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Pre-Service Teachers' Attitude Towards Application of Virtual Learning Environment (VLE) in Teacher Education

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ABSTRACT
The study was carried out to determine Pre-Service teachers' attitude towards application of Virtual Learning Environment (VLE) in teacher education. Based on the objectives of the study, two research questions and a hypothesis guided the study. The descriptive survey research design was adopted in carrying out the study. The population of the study was all pre-service science teachers in Alvan Ikoku Federal College of education Owerri. A sample of 500 pre-service science teachers selected through stratified random sampling technique was used for the study. This consists of 270 female and 230 male pre-service science teachers. A 15-item 4-points likert type questionnaire titled "Pre-Service Teachers Attitude Towards application of Virtual Learning Environment (PTATAVLE)" with reliability coefficient of 0.86 determined using Cronbach's alpha formula was used for data collection. The data generated were analyzed using mean and standard deviation to answer research questions while the hypothesis was tested at 0.05 level of significant using t-test statistical tool. The result of the study revealed that pre-service science teachers had high positive attitude towards application of Virtual Learning Environment (VLE) in teacher education. However, there was a significant difference between the response mean of male and female pre-service science teachers in favour of female pre-service teachers. Based on the findings of the study, it was recommended that, the government and curriculum planners should include Virtual Learning Environment (VLE) in teacher education curriculum as an alternative to face-to-face classroom learning.
Keywords: Pre-service teachers, Attitude, virtual learning environment, Teacher Education.

INTRODUCTION

The 21st century has witnessed a lot of technological transformation in education and will continue to improve as long as the information and communication technology keeps evolving. Technology is provoking the frontiers of the pedagogical configurations that have conventionally eased learning. Modern improvements in computer technology and the flow of personal computers, productivity software, multimedia, and network resources in this twenty-first century, signaled the expansion and execution of novel and state-of-the-art instructional strategies (Awofala, Olabiyi, Awofala, Arigbabu, Fatade, & Udeani, 2019). The internet has given rise to different levels of improvement in the traditional face-to-face approach of teaching and learning. Information and Communication technologies are making the classroom very rich and effective as it transforms the learning process from teacher-centered to students-centered. According to Robinson and Latchem, as cited in Liliana, Iuliana and Gabriel (2012) as new concepts of learning have evolved, teachers are expected to facilitate learning and make it

meaningful to individual learners rather than just to provide knowledge and skills. Recent developments of innovative technologies have provided new possibilities to teaching profession but at the same time have placed more demands on teachers to learn how to use these technologies in their teaching. As a result of this, UNESCO planning guide for ICT in teacher-education as cited in Mukuna (2013) indicated three key principles for effective ICT development in Teacher Education that were put forward by the Society for Information Technology and Teacher Education.

1.That technology should be infused into the entire teacher education programme, implying that ICT should not be restricted to a single course but needs to permeate in all courses in the programmes.

2.That Technology should be introduced in context. Accordingly, ICT application like word-processing, databases, spread-sheet and telecommunications should not be taught as separate topics rather encountered as the need arises in all courses of Teacher-Education programmes.

3.That students should experience innovative technology supported learning environment in Teacher-Education programmes. This requires that students should see their lecturers engaging in technology to present their subjects utilizing power point or simulations in lectures and demonstrations. Students should also have the opportunity to use such applications in practical classes, seminars and assignments.

One of such technologies needed to support teacher education in the 21st century is the Virtual Learning Environments (VLE). According to Rajkumar and Hema(2016) virtual classroom is an online learning environment in which the learners and instructors interact together. It is also described as a visual contact between participants and instructor in an online environment as if they are engaged in face-to-face classroom setting. It is an environment located within a computer mediated communication system for instruction to take place (Finkelstein in Rajkumar and Hema;2016). Virtual learning is a system of delivering learning materials to students via the web or recorded audio and video lectures. This system includes assessment, students' direct participation, student tracking, collaboration and communication tools. Virtual learning environment allows participants to learn or acquire knowledge in a collaborative, co-operative learning activities and interactions. Virtual Learning Environments (VLEs) are virtual spaces that teachers and students can use to present and share resources and activities and interact 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 includes a course syllabus, pre- requisites registration, skillful mentor or instructor, and distant learning applications ((Tulbure; 2012, Deka & Jena;2017, Fu; 2013). According to Rajkumar and Hema (2016) Some features and compositions that make virtual classroom essential in teaching and learning processes are Assignments folders, Audio features, Blog, Chat room, Video component, Simulation tools, Grading books, Emails, Online calendars, Examinations and Quizzes. Virtual environments are considered suitable in teaching and learning of science-based subjects. Effective implementation of virtual classroom has great implication for teaching and learning as it promotes students' interest in learning contents and encourages teachers' efficiency. Virtual Learning Environments (VLEs) promotes and allows the learner to study from any distance outside the classroom and the learner is able to study with less tension and competition. In a virtual learning classroom, the learner has the opportunity to listen to lectures, participate in class activities, ask questions, and receive feedback through their phones, ipads or computers with the support of the internet connection as if they are in a face-to-face classroom. According to Lokie (2011) virtual learning expands the possibility of using internet facilities, platforms, satellite links, and related system to access, analyze, create, exchange, and use data, information, and knowledge in ways which until recently, were almost unimaginable. The VLE provides a unified platform for content delivery, communications, assessment, and course management; with managed interfaces linked to the institution's central information systems and resources. It also helps to improve students' skills through engaging them in online learning activities and communication (Stiles, Beastall, Craig in Areej & Abdulrahman; 2011). Alves, Miranda, and Morais (2017) stated that, in order to promote and improve teaching and learning within higher education, higher education institutions have adopted learning management platforms hereinafter referred to as Virtual Learning Environments (VLEs). These environments have been used both by institutions directed towards

distance learning and by institutions essentially directed towards onsite learning. According to Anekwe (2017) the advantages of virtual learning environment includes;

* It provides the learners the flexibility of getting the learning experiences at the time, place and rate of assimilation.
* Virtual classroom can help in good class organization. The operational documents, assignments, class notes and other related information in the internet can be readily categorized for easy accessibility for the teachers and students. The information posted on the internet could be easily revised and updated for more effective teaching and learning.
* Virtual classroom provides the learners with the opportunity of gaining learning experiences 24 hours of every 7 week days without tampering with the learners' leisure time.
* The system has the capability of employing the services of most experienced personnel in different areas of need which is not possible in traditional classroom setting.
* Another educational value is the intellectual and social partnership created by the technology of virtual classroom. Students in their use of technological equipments cultivate the habit of leadership role in relation to other students (Husu, cited in Anekwe, 2017). The implication is that the technology used increases group cohesion and mutual support more especially in remote classrooms. Besides the virtual classroom enables the students to develop a range of communicative skills that enable them perform creditably in class.
* Cost effectiveness is a great advantage. Virtual classroom saves money, time and transport for students. The students who are motivated could work on their own at their home environment without wasting time and money to travel to school.
* The teacher equally enjoys the teaching because everything is digital and these works in general are sent through e-mail typed. The teacher can easily re-use his materials and can easily get materials elsewhere.
* The system can prove quite advantageous to the students in various ways with regard to its on-line features. It will help in admission, information about the courses and academic activities, assignments and projects, tests and evaluation, grading and results, faculty available for interaction, guidance and needed help, information about the commencement of the public examinations, merit schemes, entry in a vocational and professional streams etc.

One of the factors that determines successful implementation of any innovation in the teaching and learning process is the users' attitude. The positive or negative attitude of users of virtual learning environment (VLE) determines the success or failure of its resourcefulness in pre-service teachers' education. Attitude is a psychological construct that is used to describe a persons' response to a particular situation. It determines a persons' behavior towards a particular stimulus. Attitude is defined as a disposition of individuals for organizing thoughts, feelings and behaviors towards a psychological object and positive teacher attitudes are considered as an important predictor of successful teaching practices (Erdemir, & Bakırcı;2009). According to Fishbein and Ajzen in Halilu, Yushau, and Yalams(2019) attitudes are determined by the analysis of the information regarding the result of an action and by the positive or negative evaluation of these results. According to Buabeng-Andoh (2012) It is shown that when teachers have positive attitudes towards the use of technology, they can easily adopt and integrate technology in learning-teaching processes and practices. Awofala, et al (2019) stated that, it is vital to comprehend teachers' attitudes toward computer and the elements that affect these attitudes. The fruitful integration of computers in the teaching and learning process is a function of the attitudes of teachers and their readiness to accept the technology. Halilu et al (2019) indicated that attitude represents the conceptual value of these technologies in the minds of the users, not the values of the technologies themselves. Supporting the idea, Spacey, Goudling, and Murray (2003) in a study found that, positive attitudes are fundamental in implementing new technologies. Nassoura (2012) pointed out that many students had positive attitude towards e-Learning because it had a positive impact on their motivation as well as self-esteem. The attainment of any educational practices depends on the attitude of the teachers' towards incorporating ICT in teaching learning process. Teacher's positive attitude towards the blending of ICT and its tools and devices in teacher education process is an important issue because teachers' attitudes have been established to be a foremost forecaster of assimilating ICTs in educational process.

Rudden and Mallery in Liu (2005) studied the effects of short term Internet instruction on pre-service teachers' concerns about technology integration. They found that even short term Internet instruction can promote pre-service teachers' attitudes in four of the seven areas: awareness, information, consequence, and refocusing. Findings have revealed that a significant relationship exist between computer attitude and its use in institutions for pre-service teachers, and also for serving teachers in the affective attitude, general usefulness, behavioral control, and pedagogical use (Yuen & Ma, Khine as cited in Yusuf & Balogun, 2011). A positive attitude towards learning is paramount in ensuring that students acquire knowledge and skills that will be used in solving real life problems.

Gender is one of the factors that determine pre-service science teacher's attitude towards application of virtual Learning Environments (VLE) in teacher education. The European Commission (2013a) defines gender as a sociocultural process that encompasses the cultural and social attitudes of a particular society. Together, such processes either shape or sanction "feminine" and "masculine" behaviors, products, technologies, environments, and knowledge. Gender factor has created a lot of controversies towards technology use in education as there are inconsistent results about it. Islahi and Nasrin(2019) stated that over the years, a stereotypical view concerning technology use and gender has been developed, which is, relative to men and boys, women and girls might have more negative attitude towards technology and technology use, and they would be less actively engaged in technology-related activities and behaviors. Whitley as cited in Cai, Fan, and Du (2017) indicated that despite the inconsistencies among the individual studies, the research findings generally suggested that males showed more favorable attitudes toward technology use than females, confirming the general perception that gender differences existed with regard to technology use. Such gender difference might partially explain the gender gap in technology use and in the technology workforce. On the same note Islahi and Nasrin (2019) in their study revealed that teachers irrespective of their gender have a positive attitude towards technology. The knowledge of pre-service teachers' attitude toward Virtual Learning Environment (VLE) would provide information regarding their feeling and behaviors toward its application in their educational training.

Statement of the Problem

Innovative strategies of learning such as the internet mediated learning is gradually gaining popularity in higher institutions in the 21st century. The Virtual Learning Environment (VLE) is among the internet mediated learning strategies that has permeated into the teacher training institutions. Birkollu, Yucesoy, Baglama and Kambul (2017) stated that, University education is accepted as one of the important periods for pre-service teachers to receive education on technology, how to use and integrate it into their teaching practices, follow and adopt new trends and in technology. It becomes pertinent to determine the attitude of pre-service teachers towards application of Virtual Learning Environment (VLE) in their training process.

This study became necessary as there is lack of studies in this area to provide information on the attitude of pre-service teachers towards application of Virtual Learning Environment (VLE) in teacher education in Imo state, Nigeria.

Purpose of the Study

The main purpose of this study was to determine the attitude of Pre-service teachers towards application of Virtual Learning Environment (VLE) in teacher education. Specifically, the study will determine:

1. The attitude of pre-service science teachers towards application of Virtual Learning Environment (VLE) in teacher education.
2. Whether difference exist in pre-service science teachers' attitude towards application of Virtual Learning Environment (VLE) in teacher education as a result of gender.

Research Questions

The following research questions guided the study.

1. What is the attitude of pre-service science teachers towards application of Virtual Learning Environment (VLE) in teacher education?
2. What is the difference between the response mean of male and female pre-service science teachers on their attitude towards application of Virtual Learning Environment (VLE) in teacher education?

Hypothesis

This hypothesis was formulated to guide the study.

Ho_1: There is no significant difference between the response mean of male and female pre-service science teachers on their attitude towards application of Virtual Learning Environment (VLE) in teacher education.

METHODOLOGY

The study adopted the descriptive survey research design in determining pre-service science teachers' attitude towards application of Virtual Learning Environment (VLE) in teacher education. The population consists of all Bachelors' degree pre-service science teachers of Alvan Ikoku federal college of Education Owerri, Imo State Nigeria. The stratified random sampling technique was used to select a sample of five hundred (500) pre-service science teachers in 300 and 400 levels from seven departments of the school of sciences of Alvan Ikoku Federal College of Education Owerri. This consists of two hundred and seventy (270) female and two hundred and thirty (230) male pre-service teachers. The instrument for data collection was a researcher constructed 15 items four points likert type questionnaire titled "Pre-Service Teachers Attitude Towards Application of Virtual Learning Environment (PTATAVLE)". The questionnaire was made up of two sections, section A dealt with the demographic variables of the respondents while section B dealt with items related to the objectives of the study ranging from Strongly Agree(SA)=4pts, Agree(A)=3pts, Strongly Disagree(SD)=2pts and Agree(A)=1pt. To determine the face and content validity of the instrument, some copies were handed over to two experts in measurement and evaluation and one expert in teacher education in Alvan Ikoku Federal College of Education Owerri, Imo State their responses guided the restructuring of the instrument. To determine the reliability of the instrument, 35 copies were handed over to pre-service teachers outside the study group but with the same characteristics. Their responses were collated and subjected to analysis using Cronbach alpha formula which gave a reliability coefficient of 0.86 which was acceptable for the study. The instruments were administered to the respondents on face-to-face basis through their course representatives who were briefed on the purpose of the study. The respondents were allowed to fill and return the questionnaire on the spot which gave room for a 100 percent recovery. The data generated was analyzed using mean and standard deviation to answer research questions. Any item response mean greater than or within the criterion mean of 2.50 was accepted while any below was rejected. The hypothesis was subjected to analysis using the t-test statistical tool and tested at 0.05 level of significance.

RESULTS

Research Question 1: *What is the attitude of pre-service science teachers towards application Virtual Learning Environment (VLE) in teacher education?*

Table 1: Summary of pre-service teachers' responses

S/N	Item	Mean	SD	Remark
1	Virtual learning is very interesting	3.46	1.02	Accept
2	I understand topics taught using virtual learning environment	3.10	1.11	”
3	I can do assignments effectively through virtual learning environment	2.85	1.23	”
4	Virtual learning environment enables me learn from anywhere outside the classroom	3.56	0.95	”
5	Virtual learning environment allows me study at my pace	3.23	1.00	”
6	Virtual learning environment allows me ask questions to my lecturer without feeling of complex	2.78	1.68	”
7	Virtual learning environment enables me have uninterrupted access with my lecturer	3.25	0.94	”
8	In virtual learning environment l can have access to unlimited course materials	3.50	0.98	”
9	I get frustrated using Virtual learning environment to learn	2.32	2.05	Reject
10	I like virtual learning environment	3.05	1.32	Accept
11	Virtual learning environment saves time of moving from one classroom to the other	3.60	0.92	”
12	Virtual learning environment enables me receive answers to questions and assignments on time	2.75	1.26	”
13	I get focused and committed to learning when virtual learning environment is applied.	3.15	1.25	”
14	I prefer learning through virtual learning environment to classroom face-to-face.	2.65	1.54	”
15	I enjoy learning with virtual learning environment	2.85	1.36	”

Average mean = 3.07

Table 1 shows that item 9 was rejected indicating negative attitude as it had response mean of 2.32 which is below the criterion mean. While all other items were accepted indicating positive attitude as they had item response mean above the criterion mean and the standard deviation indicated the deviation of the scores. The average mean of the responses stood at 3.07 which is an indication of a high positive attitude among the pre-service science teachers towards application of virtual learning environment (VLE) in their education.

Research Question 2: *What is the difference between the response mean of male and female pre-service science teachers towards application of Virtual Learning Environment (VLE) in teacher education?*

Table 2: Summary of responses based on gender

Gender	No	Mean	SD	Difference in mean
Male	230	2.96	1.69	1.43
Female	270	3.12	0.89	

Table 2 shows that, male pre-service science teachers had response mean of 2.96 with standard deviation of 1.69 while their female counterparts had 3.12 and standard deviation of 0.89. This gave a mean difference of 1.43 in favor of the female pre-service science teachers.

Hypothesis

Ho_1: There is no significant difference between the response mean of male and female pre-service science teachers on their attitude towards application of Virtual Learning Environment (VLE) in teacher education.

Table 3: Summary of t-test analysis of the responses

Gender	No	Mean	SD	t_{cal}	$t_{0.05}$	Remark
Male	230	2.96	1.69	11.00	1.96	Sig.
Female	270	3.12	0.89			

Table 3 shows that, the calculated t-value of 11.00 is greater than the critical value of 1.96 at degree of freedom of 488 and 0.05 level of significance. This implies that there is a significant difference between the response mean of male and female pre-service science teachers on their attitude towards application of Virtual Learning Environment (VLE) in teacher education.

DISCUSSION OF FINDINGS

The study subjected pre-service science teachers to responding to a 15-items questionnaire to determine their attitude towards application of Virtual Learning Environment (VLE) in teacher education. Their responses lead to the acceptance of all the items except one as it did not have response mean above or within the criterion mean. Their responses among others indicated that, they liked virtual learning environment, had access to unlimited course resources, it saved them the stress of moving from one classroom to the other, they had immediate responses to questions and assignments done through the environment and enabled learn from any distance outside the classroom. However, few pre-service teachers indicated their frustration through virtual learning environment. The average mean of pre-service science teachers' responses indicated a high positive attitude towards application of Virtual Learning Environment (VLE) in teacher education. This result is in agreement with the findings of Al Mahmud (2014), Halilu, et al (2019) which showed that students had positive attitude towards learning with Information and communication technology (ICT) facilities. The result is an indication of their wiliness to adopt VLE as an alternative to face-to-face classroom learning.

The study also revealed that gender was a factor in pre-service science teachers' attitude towards application of Virtual Learning Environment (VLE) in teacher education. Though both male and female pre-service teachers had positive attitude towards VLE, but the females were more inclined to application of Virtual Learning Environment (VLE) in teacher education. This was visible through the response mean difference of 1.43 between male and female respondents in favor of the females. Further statistical analysis revealed a significant difference between the attitude of male and female pre-service science teachers towards application of Virtual Learning Environment (VLE) in teacher education. This result is in slight contrast with the findings of Mahmood and Bokhari (2012), Balta and Duran (2015) and Halilu, Yushau,and Yalams (2019) which indicated a significant difference between the male and female students towards ICT in favour of the male students. This is an indication that, female pre-service science teachers are likely to be more committed to the application of Virtual Learning Environments (VLS) in their academic activities than their male counterparts.

CONCLUSION

The study was carried out to determine the attitude of pre-service teachers towards application of Virtual Learning Environment (VLE) in teacher education. The result revealed a high positive attitude among pre-service teachers. However, gender was a factor in the attitude of pre-service teachers as female pre-service teachers were more positively inclined than their male counterparts. This implies that female pre-service teachers are more likely to apply Virtual Learning Environments (VLE) in their academic activities than their male counterparts.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made;

1. The government and curriculum planners should include Virtual Learning Environment (VLE) in teacher education curriculum as an alternative to face-to-face classroom learning.
2. Teacher training institutions should sustain the attitude of pre-service teachers towards Virtual Learning Environment (VLE) through provision of platforms and facilities to ensure its application.
3. Pre-service teachers should be exposed to Virtual Learning Environments (VLE) in their training programme to ensure their competence and sustain their attitude towards it.

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