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Assessment of e-Learning Skills Need of Vocational Education Students in South-Eastern Universities, Nigeria

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Abstract
The purpose of the study was to identify e-learning skills needs of Vocational Education students in universities in Southeastern Nigeria. To elicit the pertinent information for the study, two research questions were answered on the students' expressed performance and perceived level of importance attached on the e-learning skills. One null hypothesis was also formulated and tested at 0.05 level of significance. A structured questionnaire was used to collect data. The questionnaire was face-validated by three experts. Data were collected from 273 respondents made up of Vocational Education students in Universities in five states in Southeastern Nigeria. Mean and standard deviation were used to answer the research questions while correlated t-test statistic was used to test the null hypotheses. The study found that the expressed performance of students on the identified e-learning skills was poor and their perceived levels of importance of the skills were very high. Among others, the researchers recommended that, training should be organized for students on e-learning in the identified deficient areas to close the skills gap.
Keywords: e-learning, Vocational Education Students, Skills needs, University

1. Introduction

e-learning encompasses learning at all levels, both formal and non-formal that uses an information network such as the internet, and intranet (LAN) or extranet (WAN), whether wholly or in part, for course delivery, interaction, evaluation and/or facilitation. Hedge and Hayward (2004) defined e-learning as an innovative approach for delivering electronically mediated, well-designed, learner-centered and interactive learning environments to anyone, any place, anytime by utilizing the internet and digital technologies in concert with instructional design principles. In this globalization age, learning can be obtained online or offline through the internet or through the computer – CD-ROM. The online ways involves the use of browsers like: Internet Explorer, Navigator, and Mozilla fire fox among others for learning. In the context of this study, e-learning is the use of digital technologies with internet base to empower students to acquire knowledge with ease.

The development of e-learning and globalization of information and communication technology have created high demand for workers with computer, communications, and other occupational skills that can be acquired in Universities. Toffler (2010) submitted that the illiterates of the 21st century will not be those who cannot read and write, but those who cannot use electronic technology to learn, unlearn and relearn. The issue of learning in e-learning environments must be given a thorough attention to enable the student participate in the global society

e-learning includes Computer-Based Training (CBT), Web-Based Training (WBT), and Electronic Performance Support Systems (EPSS), distance or online learning and online tutorials (Kurtus, 2010). In addition, Smith, Reed & Jones (2008) stated that e-learning content is delivered via the internet, intranet/extranet, audio or video tape, satellite TV and CD-ROM. It may be in the form of audio, visual, and /or audio/visual and always creates an atmosphere of learning convenience. Hence, Brandon and Howard (2011) affirmed that e-learning has some definite benefits over traditional classroom training. These, according to the authors, include flexibility and cost savings from not having to travel or spend excess time away from work. The most important advantage of e-learning is that e-learning enables people to learn anytime and anywhere. e-learning gives freedom and flexibility to learn when and where one wants and at one's own pace. Other benefits derivable from e-learning experience include: its' fastness and time saving; it provides a consistent message and one can work from any location at any time (Brandon & Howard, 2011). Also, e-learning can be updated easily and quickly, and can lead to retention and a stronger grasp of the subject matter. e-learning has uniformity of content among other numerous benefits most especially when it is properly applied during teaching and learning environments (Brandon & Howard, 2011). For effective use of e-learning especially the application and processes, students should be able to efficiently explore the present-day digital technologies for effective learning lifelong skills.

Skill is imperative for e-learning activities such as glossary, forum, assignment, wikis, charts among others. According to Obi (2005), skill is the ability to use one's knowledge effectively and readily in performing an act, or habit of doing a particular thing competently. For example, a singer who plays the guitar while singing is said to be skillful in playing the guitar. Nnachi (2007) refers to skill as the ability to perform well in a task as a result of exposure, training or practice. The author explained that an individual may hardly be skilled in a task without

exposure, training or practice. Researches especially in developing countries like Nigeria show that instructions and learning are done through the conventional methods (European Commission Report, 2014). In line with the above explanations, this study seeks to determine the e-learning skills needs of Vocational Education students in Nigeria universities.

A university is an institution of higher education that offers programmes beyond the high school level (Gutek, 2009). In the view of Sharma (2005), universities are institutions of higher learning that are well structured into colleges or faculties with various academic disciplines typically made for undergraduate and postgraduate students to develop on a career. University education provides necessary training for individuals wishing to enter professional careers. University education also strives to develop creativity, insight and analytical skills in students. A student, according to Pearson (2007), is someone who is studying in school such as college and University. A Vocational Education student in the context of this study is an individual admitted into a University to study a Vocational course such as Vocational Agricultural Education, Vocational Business Education, Vocational Computer Education, Vocational Home Economics Education and related disciplines. Before a student is admitted into a vocational education programme in any of the Nigerian Universities he/she must meet the minimum entry requirements laid down by the National Universities Commission (NUC), and pass the Unified Tertiary Matriculation Examination (UTME) and post UTME examination of the University.

The utilization of e-learning in Universities has become a global affair. However, this is not yet the case with Nigerian tertiary institutions as some students still rely mainly on books and hard copy materials from the Library. This practice narrows the views of the students as majority of the materials found online cannot be located in the library. The limited educational resources available to the students due to their poor skills in surfing the internet would affect their academic performance.

2. Statement of the Problem

Technology has transformed almost every aspect of human activities including education especially developed countries of the world. Information and communication technology is currently transforming the method for educational delivery and the way people learn. The online and open technologies are changing how education is accessed and delivered to citizens of the world. The benefits of this transformation should be available to everybody, both the old and the young, but it should be shaped by educators and policy makers rather than something that should just happen to them.

However, many educational institutions especially in developing countries like Nigeria are yet accessing the change and the governments are slow in this regard. According to the European Commission Report (2014), while there may be instances of innovations in such countries, the landscape is fragmented with many barriers preventing widespread uptake and full-fledged institutional and national strategies for adopting new modes of teaching and learning brought by ICT. U Eteng (2009) also asserted that in developing countries including Nigeria the application of e-learning in educational institutions is yet to gain much ground. The author found that e-learning is challenged in the universities by the inadequacy of facilities and structures. Research also indicated that educators in many institutions still use the conventional and the traditional methods of teaching. Brandon and Howard (2011) observed that the chalkboard and textbooks have continued to dominate classroom activities in most schools in Nigeria. E-learning in educational institutions in Nigeria is challenged by acute shortage of e-learning materials and facilities (Jegede & Owolabi, 2003; Nwana, 2012; and Umeasiegbu & Esomonu, 2012). Obahiagbon and Osahon (2014) also found that 85 percent of ICTs are used more in administrative purposes such as hostel allocation and course registration among others as compared to teaching and learning in Nigeria tertiary institutions. This scenario raises the doubt of students' awareness and access to e-learning opportunities. Hence, the need to assess the e-learning skills need of vocational education students in the South-Eastern Universities in Nigeria.

3. Purpose of the Study

The major purpose of this study was to assess the e-learning skills need of students in universities in South-Eastern Nigeria. Specifically, the study sought to:

1. Find out the perceived level of importance of e-learning skills by the students.
2. Determine the students' expressed performance level in e-learning skills.

4. Research Questions

1. What are the students' perceived level of importance of e-learning skills?
2. What are the students' perceived level of performance in e-learning skills?

5. Hypotheses

The following hypothesis was used to further guide the study. This was tested at 0.05 level of significance.

Ho_1: The year of study is not a significant source of difference among students on their mean ratings of their

perceived level of importance of the e-learning skills.

6. Scope of the Study

The study is restricted to the assessment of e-learning skills need of the students in 12 Universities in South-eastern Nigeria. It also focused on students of vocational education. Ndufu Federal University, Ebonyi State, Nigeria was not included since the Department of Vocational Education has not fully taken off as at the time of this study.

7. Methodology

The study adopted a survey research design. According to Osuala (2005), survey research helps the researcher to identify present conditions, present needs as well as information on which to base sound decisions. The author further stated that survey research focuses on people, the vital facts of people, and their beliefs, opinions, attitudes, motivation and behavior. Descriptive survey design was, therefore, considered most appropriate for this study because it seeks opinions of respondents on e-learning skills needs of Vocational Education students.

This study was carried out in the Universities in South-east of Nigeria which comprises of five states, namely: Abia, Anambra, Ebonyi, Enugu, and Imo States. The choice of this area was based on the fact that many University graduates are unemployed in area.

The population for the study consisted of 303 Vocational Education students in Universities in southeast Nigeria. The population for the study was obtained from Federal Ministry of Education (Statistics of Education in Nigeria: 2005-2010). No sample was taken as the entire population was considered manageable. Leedy (1980) in Nwana (1981) postulated that it is ideal to study the entire population whenever possible.

Structured questionnaire on e-learning skills needs of Vocational Education students was used to elicit response from the respondents. The instrument had a five-point response scale of Strongly Agreed (SA) (5) to Strongly Disagree (SD) (1) which was developed based on extensive literature review and the research questions. The questionnaire was made up of two parts namely: part one and part two. Part one solicited information on personal data of the respondents; while part two comprised 49 items which were structured into five sections on the e-learning skills need of student. The questionnaire was subjected to face-validation by three experts. Based on their comments and suggestions, amendments were made on the instrument before a final copy was produced and used for this study. The reliability of the instrument was established using Cronbach Alpha technique. The internal consistency of the items was established by a single administration of the instrument to University of Lagos, Lagos State. The reliability coefficient of the sections all together was 0.91. Copies of the questionnaire were administered on the respondents with the help of three trained research assistants. The research assistants collected the completed copies of the questionnaire from the respondents after one week. A total of 273 copies (95%) out of 303 copies of the questionnaire were returned.

The data collected from the respondents were analyzed using mean, standard deviation and correlated t-test statistics. Statistical Package for the Social Sciences (SPSS) was used also to ensure accuracy. The mean and standard deviation were used to answer the research questions. Any item with a mean rating of 3.50 and above was regarded as agreed while any item with a mean rating less than 3.50 was regarded as disagreed. The correlated t-test statistic was used to test the null hypothesis at 0.05 level of significance. Any hypothesis whose correlated-t value was less than or equal to t-table of 1.96 was regarded as not significant, while any hypothesis whose correlated-t value was greater than t-table of 1.96 was regarded as significant.

8. Presentation and Analysis of Data

Cluster analysis was employed to analyse the data. The results are presented in clusters on Table 1. However, details (item analysis) are attached at the end of the paper as the appendix.

Table 1: Correlated t-test analysis of Students' Perceived level of importance of e-learning skills and their Expressed level of Performance of the e-learning skills in clusters.

e-learning Clusters	X_I	SD_I	X_p	SD_P	Corr-t	Remarks Ho	PG
1. Forum	4.36	0.56	2.57	0.43	41.69	S*	N
2. Lesson	4.45	0.47	2.45	0.28	60.69	S*	N
3. Resources	4.30	0.36	2.69	0.34	53.19	S*	N
4. Glossaries	4.53	0.36	2.32	0.42	66.41	S*	N
5. Choice	4.43	0.37	2.28	0.29	75.55	S*	N
6. Quiz	4.39	0.45	2.21	0.32	66.09	S*	N
7. Surveys	4.14	0.42	2.78	0.34	41.31	S*	N
8. Charts	4.30	0.67	2.66	0.43	34.03	S*	N
9. Wikis	3.82	0.61	2.85	0.48	20.61	S*	N
10. Assignment	4.04	0.53	2.58	0.54	31.78	S*	N

Key: X_I = Mean of Importance
X_P =Mean of Performance
PG = Performance Gap
N = Needed
SD_I= Standard Deviation of the perceived level of Importance
SD_P = Standard Deviation of the level of performance
S^* = Significant at 0.05

9. Discussion of the Findings

The data presented in Table 1 above revealed that, the mean ratings of the respondents on the ten (10) identified clusters on e-learning skills are perceived as important by students. The clusters had mean values ranging from 3.82 to 4.53 which are all above the cut-off point of 3.50 on a 5-point scale. The above findings also indicated that the respondents accepted that all the ten (10) identified clusters are important for student for effective use in e-learning activities. The findings are congruent with Brandon and Howard (2011) who reported that e-learning has definite benefits over physical classroom teaching and learning. On the other hand, the mean ratings of the respondents on the expressed performance of the ten (10) identified clusters on e-learning skills ranged from 2.21 to 2.85 which are lower than the cut-off point of 3.50 on a 5-point scale. This implies that the students' performance in e-learning skills were very low. These findings on the level of students' performance are in agreement with U Eteng (2009), and Obahiagbon and Osahon (2014) who reported that the application of e-learning in developing countries like Nigeria is yet to gain much ground and that ICTs including e-learning in Nigeria are used more in administration than in the teaching learning process.

The table presented in appendix further showed the result of the correlated t-test on perceived level of importance and expressed performance on each item. It indicated that the correlated-t (Corr-t) values of forty five (45) out of 49 items from ten clusters on e-learning identified skills ranged between 12.26 to 44.41which are in each case greater than t-table value of 1.96 indicating that the level of perceived importance of the items as perceived by the students is significantly higher than their performance. The findings further affirm that the students are deficient in the full application of the e-learning skills. The result also corresponds with European Union Commission (2014) that the widespread uptake and full-fledged adoption of new modes of teaching and learning such as e-learning is still marred by many barriers like acute shortage of innovative learning materials and facilities. On the other hand, the correlated t-value on the remaining four items in the ten clusters ranged from 0.70 to 1.89 which is less than t-table value of 1.96 indicating that the level of perceived importance of the items is not significantly different from the level of performance. The standard deviation values of the ten clusters on perceived level of importance in the appendix ranged between 0.36 and 0.67 which indicated that the responses of the respondents on the ten clusters are close to each other and to the mean. The standard deviation values of the ten clusters on the level of performance in the table ranged between 0.28 and 0.54 which implied that the responses of the respondents on the ten clusters are also close to one another and to the mean.

10. Summary of Findings of the Study

1. The study revealed that students rated all the identified 49 e-learning skills (see Appendix) as important for their effective learning. Majority of the skills were rated highly important with few others rated as averagely important or just important. Therefore, all the skills presented were important.
2. The study also revealed that students perform only few of the e-learning skills presented and also the students had a low performance on the remaining 46 skills.
3. A comparative test of the mean ratings of the importance and performance above show that although the skills were rated very highly important, they were performed very low by students. This establishes

a skill-gap in these identified e-learning skills.

11. Conclusion

This study was carried out to determine the e-learning skills needs of vocational education students in southeastern Nigeria Universities. The study identified and compared the level of perceived importance of e-learning skills to the level of expressed performance of the same e-learning skills to find out the e-learning skill gap that existed in the students. It was therefore found that majority of the skills were rated highly important with few others rated averagely important or important. Based on these findings, the study therefore concluded that all the identified skills presented were important for students learning activities. However, the students' application of the skills is still very low which could be as a result of poor teacher quality and other factors that impair effective learning.

12. Recommendations

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

1. Regular workshops should be organized by experts and academics to train the current Vocational Education students on e-learning skills to improve their academic performance.
2. E-learning skills should be integrated into the curriculum of Vocational Education programme of South-eastern Nigerian Universities to avail the students of the opportunities of acquiring the skills.
3. The teachers should also be supported by government and philanthropists through sponsorship to seminars, workshops and conferences to develop themselves professionally for effective teaching of the e-learning skills to the students.

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Appendix: Detailed Correlated t-test analysis of Students' Perceived level of importance of e-learning skills and their Expressed level of Performance of the e-learning skills

S/No	Item statement	N=273 X_I	SD_I	N=273 X_P	SD_P	t-Cal	Remarks HO	Remarks PG
	Forum Skills							
1	Use distribution lists to send messages to a group	4.53	0.65	2.19	1.04	31.29	**S***	**N**
2	Attach files appropriately to email messages	4.33	0.68	3.00	1.16	16.20	**S***	N
3	Ability to create distribution lists for class groups	4.41	0.67	2.25	1.05	28.56	**S***	N
4	Use "cc" (carbon copy) and "Bcc" (Blind Carbon copy) when desired	4.53	0.72	2.43	0.97	28.88	**S***	N
5	Create word processed course documents	4.29	0.88	2.44	0.71	27.02	**S***	N
6	Ability to edit a word processed course documents	4.05	0.93	3.08	0.92	12.26	**S***	N
	Lesson Skills							
7	Upload word documents to a departmental or course page/blog	4.56	0.79	2.52	0.97	26.93	**S***	N
8	Use presentations (powerpoint) to display course outlines, images or instructions	4.44	0.83	3.18	0.81	17.94	**S***	N
9	Use tables and styles to enhance the formatting of a document	4.41	0.72	1.93	0.58	44.41	**S***	N
10	Maintain a list of core course documents throughout the year	4.79	0.49	2.55	1.11	30.56	**S***	N
11	Upload presentations, videos or animations among students	3.33	0.73	3.47	0.87	1.09	**NS**	**NN**
	Resources Skills							
12	Have a means of bookmarking useful sites (Delicious, Clipmarks)	4.58	0.62	3.25	0.72	23.08	**S***	N
13	Subscribe to podcasts via iTunes	4.19	0.43	2.34	0.93	29.84	**S***	N
14	Participate with colleagues in sharing resources	4.23	0.60	2.32	0.96	28.17	**S***	N
15	Set up your own collection of RSS feeds	4.30	0.84	2.52	0.82	24.99	**S***	N
16	Explore other bookmarking approaches (Diigo, Clipmarks)	4.27	0.84	3.09	0.80	16.83	**S***	N
17	Use iTunes to find quality video podcasts	3.89	0.78	2.64	0.90	21.51	**S***	N
	Glossary Skills							
18	Join an email list, group or network where resources are shared	4.58	0.60	2.39	0.89	33.56	**S***	N
19	Apply a variety of bookmarking approaches as useful	4.49	0.77	1.95	0.85	36.47	**S***	N
20	Use multiple pages of RSS feeds for different themes or topics	4.34	0.74	2.88	0.86	21.41	**S***	N
21	Access and edit podcasts to use in class (Quick Time Pro)	4.69	0.89	2.34	0.99	29.03	**S***	N
22	Contribute resources you find to local and online colleagues	4.57	0.74	2.35	1.14	26.85	**S***	N
23	Add links to a Web sit	4.50	0.65	1.98	0.99	35.27	**S***	N
	Choice Skills							
24	Use categories/tags	4.48	0.82	2.45	0.73	30.40	**S***	N
25	Embed a video	4.53	0.62	1.95	0.79	42.23	**S***	N
26	Add a podcast file	4.29	0.91	2.36	0.86	25.36	**S***	N
27	Embed a Google Map, Dipity Timeline, etc	4.53	0.62	1.95	1.04	35.18	**S***	N
28	Create opportunities for co-students to post sincere comments	4.42	0.82	2.52	0.97	24.68	**S***	N
29	Encourage co-students to share interesting resources with the group	4.33	0.98	2.46	0.61	26.84	**S***	N
	Quiz Skills							
30	Enable co-student to contribute insights related to course topics.	4.03	1.34	1.92	0.55	24.12	**S***	N
31	Use "Real, Rich and Relevant" stimulus prompts	4.59	0.49	2.49	0.64	42.50	**S***	N
32	Ask co-students to create their own maps	4.55	0.61	2.51	0.69	36.50	**S***	N

	regularly							
33	Experiment with a variety of mind mapping strategies	4.41	0.67	1.91	0.73	41.58	**S***	N
34	Explore cognitive scaffolding tools to prompt higher performance	4.57	0.63	1.95	1.03	35.73	**S***	N
35	Analyze class maps as tools for discussion	4.48	0.68	2.52	0.97	27.43	**S***	N
	Survey Skills							
36	Use a thematic focus related to subject matter	4.54	0.72	2.42	0.69	35.01	**S***	**N**
37	Actively track themes that enliven content with current events	3.20	0.76	3.36	0.54	0.70	**NS**	**NN**
38	Use prompts to engage cross-disciplinary thinking.	4.53	0.62	3.15	0.68	24.59	**S***	N
39	Integrate access to resources with the learning space	4.28	0.57	2.81	0.82	24.35	**S***	N
40	Develop a routine for looking at new resources	4.54	0.72	1.95	1.04	33.92	**S***	N
	Chat Skills							
41	Explore resources and to contribute insights and comments	4.10	1.00	2.63	0.89	18.21	**S***	N
42	Use personal learning spaces for course-related reflections and insights	4.44	1.11	2.91	0.81	18.39	**S***	N
43	Contribute as a member of Personal Learning Environment	4.35	1.21	2.45	0.91	20.92	**S***	N
	Wiki Skills							
44	Publish model responses from a position as mentor	3.07	1.05	3.29	0.84	1.89	**NS**	**NN**
45	Use the Personal Learning Environment as an evolving portfolio of learning	4.56	0.89	3.18	0.70	20.07	**S***	**N**
	Assignment skills							
46	Upload content to the Web	3.54	0.79	3.38	0.72	0.94	**NS**	**NN**
47	Access course content	4.65	0.56	2.81	0.82	30.58	**S***	N
48	Download content	4.14	0.61	2.52	0.84	25.67	**S***	N
49	Format content to the Web	4.44	1.11	2.63	0.89	20.93	**S***	N

Key: $\mathbf{X_I}$ = Mean of Importance
$\mathbf{X_P}$ =Mean of Performance
PG = Performance Gap
N = Needed
NN** = Not Needed
S* = Significant at 0.05
NS = Not Significant at 0.05
$\mathbf{SD_I}$= Standard Deviation of the perceived level of Importance
$\mathbf{SD_P}$ = Standard Deviation of the level of performance

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