents, multistage sampling technique. The instrument for data collection was a structured Questionnaire titled Leveraging E-learning Resources for Teaching and Learning (UERTL), developed by the researcher. The instrument was subjected to face validation by three experts, the validates were requested to check the adequacy of the items and the weighting of the response options. The reliability of the instrument was determined by administering the instrument to 13 respondents, 3 lecturers and 10 students from the department of Computer Education Programme, Federal College of Education, Abeokuta, Ogun state. It was used to measure the internal consistency. The researcher personally administered the instrument with the help of a research assistant to the selected Colleges of Education. The instrument was presented in sections of 1 and 2. Section 1 was designed to obtain background information about the respondents, which contained type of respondents' i.e. lecturers, instructors, students and gender, with options and blank spaces that would enable the respondents to tick as appropriate. Section 2 contained 2 clusters of item statements that relates to the research questions, In each cluster, there are definitions of the key components in the cluster for easy understanding of the item statements by the respondents as it

specifically addresses each research question. Cluster 1 and 2 were on a four-point rating scale eliciting of information based on the degree of conviction of the respondents. Each item statement in cluster 1 and 2 has a response of “Very Highly Leveraged” (VHL) 4 points, “Highly Leveraged” (HL) 3 points, “Moderately Leveraged” (ML) 2 points, “Poorly Leveraged” (PL) 1 point. The data collected were analyzed using mean (\bar{X}) and standard deviation (SD). A criterion mean of 2.50 was adopted as a cut-off point for **Results**

the item. Consequently, any item that has a mean value of 2.50 and above is highly leveraged while any item below 2.50 is poorly leveraged. The hypotheses formulated to guide the study was tested at 0.05 level of significance using ANOVA to answer the two hypotheses, The null hypothesis was rejected for any item whose F-value reaches a significance value that is less than 0.05 while the null hypothesis was upheld for any item whose F-value reaches a significance equal to or greater than 0.05

Research Question 1

What are the hypermedia resources leveraged for teaching and learning of computer education programme?

Table 1
Mean rating of respondent view on leveraging hypermedia resources for teaching and learning of Computer Education programme in Colleges of Education in Enugu State

S/N	ITEM	\bar{X}	SD	Remark
I used to leverage				
1	YouTube to share videos	2.56	1.09	L
2	Encarta and Groliers for articles maps and dictionary	2.51	1.06	L
3	Vyond in creating animated videos	2.71	1.04	L
4	Moovly to create educational videos	2.09	0.90	PL
5	Animaker for creating easy animation	2.09	0.90	PL
6	Twitter to share my thoughts and connect people	2.92	0.93	L
7	Facebook to connect people and share my thoughts	2.80	1.17	L
8	Instagram to share videos and images	2.51	1.05	L
9	Google Map to fine the nearest place of interest	3.00	1.01	L
Cluster Mean		2.58	1.06	L

Keys: \bar{X} =Mean, SD=Standard Deviation, PL=Poorly Leveraged, L=Leveraged

Data presented in Table 1 showed the mean rating of respondents on the leveraging of hypermedia resources for teaching and learning of computer education programme in Colleges of Education in Enugu State. Responses show the mean values ranging from 2.09 to 3.00. Out of the 9 items listed, items 1,2,3,6,7,8 and 9 was leveraged while items 4 and 5 was poorly leveraged. However, an overall mean rating of 2.58

shows that hypermedia resources were leveraged in teaching and learning of Computer Education programme in Colleges of Education in Enugu State. Also, the standard deviation values for the 9 items ranged from 0.90 - 1.17, indicates that the respondents were not far from one another in their responses and their responses were not far from the mean

Table 2:

Mean rating of respondent view on leveraging e-assessment resources for teaching and learning of Computer Education programme in Colleges of Education (N = 310)

S/N	ITEM	\bar{X}	SD	Remark
I used to leverage				
10	Google form to create survey and questionnaires	2.56	1.09	L
11	Proprofs Quizzes to create online tests	2.30	0.40	PL
12	Kahoot in playing educational games	2.56	1.09	L
13	Quizlet for electronic assessment	2.40	1.77	PL
14	Mentimeter for presentation	2.49	0.81	PL
15	Microsoft forms for creating forms, survey and quizzes	2.50	1.79	L
16	Survey anyplace for assessment and research	2.40	1.77	PL
17	Poll everywhere to ask questions and receive answers	2.19	0.78	PL
18	survey Monkey to create, send and analyze surveys	2.32	1.15	PL
	Esurv for survey analysis			
Cluster Mean		2.42	1.79	PL

Keys: \bar{X} =Mean, SD=Standard Deviation, PL=Poorly Leveraged, L=Leveraged

Data presented in Table 2, reveals the respondents' views on the leveraging of e-assessment resources for teaching and learning of computer education programme in Colleges of Education in Enugu State. Responses showed the mean values ranging from 2.19 to 2.56. Out of the 9 items listed, only 3 items were leveraged while 7 items were poorly leveraged. The table shows that items 11, 13, 14, 16, 17 and 18 had mean score less than 2.50 on the leveraging of e-

assessment resources for teaching and learning of computer education programme. The cluster mean of 2.42 shows that e-assessment resources were poorly leveraged for computer education programme in Colleges of Education in Enugu state. The standard deviation values for the 10 items ranged from 0.40 - 1.79 which showed that the respondents were not far from one another in their responses and that their responses were not far from the mean.

Table 3:

ANOVA Analysis Of the mean responses of Lecturers, Instructors and Students on the leveraging of hypermedia resources for teaching and learning of computer education programme in Colleges of Education

Source	Group	Sum of Squares	Df	Mean Square	F	p-value	Remark
Overall	Between Groups	0.022	2	0.397	5.114	0.007	S
	Within Groups	12.124	397	0.088			
	Total	12.146	399				

Significant at 0.05

The one-way ANOVA presented on Table 3 shows the statistical mean square, F ratio, degree of freedom and the P-value of responses of lecturers, instructors and students on the leveraging of collaborative

resources for quality teaching and learning. The table 3 showed the cluster F-ratio of 5.114, at 399 degree of freedom and p-value of 0.007 which is less than 0.05, thus, the null hypothesis was rejected as

postulated that there is no significant difference in the mean ratings of respondents on the leveraging of

hypermedia resources in teaching and learning of computer education programme in Colleges of Education in Enugu State.

Table 4:
ANOVA Analysis of the mean responses of Lecturers, Instructors and Students on leveraging e-assessment resources for teaching and learning of computer education programmes in Colleges of Education

Source	Group	Sum of Squares	Df	Mean Square	F	p-value	Remark
Overall	Between Groups	0.028	2	0.506	5.130	0.006	S
	Within Groups	13.213	397	0.095			
Total		13.241	399				

Significant at 0.05

The one-way ANOVA presented on table 4 shows the statistical mean square, F ratio, degree of freedom and P-Value of responses of lecturers, instructors and students on the leveraging of e-assessment resources for teaching and learning. The table showed the cluster F-ratio of 5.130, at degree of freedom of 399 and P-value of 0.006 which is less than 0.05, thus, the null hypothesis was rejected as postulated that there is no significant difference in the

Discussion of Findings

The findings on the leveraging hypermedia resources for teaching and learning of computer education program in Colleges of Education in Enugu state indicates that the respondents leveraged hypermedia resources for teaching and learning of computer education programme in Enugu State. Items leveraged were YouTube, Vyond, Twitter, Facebook, Instagram, Google Map among others. The study was in conformity with the study of Koliassa (2016), who affirmed that the leveraging of hypermedia resources in teaching and learning allows lecturers,

mean ratings of respondents on leveraging e-assessment resources in teaching and learning of computer education programme in Colleges of Education in Enugu State. the mean of instructors (x: = 2.43). The Scheffe post hoc test suggests that the students and instructors were similar on e-assessment resources leveraged in Computer Education programme in colleges of education in Enugu state.

instructors and students to explore and analyze different perspectives within which to solve a specific problem, have access to vast amounts of information, users can explore a text in depth, interaction with the instructional material can be self-paced hypermedia, catches attention and engages the users among others. The result of the findings was also in conformity with the opinion of Carley (2014) who opined the essential principles of hypermedia resources to be flexibility and adaptability of the programme (students can start and complete their tasks at any convenient time), availability of different resources

(unlimited number of students can use the same sources of information), minimization of efforts and time (students can send their homework online, saving time), joint work of students through chats, forums, team projects, self-assessment, and self-control. Chuwang (2013) in his research stated that the use of hypermedia in education allows students access to hypermedia electronic resources which are a combination of maps, text, sound and images in the classroom according to the characteristics of the students. The researcher further stated that hypermedia network offers single feedback, communication with lectures, instructors and with any other user so as to achieve the objectives of teaching.

The study was also in conformity with the study of Jixan (2014) who asserted that hypermedia resources actually provide an effective method of information presentation so that students can construct knowledge from a number of angles to improve their efficiency of information transfer and the depth of understanding. Furthermore, the interactive nature of hypermedia resources promotes interaction mechanisms for lecturers and students, which is the centre of efficient teaching implementation

The findings on leveraging e-assessment resources for computer education programme, revealed that e-assessment resources were poorly leveraged. This is attributed to the lack of awareness and skills on E-learning resources by lecturers, instructors and students of Colleges of Education. The study was in conformity with the study of Alruwais, Wills and Wald (2018), who enumerated the challenges associated with the use of e-assessment resources, the researchers emphasized that inexperienced students with computer or with the e-assessment process, poor accessibility of computer and internet, poor technical

infrastructural development, especially in poor countries contributes to poor leveraging of e-assessment resources by lecturers and instructors. Yilmaz (2017), also asserted that e-assessments on students might not be fair to lower-performing students since they might feel that it takes too much effort and time to complete e-assessments. The study of Attenda, and (Adeniran (2020) stated that a substantial amount of time is required to design quality questions, some lecturers might create questions or tasks that assess only lower-order skills. Lecturers who are not comfortable with the use of an e-assessment system also tend to design poor assessments.

Furthermore, the study was in conformity with the study carried out by Arkorful and Abaidoo, (2015), who asserted that the time needed to create e-assessment tasks cannot be overlooked. The creation of e-assessment activities requires time and experience on the part of the lecturers and instructors, as the lecturers needs to ensure that the activities continue to be of a high standard

Conclusion and Recommendations

E-learning resources are crucial in this era of technology. This trend has continued to transform the pattern and scope of services rendered by lecturers and instructors. E-learning skills are also required by lecturers and instructors of Colleges of Education in other to benefit maximally and to be able to handle the resources and process information effectively. This study has attempted to evaluate the utilization of the various E-learning resources listed, which are the, hypermedia resources and the e-assessment resources in teaching and learning of Computer Education programme in Colleges of Education in Enugu state. This study revealed that most of the hypermedia resources were utilized for teaching and

learning of computer education programme. The study also revealed that most of the e-assessment resources were poorly utilized in teaching and learning of Computer Education programme, this could have been as a result of lack of awareness and skills on e-learning resources by the lecturers and instructors, lack of funds, lack of internet access among others. The study suggested among others that the Government and Colleges of Education should subsidize e-learning training fee to encourage lecturers, instructors and students. Government should also improve on power supply.

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