Pre-Service Teachers, Awareness and Utilization of Virtual Learning in Colleges of Education, Enugu State

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Abstract

This study aimed to investigate the extent of awareness and utilization of virtual learning among the pre-service teachers in colleges of Education in Enugu State. The work adopts descriptive survey research design. A sample size of 400 final year NCE pre-service teachers from the three colleges of Education in Enugu State, were drawn from a population of 1250 through purposive method. Two research questions guided the study. A self developed questionnaire titled "Pre-service Teachers Awareness and utilization of virtual learning questionnaire (PTAUVLQ) was developed to collect data. Findings revealed that a greater number of pre-service teachers were not aware of what constitutes virtual learning. Findings also showed that a greater number of pre-service teachers were not utilizing virtual learning in instructional delivery. The findings boiled down to that, students lacked much knowledge of what virtual learning is all about. Findings also showed that a greater number of pre-service teachers were not utilizing virtual learning in instructional delivery; students lacked much knowledge of what virtual learning entails and the benefits to their curriculum offering; they were not likely to highly engage in virtual learning to enrich their course curriculum. This could make them lag behind other students from other colleges of Education who were aware and utilize the virtual learning. It was critically recommended that efforts should be made to improve virtual learning of students and integrating virtual activities in curriculum delivery in schools especially in colleges of Education.

Keywords: Virtual learning, Awareness, utilization, Curriculum content, colleges of Education

Introduction

The advent of internet has precipitated major and rapid technological changes that have resulted in blooming business industries, competitive job markets. This has made the bulk of information and more so relevant information to be searched and retrieved from the www. The world is in an era where changes are unavoidable. There is no end to the volume of information that society claims we need to possess. Every new day drives us a step further into a system where knowledge is gainful. While there is a progress in all aspects, the needs of the society in the area of education should not be over looked. It is through education can the assessed information be transmitted. Education institutions in the past have been playing the official role of transmitting knowledge until recently when the main purpose of education came to mind which is to develop innovative, creative and probing minds (Talib & Mbero, 2010). They further stated that, while the educational institutions of yesterday were built around the needs, ideas and resources of the past, today they are focusing on providing a learning environment that is informal and flexible (Teemu, Ulla, Mareena, Kokko, Jyri, Henriikka, Erkko & Laura, 2021) where effective learning can take place, not necessarily confined to the locality of education institution. With the emergence of technology and multimedia, the world can gladly succumb to the delights of virtual education and bring learning into our homes, study at our own convenience and earn qualifications that hold in store a better future. Through the digital fusion of technologies like computer, television and telecommunication as virtual education, we have a powerful tool to assimilate knowledge and facilitate the teaching and learning process.

Virtual education means the use of technology to deliver a significant portion of instruction to students via the internet, in a virtual or remote setting. Virtual education refers to as an instruction in a learning environment where teachers and students are physically separated by time, or space or both (Alib &Mbero, 2010). It is where courses are delivered entirely online, where physical distance between teacher and student is immaterial. Virtual education according to them does not only make education more convenient, it also provides the ability to control, store and extract whenever needed, information in its various forms, tailored to suit the immediate needs of individual. The virtual education programmes in most of the developing counties, and even in some of developed countries, are aimed at training future teachers, to recognize the needs the information age for new

learning skills, to know virtual learning environments and know how to use the information communication technology (ICT) tools and processes (Abidoye & Fakokunde, 2018).

Lokie (2011) defined virtual learning as the learning that is not confined within the walls of a classroom but that, which 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. It involves learning acquired via interaction with digitally delivered content, net work-based services and tutoring support often with any type of online tool and media including the internet, intranets, extranets, simulations and games, virtual worlds, clouds, satellite broadcasts and web platforms (Jarmin, 2011); Abidoye and Fakokunde (2018).

It is carried out through the use of and integration of electronic discourses such as e-mail, portal, downloadable-executable file, face-book, social networking, web platforms, electronic dissertations and e-portfolios and so on. Virtual learning is a type of information and communication technology that facilitates learning to improve the quality of teaching and learning (Suri & Sharma, 2014). It also refers to the use of technology in learning in a much broader sense than internet –based learning, mobile learning and computer assisted education (Krishnakumar & Rajesh, 2011). Virtual learning uses interactive technologies and communication systems to develop better learning experiences (Suri &Sharma, 2014). It covers a wide range pedagogical tools and approaches to meet the needs of students and teachers by offering opportunities to create environments, in which students and teachers can share knowledge (Kar et al, 2014).

Universities have expanded their use of virtual learning to provide better and more cost-effective ways of teaching and learning (Suri & Sharma, 2014). Virtual learning creates equal opportunities in education and provides the opportunity for ubiquitous learning with the use of information and communication technologies (Bicer & Korucu, 2020). Since virtual learning is a process controlled by students, it is important to know their abilities and skills (Gulbahar & Alper, 2014). In lieu of this, Nigerian government has made a commitment to improve the information and communication technology skills of its people and to bridge

the digital gap by targeting Nigerian higher institutions (FME, 2007). Abidoye & Fakokunde, (2018) affirmed that, the FRN (2014) earlier stated that, the government shall provide facilities and necessary infrastructure for promotion of ICT and e-learning". They further affirmed that these commitments are in line with that of the New Partnership for Africa's Development (NEPAD) to achieve a sustainable development in the 21st century. Furthermore, much technology has been placed in schools such as computers educational software and much training for teachers' skills and knowledge of teaching with technology which has been provided.

Multiple use of technology in teaching including the use of power points presentation in the presentation of teaching, seminars, conferences, workshops and other educational platforms, backing up files, and word processing programmes are examples that have boosted teachers' morale and serves as the benefits of the practical use of virtual platforms in schools, but despite all these efforts made by government, many teachers still do not integrate technology effectively in their classroom even when they have the technology and initial training (Abidoye 2016). The situation is attributed to a variety of factors, which include lack of proper teacher education. (Brown, 2010). Some of such problems as explained by Agyei and Voogt (2015) bother on software issues judging by the fact that such software is not originally developed by the teachers. Agyei & Voogt, (2015) argued that most of the software applications being used in schools such as databases, spread sheets and word processing software were created for business purposes and not for education. Also some video sharing platforms such as face-book, you tube, Insta gram, twitter and others which are now originally created for educational purposes. Though, many teachers started utilizing the software in teaching, initially they were not meant for this purpose and so it remains difficult for teachers to use these software in the teaching and learning process appropriately (Agyei & Voogt, 2015). Another issue is that many teachers are not competent in using the software since the main aim of creating them was not for teaching and learning (Cuban, 2001). Therefore, training and education should take into cognizance teacher motivation regarding the use of technology (Molia 2010). Virtual learning has been described as an enabling process, which depends on learners' awareness.

Pre-service teachers are student teachers who are enrolled in a teacher education programme and working toward teacher certification, trained by the in-service teachers. Pre-service is used to describe the education and training that occurs prior to a practitioner obtaining a college degree and entering the workforce. It prepares students teachers to meet the personnel standards of a specific discipline in the process of preparing to become a teacher. Pre-service teachers during their practicum, (teaching practice) are involved in active observation and may also participate in preparing materials to be used for the beginning of the school year's work. Teaching practice is a vital part of their education which gives them opportunity to practice teaching to know how well they are suited to the role and whether they enjoy being a teacher. Teaching practice also allows student teachers to practice the art and science of teaching, and the supervision and support of experienced teachers.

Teaching is much more than standing in front of a classroom and sharing ones knowledge with the group in front of him. It is a role one is employed to do in an institution or college of Education.

College of education is a tertiary institution or teacher training college principally engaged in teaching or research oriented towards the need of pre-school, compulsory or post compulsory sections of education and trainings, which is administered by a governing body constituted by Teachers' training authorities.

Awareness refers to knowledge and understanding of the meaning, structure and content of any new technology like the internet. It also involves awareness of the potential benefits of using that technology. Creation of awareness empowers people to participate in applying the new technology, designing the new technology tools and having a meaningful role in society's development and thereby provides the basis for investigating the status of virtual learning among the students of colleges of education viz-a-viz Eha-Amufu (Federal), Nsukka and ESCET, all in Enugu State.

Statement of the Problem

Many NCE teachers are solely exposed to traditional lecture methods of teaching. Again, many lecturers lecturing in colleges of Education principally teach through

traditional lecturing, that is, lecturer-centred method, despite the influx of virtual technologies (no matter the level of the tertiary institution). This means that many pre-service teachers do not see distance teaching and learning as effective as the traditional method. Many rather see virtual learning as a threat to the higher principles of education, a regressive not approved trend, towards the rather old era of standardization and which is purely for commercial interest (Ahmad, 2012). The traditional lecture method which have been used by many lecturers currently in most of Nigerian teacher training institutions especially colleges of education, is inappropriate for teaching some of the new technology concepts in the curriculum to this technology driven age. Studies had also revealed that the use of traditional lecture method alone cannot make students fit in into this globally literate and succeed in this information age. Awareness and utilization of virtual learning among pre-service teachers would determine to the great extent, if Nigeria could have more independent learners who are problem solvers and who can contribute positively in improving the quality of teacher education programme in Nigeria. Many trainee teachers have smart phones and other digital technologies that are internet enabled devices and many also have access to the internet enabled computers. As we live in a fast-paced world, and traditional learning is often an obstacle, due to outdated learning resources, digital learning makes it possible to update study materials fast and in real time, keeping content fresh and relevant in quickly changing environments. When students are taking an online class, they can be certain the information received is updated to the current climate, whereas in traditional settings, textbooks may still contain outdated irrelevant content. That is why Prensky (2001), Abidoye and Fakokunde (2016) and Gul Ozudogru (2019) found that young people of the digital native generation possess sophisticated knowledge of and skills with information technologies. Therefore, whether pre-service teachers in Enugu State use these facilities, knowledge and skills for virtual learning is yet to be empirically found out. However, most of the studies on the virtual learning in teacher training institutions were around the developed countries of the world like Britain, USA, UK with very few studies in developing countries like Nigeria (Molia, 2010). Therefore, as move towards virtual learning in tertiary institutions continues to grow, the more important it becomes to 'examine the awareness and utilization of virtual learning among pre-service teachers' in colleges of education in Enugu State'.

Purpose of the problem

The general purpose of the study is to investigate the awareness and utilization of virtual learning among pre-service teachers' in colleges of Education in Enugu State. Specifically, the study seeks to find out:

1) The extent pre-service teachers' in colleges of Education are aware of what made up virtual learning.
2) The extent pre-service teachers' in colleges of Education utilize virtual learning for instructional purposes.

Research questions

Two research questions guided the study.

1. What extent are pre-service teachers' in colleges of Education aware of what made up virtual learning?
2. What extent are pre-service teachers' in colleges of education utilize virtual learning for instructional purposes?

Literature Review

Conceptual framework

Pre-service Teachers

Pre-service teacher also known as student teacher, teacher candidates, aspiring educator, emerging mentor, future pedagogue, novice instructor, trainee educator, prospective tutor and practicing teacher role are terms used to describe the student teachers who are enrolled in a teacher preparation programme, who must successfully complete degree requirements including course work and field experience before being awarded a teaching license. They are teachers in training who have graduated from high school and in the certificated process to become teachers (igi-global.com). They are teacher candidates who undergo a special training at a higher educational institution, which covers theoretical, practical training and certification to obtain a diploma and/ or license to become an in-service teacher. They complete supervised field-based teaching experiences with the support and mentorship of university faculty. They are students trained from higher education institutions to become professional teachers, who have little to no experience teaching in the classroom (Inf Scipedi).

Virtual learning

Virtual learning is a kind of learning that is mainly web-based e-learning platform. It needs online portfolios, learning management system, systematic use of assessment, and course content in order to provide students with regular feedback. It refers to an environment where students study a digital-based curriculum taught by instructors that lecture online via video or audio. A virtual classroom, allows online learning environment where teachers and students communicate, interact, collaborate and explain ideas without physical contact. It enables students to access quality teachers anywhere on the planets so long as they both have a reliable internet connection.

Theoretical framework

Multimedia learning theory.

Multimedia learning theory was originally propagated by Richard Mayer, in 1997. It falls under the theory of cognitivism. This theory states that deeper learning can occur when information is presented in both graphics and text than by only text. The theory hinges on the presumptions that there are two channels through which learning can occur. They are auditory and visual. The theory also focuses on how people learn through various sets of media, which is a subject very fitting in the world of virtual learning. The theory puts forth three important cognitive processes that are necessary for meaningful learning. They are selecting, organizing and integrating. This theory is predicated on the theories of cognitive load and information processing. Cognitive load occurs when extraneous information completes for the processing capabilities of the working memory and therefore interferes with the learning process. Information processing theory states that information we learn passes through stages in our memory via a series of processes that allow it to be retained in long term memory. Multimedia learning theory is based on the idea that when using multimedia, it is important to reduce cognitive load and therefore improve the information processing capabilities of our memory. Mayer (2014) states that, a major challenge for instructional designers is that meaningful learning can require a heavy amount of essential cognitive processing but the cognitive resources of the learner information processing system are severely limited. Therefore, multimedia instruction should be designed in ways that would minimize any unnecessary cognitive load. This theory can be divided into seven principles according to Clark and Mayer (2003). The principles

are: multimedia principle that says that words correspond with graphics. Modality principle is of the view that present words as audio narration rather than on-screen test. Redundancy principle explains visuals with words in audio or text not both. Coherence principle talks about adding interesting materials that hurts learning. Personalization principle says use conversational style and virtual coaches. Finally, segmenting and pre-training principles talk about managing complexity by breaking a lesson into parts.

Implications of the principles to virtual learning

An appropriate combination of graphics and words should be based to deliver a good presentation by bringing together appropriate images to go along with verbal stimuli that effectively support virtual learning. Content is presented as smaller chunks of text or smaller text blocks. This allows the learners to process small amount of information and integrate them first before moving over to the next set of data. When using words, an auditory medium is preferred to a text presentation. This makes the sensor data be processed through separate channels and be later integrated, making the learner able to process data effectively. When using both graphics and text, words are kept close to the graphics. For tests and practice questions, feedback should appear on the same page as the question or test. From the study carried out by Mayer and Clark (2003), shows that a learner obtains better results when elements of learning are not separated from each other. Information that is not relevant to the content or situation should not be included in the presentation, which includes decorative graphics and unrelated background music. Therefore, this theory posits the fact that good auditory and visual formations are very crucial when engaging in virtual teaching and learning. Pre-service teachers can increase the efficiency of multimedia learning and raise student learning results by using these design concept into the creation of virtual learning products.

Methods

The study employs a descriptive survey research design to elicit information on pre-service teachers' awareness and utilization of virtual learning in colleges of Education**.** The population of the study comprises all final year NCE students (1300) from the three colleges of Education in the State. Purposive ransom sampling technique was used to select 150 students from ESCET, 150 students

from Eha-Amufu and 100 students from Nsukka covering 10 depts from each college. Therefore, from the three colleges of education, a total of 400 pre-service teachers were selected. The point of decision fixed at 25 items that attracted a mean of 2.5 and above was accepted. While any item that attracted a mean of less than 2.5 was rejected. Final year students were chosen because they have been exposed to compulsory courses in computer and ICT usage. The instrument used in this study was a 20 item questionnaire designed by the researcher titled "Pre-service teachers awareness and utilization of virtual learning questionnaire (PSTAUVLQ). It was a four point scale questionnaire of strongly agreed (4), agreed (3), disagreed (2) and strongly disagreed (1). The questionnaire has two parts. Part one of the questionnaire elicited information on pre-service teachers' awareness of virtual learning, then the second part of the questionnaire elicited information on the pre-service teachers' utilization of virtual learning. The instrument was validated by two experts from Arts Education and one from Science Education both from UNN. Cronbach Alpha was used to establish the reliability of the instrument. The positive value of 0.87 was recorded and so the instrument was considered suitable to be used for the study. Data collected was analyzed using mean and standard deviation.

Results

Research question one:

What extent are pre-service teachers in colleges of Education aware of what constitutes virtual learning.

Table 1:

Extent of pre-service teacher's aware of what constitutes virtual learning. N=400

S./N	Items	VHE	HL	LE	VLE	Mean	Std.dev.
1	I do research for course content information from online data base	34	200	120	46	2.56	.67
2	I often learn from mobile phones through network technologies	20	243	78	59	2.51	.73

3	I learn through internet stimulated tutorial without physical classroom or tutor	10	260	80	50	2.50	.57
4	I often text to friends examinations, quizzes and assignments online	10	60	280	50	1.48	.67
5	Students can read with ease, view, listen to online academic programmes through their smart phones, maps and other internet facilities	40	178	132	50	2.46	.84
6	Reading and sharing information through different educational blogs are very easy	10	278	80	32	2.50	.57
7	I download information through internet for class assignments	70	209	70	51	2.71	.89
8	Learning through online self-spaced (asynchronous environment), course contents with search engines and hyperlink support are cumbersome.	5	45	135	215	1.51	.64
9	Some outline educational project teams require identification before participating	15	65	220	100	2.00	.79
10	It is very easy to learn from self accessed web modules that relates to personal needs	10	240	120	30	2.53	.64
	Grand mean average 2.27						

Table 1 shows VHE the pre-service teachers agreed to the following items: 1. (2.56); 2.(2.51); 3(2.50);6.(2.50), 7.(2.71); 10(2.53) because their mean scores were up to 2.5 and above.

The Table also shows VLE the pre-service teachers disagreed to the following items: 4.(1.48); 5.(2.46); 8.(1.51) & 9 (2.00) because their means scores were below the benchmark of 2.5. Based on the grand mean average score of 2.27, which falls within the point of decision fixed for low extent, it can be therefore deduced that the extent to which pre-service teachers in colleges of education are aware of what constitute virtual learning is low.

Research Question Two

What extent is the pre-service teachers in colleges of Education utilize virtual learning in instructional delivery?

Table 2: Utilization of virtual learning pre-service teachers in colleges of Education N=400

S./N	Items	VHE	HE	LE	VLE	Mean	Std.dev.
11	Virtual learning technological tools have links information that direct students to sites to browse and read in order to gain enough knowledge about ones course	25	230	70	75	2.52	190
12	Virtual learning provides students access to online lecture notes, exams, assignments and quizzes in their field of study.	20	215	85	80	2.45	.86
13	Virtual learning provides access to flexible learning environment for students and lesson students contributions	70	146	95	89	2.51	1.03

14	Virtual learning platform provides knowledge that are educative in such a way that students feel they have no control over the way they learn	0	50	107	243	1.51	.71
15	Different interactive technological tools of virtual learning cater for students different styles of learning	47	200	70	80	2.53	.93
16	Virtual learning boosts students understanding of the interrelationships of students globally	105	210	76	12	2.62	.89
17	Students use their phones to attempt online assignments with instructions and guidelines from the learning platform	55	170	74	107	2.50	1.10
18	Virtual learning platform allow student flexibility in learning at their pace in and outside school	85	134	74	107	2.50	1.10
19	Virtual learning does not provide avenue for students to download assignments from other countries and submit as their	0	70	75	255	1.53	.77
20	Virtual learning platform provides avenues for students' assignments, term papers, seminar papers or projects to be written for them after payment	108	110	46	136	2.46	1.20
	Grand mean average	2.31					

Table 2 shows the extent pre-service teachers agreed to the following items: 11(2.52); 13(2.51); 15(2.53); 16(2.62); 17(2.51) and 18(2.50) because their mean scores were up to 2.5 and above. The table further shows VH extent the pre-service teachers disagreed to the following items – 12(2.45); 14(1.51); 19(1.53) and 20(2.46) because their mean scores were below the benchmark of 2.5. Based on the value of grand mean average score of 2.31 which falls within the point of decision fixed for low extent, it can be induced that the extent to which pre-service teachers in colleges of education utilize virtual learning in instructional delivery is low.

Discussion

The findings of this study revealed that the pre-service teachers' level of awareness of what constitute virtual learning is low; reason being that a great number of the pre-service teachers were not aware of what made up the virtual learning. It was found that they can do research for course content information from online database; learn from mobile phones through network technologies; learn through internet stimulated tutorial without physical classroom or tutor; reading and sharing information through different educational blogs; download information for class assignments and learn from self accessed web modules that relates to personal needs. On the other hand, a greater percentage of students did not know that they could learn through texting friends, examination, quizzes and assignment online, self-spaced course content with search engines and interlink support are cumbersome and that some online educational project teams require identification before participating.

This showed that a great number of students are not aware what constitutes virtual learning. The finding agrees with the findings of Abidoye and Fakokunde (2018) who found that students in colleges of education, Enugu State have poor knowledge of virtual learning.

Again, the findings of this study showed that the pre-service teachers' utilization of virtual learning in instructional delivery is in low extent. Reason was that they did not utilize virtual learning for instructional delivery. It was found that a great number of pre-service teachers could only utilize for instructional delivery, technological tools that have information links that direct students to enough knowledge about their field of study, virtual learning that provides students

access to contributions, virtual learning that caters for students different interactive tools for different styles of learning virtual learning boosts students understanding of the interrelationships of students globally; students use their phones to attempt assignments online. With instructions and guidelines from the platform, and finally virtual learning platforms allow students flexibility in learning at their pace in and outside school. On the other hand, a certain percentage of pre-service teachers did not utilize virtual learning for instructional delivery for they did not utilize the virtual learning platform that provides educating knowledge in such a way that students feel they have no control over the way they learn. Learning does not provide avenue for students to submit as theirs and finally virtual learning platform provides avenues for students' assignments, term papers, seminar papers or project to be written for them after payment. In other words, a great number of students did not utilize virtual learning for instructional delivery. This finding is in agreement with the finding of Sani, Oseyi and Agunsoye (2018) who found that students and lecturers possess low ICT literacy level, that is the prerequisite for ICT competencies; that many students in public tertiary institutions are from remote areas where they are unexposed to various technologies, is a major limiting factor. Such students have to be adequately trained so as to be aware, be able to access and utilize virtual learning or else, they will completely be cut off from academic activities.

Conclusion

Based on the findings of the study, it is concluded that pre-service teachers in colleges of education have low extent level of awareness and utilization of virtual learning. It is also concluded that student, and lecturers possess low ICT literacy level that is the prerequisite for ICT competencies. That many students in public tertiary institutions are from remote areas where they are not exposed to various technologies, which is major limiting factor. Therefore, such students have to be adequately trained so as to be aware, be able to access and utilize virtual learning so not to be completely cut off from academic activities.

Recommendations

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

1) Government should invest more funds in providing digital technologies to the colleges of education to enhance the ability of the colleges of education to expose to virtual learning.
2) Governmental agencies and various teachers' institutions should organize seminars and conferences to intimate colleges of education students more on the constituents and benefits of virtual learning to their course curriculum.
3) In other to make pre-service teachers became very much aware and utilize virtual learning, there need to be incorporation of virtual activities with the curriculum, teaching and learning pedagogies, measurement of actual learning and outcomes.
4) Colleges of education should enhance ICT training for students. They should be exposed to a range of co-curricular practical activities on virtual technology to enable them become more aware and be motivated for virtual learning. Therefore, there is need to provide adequate platform to connect both lecturers and students for reliable virtual learning.

References

Abidoye, J. A. (2016) The application of digital photographic prints and student academic achievement in senior secondary school Geography in Ondo State,*Faculty of Education Journal*. University of Berun.

Abidoye, J. A. & Fakokunde, J. B. (2018). Preservice teachers' awareness and utilization of virtual learning in colleges of education in Ondo State, Nigeria. In *Studies in Education*, 18(1) 21-30.

Agyei, D.D and Voogt, J.M. (2015). Preservice Teachers' Track Competencies for spreadsheet integration; Insights from a mathematics-specific instructional technology course. *Technology, Pedagogy and education*, 24 (5), 605-625.

Ahmed, S.A. (2012). Essentialities for e-learning; the Nigerian tertiary institutions in question. *Academic Research International* 2(2), 286-291.

Bicer, H. & Korucu, A. T. (2020). The adaptation of the attitude scale towars e-learning into Turkish. *Educational technology theory and Practice*, 10(1), 237-256.

Brown, S. (2010). From VLEs to learning webs: the implication of Web 2. 0 for learning and teaching. *Interactive learning environments*, 18 (1), 1-10.

Federal Ministry of Education (2007). *Ten-year strategic plan*. Abuja: Federal ministry of Education.

Gulbahar, Y & Alper, A. (2014). Development of e-learning styles scale for electronic environments. *Education and science* 39 (171), 421-435.

Jarman, L. (2011). Homo vertualis: virtual worlds, learning and an econology of embodied interaction. *International Journal of Virtual and Personal Learning Environment*, 1 (1), 38-56.

Kar, D, Saha, B., & Mondal, B. C. (2024). Attitude of university towards e-learning in West Bengal, *American Journal of Educational Research* 2 (8), 669-673.

Krishnakumar, R. & Rajesh, K. M. (2011). Attitude of teachers of higher education towards e-learning. *Journal of Education and Practice*, 2 (4) 48-54.

Molia, J. (2010). Addressing first and second order barriers to changel: Strategic for technology integration. *Educational Technology Research and Development* 47(4), 47-61.

Ornstein, A. C, Levine, D. U., Gutek, G. & Vocke, D. E. (2016). *Foundations of education*. New York: Nelson.

Ozudogru, g. (2019). Preservice Teachers' e-learning styles and attitudes towards e-learning. *Inquiry in Education*, 14 (1), 1-14.

Sam, J. O. Oseje, N. A & Agunsoye, F. B. (2018). Shifting from classroom learning to e-learning in Nigerian public tertiary institutions: Way forward in era of covid-19. *In Journal of Applied information science and Technology*. www.jaistonline.org.

Suri, G. & Sharma, S. (2014) Students attitudes towards e-learning. A case study skyline *Business Journal* 10 (1), 38-42.

Talib, M & Mbero, Z. A. (2010), Hyperlink learning in tertiary institutions: The role of multimedia. *In the information Technologist* 7 (1) www.ajol.info.

Teemu, V; Ulla, h; Mareena, H, Kokko, A; Jyri, M., Henriikka, V; Erkko, S and Laura, H. (2021) Learning environment preferred by university students; a shift towards informal and flexible learning environments. *Learning Environment Research* 25: 371-388 https://doi.org/10.1007/s10984-020-09339-6 24/5/2024.