EVALUATION OF VIRTUAL LEARNING ENVIRONMENT FOR LEARNING CONCEPTS IN TECHNICAL DRAWING IN ILORIN METROPOLIS

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Abstract
This research aimed to evaluating virtual learning environment for junior secondary school basic technology students in Nigeria. In this study, a mixed method quantitative pilot study design with qualitative components was used to test and ascertain the ease of and validation of the virtual learning environments. Convenience sampling technique was used in selecting the three content, Technical drawing and educational technology experts to evaluate the virtual learning environment. Three validating instruments were employed in conducting this study: (i) Content Validation Assessment Report (CVAR); (ii) Technical Expert Validation Assessment Report (TEAR); (iii) Educational Technology Experts Validation Assessment Report (ETEVAR). All the instruments were face and content validated. CVAR, TEAR, ETEVAR were administered on content specialists, Technical drawing experts, and educational technology experts. The findings revealed that the process of developing virtual learning environment through ADDIE model was successful. In addition, the report from the validating team revealed that the virtual learning environment is valuable for learning Technical drawing It is therefore recommended that virtual learning environment should be produced to teach Technical drawing concepts on large scale.

Keywords: *Development, Validation, virtual learning environment and Technical Drawing .*

INTRODUCTION

Advancement in technology are forcing educational institutions to reexamine their learning strategies and objectives to determine how digital technology is used to maximum advantage that is to improve learning outcomes, accommodate diversity in learning needs, tap into social networks and research learning environments for future improvements. The teachers construct lessons that are relevant, progress through many disciplines, encourage learning transfer, and develop thinking skills, treating teamwork as a learning outcome, and exploiting technology for learning support and faster creativity (Saavedra & Opfer, 2012). Drent and Meelissen (2012), argue that the deployment of learning technologies has been of benefits to students and helps the students to develop skills to access information, collaboration, communication, and problem solving. Technology has been of help to the teaching and learning environment. It has make learning for students and teaching for teachers much easier. The connection between technology and learning can be seen as multifaceted phenomena, but research indicates that particular uses of technology can improve students learning (Moeller & Reitzes, 2011).

Information and Communication technology is one of the first technology development that is ad1opted in education. In Nigeria curriculum, starting from primary school to secondary school, information and communication has always been a core course. Vastimir and Dalibar (2019) stated that integrating information and communication technology into education has improve knowledge in the field of interpretation, learning process and for future professional activity. Information and Communication technology is an indispensable part of the contemporary world. Infact, culture and society have to be adjusted to meet the challenges of the knowledge age. Therefore, the school will be indispensable in developing an information and communication technology of any country. In addition information and communication technology has the potential to prepare student for a lifetime, because information and communication technology can help students to develop their skills, boost their motivation and widen knowledge and information (Grabe &Grabe, 2017, Hussain, 2017).

Information and communication technologies could Oxford University press (2015) defined Virtual Learning Environment (VLE) as a system for delivering learning materials to students via the web.

These systems include assessments and students tracking features as well as collaboration and communication tools. They can be accessed both on and off campus, meaning that the system can support students' learning even outside the lecture. Virtual Learning Environment provide a means to manage the learning experience, communicate the intended learning experience and facilitate tutors and learners involvement in the experience (Sneha & Nagaraja, 2013).

Virtual Learning Environments are virtual spaces that teacher and students use to present and share resources, perform activities and interact t with one another. These platforms can be used to teach a complete online course or as a supporting feature for face-to- face courses. Virtual learning environment is more realistic and practical when compared to the traditional method of learning. The main goal of Virtual Learning Environment is to ease, motivate and provide learning experiences that go beyond the classroom.. Virtual Learning Environments has been successfully employed in educational applications and it is at the core of what is known as virtual reality learning environment (Monahan et.al 2018).

Virtual Learning Environment has been used to deliver various pedagogy act online and been a source of knowledge to teachers and students. Virtual Learning Environment can be used to teach courses such as technical drawing, biology, chemistry etc. Specifically, on these projects the development of the Virtual Learning Environment will be used to teach technical drawing in secondary schools. Different applications have been use online to develop virtual learning environments such as Edmondo, Schoology, Uscovirtual etc.

Technical drawing is a type of detailed drawing usually employed in courses such as architecture, engineering and constructions. Technical drawing is the act and discipline of composing drawings that visually communicate how things functions or is constructed. Technical drawing is essential for communicating ideas in industry and engineering. Using a Virtual Learning Environment to teach technical drawing makes it easier and more convenient for secondary school student. It is more captivating and motivating which enhance and facilitate quick and fast learning for secondary students.

Virtual Learning Environment will increase the efficiency and effectiveness of teaching and learning Technical Drawing in schools. Like real classrooms, virtual classrooms may also influence student's interest and anticipated success by virtue of their design. potentially facilitate the attainment of relevant life skills that support the economic and information development process, if it is carefully integrated into education (Azra & Leonard, 2010). Secondary schools must think globally in order to respond to student's needs, create new relationships, design new programs and rebuild their conceptions on the characteristics on learning environments to encourage innovation, experimentation and teachers activities. To satisfy these requirements, secondary schools must promote the use of information and communication technology. Electronic learning has been a form of integrated information and communication technology in education. Ahmed (2010) stated that electronic learning is changing the way teaching and learning process is taking place in institutions. Electronic learning has change the way people in Nigeria perceive education, because it has enhance the quality of teaching and learning. A broader definition of electronic learning is provided by Selim (2017) as the delivery of course content via electronic media, such as internet, intranet, extranet, satellite broadcast, audio- video tape, interactive TV and CD-ROM. Electronic learning is divided into different type such as web- supplemented courses, virtual reality, and virtual learning environment.

Electronic learning has been practiced in schools and cooperate occupational training contexts as part of lifelong learning. However, with emergence of new open and mobile platforms and web applications, a range of possibilities has opened to facilitate teaching and learning process in a blended environment. As a result, electronic learning has been implemented in all educational system. Docebo (2016) asserted that electronic learning is a growing field. Pumahapinyo and Svwannatthachote (2014), stated that various forms of technology are used to facilitate e-learning, with most applications using a combination of techniques such as blogs, collaborative software, e-portfolios, and virtual classrooms. Particularly for secondary schools, an increasing tendency is to create a virtual learning environment in which all aspects of a course are handled using a consistent and standard interface throughout the institutions (e.g Moodle, Schoology, Edmodo).

Statement of the Problem

The need for better evaluation of students in virtual learning environment in the society today cannot be overemphasized. The issue has created so much worry on the minds of educational stakeholders such as government, school managers, teachers, parents and many others. Inadequate resource materials for teaching are indeed a major problem in Ilorin metropolis .The stakeholders especially parents and the public are complaining about the extent of mass failure of students in public examinations which some attribute to school related factors such as bad school location, inadequate school resources, internet facilities among others. The integration of Virtual Learning Environment into teaching and learning process would made much progress in African countries. Most of African countries which are developing countries are faced with varied challenges that include poverty, poor infrastructure, poor infusion and use of Information Technology (IT), poor education facilities and lack of experienced and skilled personnel. Bridging these gaps institutions in country such as South Africa intend to involve advance technology into their educational system such as virtual learning environment. The use of Virtual Learning Environment could promote innovations and encourage educators and learners to grow from traditional to virtual learning pedagogy that supports cognitively informed Virtual Learning Environments. Hence, the problem of this study is; could evaluation of Virtual Learning Environment for learning concepts in Technical Drawing in Ilorin metropolis produce significant improvement in our education.

Purpose of the Study

The main purpose of this study is to evaluate virtual learning environment for learning selected technical drawing concepts in Ilorin metropolis. Specifically, this study:

1. Determined the content of virtual learning environment on technical drawing concept.
2. determined (Educational Technology and Technical drawing)ease of use on Virtual Learning Environment in Technical Drawing concept.

Research Questions

Answers were sought out to the following research questions:

1. What are the processes involved in the content of Virtual Learning Environment on technical drawing concepts?
2. How do (Technology Education and Technical drawing) experts rate the ease of use of virtual learning environment for teaching a selected Technical drawing concept?

Methodology

Survey research design was adopted for the study, the population for this research consists of basic technology teachers, computer experts and educational technology experts. Convenient sampling technique was used to select three senior lecturers from Educational Technology Department University of Ilorin and three senior basic technology teachers from three secondary schools in Ilorin to validate the content of the basic technology for junior secondary school Class two (JSSII). A 19-items structured questionnaire developed by the researchers titled Evaluation of virtual learning environment for teaching selected technical drawing concept was used for data collection. The instrument was validated by experts in Technology Education from the Faculty of Education, University of Ilorin. The instrument was trial tested using 20 students from secondary schools that were not part of the sampled population of the study. The data collected was analyzed using Cronbach Alpha Correlation Co-efficient which yielded 0.76. The coefficient indicated high internal consistency which implied that the instrument was reliable to be used for collection of data for the study. The data collected were analyzed using descriptive statistics of mean and standard deviation to answer research questions whereby a mean cut-off point of 2.50 and above were considered as agreed, while an average mean of 2.49 and below was considered disagreed with respect to the research questions

Presentation of Results

Research question One: How do (technology education and Technical drawing) experts rate the virtual learning environment for teaching a selected technical drawing concept?

Table 1: Educational Technology Experts Rate the Developed Virtual Learning Environment for Teaching a Selected Technical Drawing Concept

S/N	ITEMS	Mean
1	The content is structured in a clear and understandable manner.	3.40
2	The structure allows learners to move around freely in Different units.	3.60
3.	The structure of the package permits learners to advance, review, see example, repeat the unit, or escape to explore another unit.	3.60
4	The package facilitates learning by doing	3.20
5	The package allows learners to work on their own pace.	3.60
6	The package allows learners to discover information Through active exploration.	3.60
7	The quality of the text, image, and graphics are good	3.60
8	The package provides printing capabilities	3.80
9	The presentation of information can captivate the attention of student	3.90
	Grand Mean	3.90

Table 1 indicates the mean responses of Technology Education experts on the validate of virtual learning environments. Using a bench mark of 3.0, the grand mean result revealed that the mean score for each of the ten (9) items on the questionnaire is above, while, the grand mean score of all the ten (10) items is 3.90. This indicates that Technology Education experts rate the developed virtual learning environments suitable for learning.

Table 1: Evaluation of Technical Drawing Expert on the validation of Virtual Learning Environment

S/N	ITEMS	Mean
1	The content of the course material you have been given to go through conforms to standard.	3.76
2	The subtopics have been sequentially and coherently arranged.	3.78
3.	The language used in the course manual is simple and easy for both teachers and students.	3.67
4	The diagram in the package are clear and capture attention.	3.65
5	The content is sufficient to achieve the obtained objectives for the selected topics in Technical drawing.	3.47
6	The evaluation questions for each lesson are relevant for the attainment of the lesson objectives.	3.87
7	The students self evaluation questions are relevant to the Student understanding of the course content.	3.60
8	The package facilitates learning by doing.	3.45
9	The package promotes collaborative learning.	3.33
10	The package allows learners to work on their own pace.	3.33
	Grand Mean	3.95

Table 2 indicates the mean rating of Mechanical engineering experts on a validation of virtual learning environment in technical drawing. The table revealed that the grand mean score of the Technical drawing experts' rating of the developed virtual learning environments in Technical drawing is 3.95 which is higher than the benchmark of 3.00. This implies that the virtual learning environments in technical drawing was well structured and every expectation in the developed virtual learning environments was achieved.

Discussion

The steps in developing virtual learning environments was used to answer research question one. Findings on the steps in the development of virtual learning environments for secondary school Technical drawing in Nigeria showed that using instructional system design procedures by ADDIE (2005) in developing virtual learning environments was successful. This finding is in line with the recommendations of Dick (2005),who affirm that components such as instructor, learners, materials, instructional activities, delivery system and learning and performance environments interact with each other and work together to bring about the desired student learning outcomes. The finding is also in agreement with Selim (2017) study which suggested that using a systematic approach such as ADDIE to develop a valid and effective interactive virtual learning environment was still viable. It also agreed with the finding of Ahmed (2010) who reported that adopted design model provided by Ina, Fourie in (1994) and the social constructivist learning theory take less time and effort as it starts with specific set of prescribed objectives.

Findings on how virtual learning environments for Technical drawing in Nigeria can be validated was revealed that experts and students' validation reports were positive. This finding agrees with the finding of Ahmed (2010) who reported that reaction from the validating team and students' field trial validation revealed that the development of computer assisted instructional package is valuable for learning Technical drawing. The finding of this study also agrees with the finding of Özkök (2013) who revealed that the virtual learning environment is valid and reliable measure of Turkish students perceived virtual learning environments traits.

Conclusion

Based on the results of this study, it was concluded that educational technology experts rate on virtual learning environment for teaching technical drawing concept, evaluation of technical drawing expert on virtual learning environment have significant influence on students academic achievement in secondary school in Ilorin metropolis, Kwara Sate, Nigeria. .

Recommendations

Based on the finding of this study the following recommendations were made;

i. School administrator should be able to make adequate provision for e-resources in the school so that teaching and learning would be effective.
ii. Virtual leaning environment should be produced to teach technical drawing concept on large scale.
iii. Government should provide conducive environment for teaching and learning of virtual learning in the school
iv. Technical drawing teachers should imbibe the spirit of using virtual learning for teaching their students in order to enhance learning of technological concepts at secondary school level

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