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Challenges Facing Application of E-learning Facilities in Vocational and Technical Education Program in South Nigeria Universities

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Abstract: The advancement of science and technology has improved system of learning and instruction; this has moved learning instruction to e-learning. Vocational and Technical Education as instrument for national development must join suit in this dynamic and evolving of instructional delivery, in order to achieve its purpose in the life of the people and the nation. The study examined the concept of VTE, emergence of e-learning, e-learning facilities, benefits of e-learning in Vocational and Technical education, challenges of e-learning application in VTE, strategies for improving e-learning application in VTE. In conclusion it was discovered that in spite of the relevance of e-learning in teaching and learning of VTE, teachers are not utilizing it, this is mainly due to the unavailability of facilities for e-learning and the inadequacy of the facilities where available, this is in addition to the fact that stakeholders are not providing enabling environment for it to thrive. It was recommended that government and stakeholders in education should provide facilities in e-learning, put policies in place to encourage the enforcement of e-learning in institutions, make internet connectivity priority in Universities, make adequate budgeting allocation for procurement and maintenance of facilities for e-learning among others.

Keywords: Evaluation, Farming Skills Acquisition Programme and Farming Skills Acquisition Centres.

1. Introduction

The entire globe is being turned into one village due to the advance in science and technology. The traditional system of learning is no longer popular. The mode of learning is tilting towards e-learning, Vocational and Technical Education (V.T.E), which is catalyst in national development and a means of poverty reduction cum job creation, needs e-learning to advance its course.

The different options of V.T.E are: Agricultural Education, Business Education, Consumer Education, Computer Education, Home Economics Education, Fine Arts Education, among others. Due to the large number of students enrolled in V.T.E and the problems of ill-equipped, obsolete and inadequate laboratories/workshops and shortage of manpower; it becomes imperative to use virtual approach of e-learning. Electronic learning, or simply put E-learning may be described as a technological mediation and digital empowered learning that utilizes hardware (e.g. Pcs, tablets, printers, digital cameras, digital videos, scanners, overhead projector), software (e.g. operating system, cloud technologies, applications, writing, editing, Ms. office) and CD textbooks that falls in the category of courseware, e-contents, USB drives, CD-ROM, whether from a distance or face to face learning to empower teachers to students interaction (Eze, Chinedu-Eze & Bello, 2018). Adelabu and Adu (2015) opined that it involves the application of computer and information technology in teaching and learning. The paper will look at the advantages of e-learning, concept of VTE, emergence of e-learning, types of e-learning facilities, benefits of e-learning application, challenges of e-learning application, strategies of improving the application of e-learning facilities, recommendation and conclusion.

2. Concept of Vocational and Technical Education

Vocational and technical education (VTE) popularly known is referred to by the United Nation Education Scientific and Cultural Organization (UNESCO), the International Labour Organisation (ILO) and other International agencies as Technical Vocational Education and Training (TVET). V.T.E has been delivered

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or taught in Nigeria Schools through the traditional way of learning, with the use of chalkboard, which is most often teacher centered, in the classroom, workshop or the laboratory. The assessment most times is not competency-based, with paper, pen and pencil. The major emphasis is on the theoretical component of the program. There are however new challenges and demands occasioned by the rising wave of technology and pedagotronics in education, changes and complexities/uncertainties of today's world and globalization.

Vocational and technical education is define by UNESCO in Ekpeyong (2011) as an aspect of the educational process involving the study of technologies and related sciences and the acquisition of practical skills, attitude, understanding and knowledge related to occupation in various sectors of economic life.VTE is a lifelong education that prepares the recipient for the world of work through acquisition of relevant and sustainable skills. Barbados (2018) opined that TVET is workforce training that includes all programmes and courses that contribute towards the development of the knowledge, technical skills, attitude and essential skills of being competitive in the world of work. In the view of Uwaifo (2009), technical education is the training of technically oriented personnel who are to be the initiators, facilitators and implementers of technological development of a nation.

The objectives of TVET as enumerated by Federal Republic of Nigeria (FRN) (Olulube & Ubogu, 2008) include:

- Provision of trained manpower in the areas of applied science, technology, business particularly at craft, advanced craft and technical levels;
- Providing the technical knowledge and vocational skills necessary for agriculture, commercial and economic development; and
- Give training and impart the necessary skills to individuals for self-reliance economically.

3. Emergence of E-learning

Electronic learning is the application of information communication and technical (ICT) in teaching and learning. Ozoemena (2014) defined e-learning as the application of a whole range of technologies involved in information processing and electronic communication such as computers, internet, e-mail, computer software, satellite, mobile communication gadgets and other allied electronic devices for dissemination of knowledge and information. The term e-learning has been in existence since 1999, when it was first used at CBT system seminar in Los Angeles and in the year 2000, business began using e-learning to train their employees. By 2010, e-learning has been inspired by social media such as YouTube, Twitter, ITunes, Skype etc (Gogos, 2014).

Workers have opportunity to improve upon their industry learning base and expand their skills through e-learning in VTE. At home individuals were granted access to program that offers them ability to earn degrees and enrich their lives through expanded knowledge in VTE. Today e-learning has come to stay as many persons own computers, there is also an increase in internet connecting speed and virtually everyone now has Smartphone and other portable devices with which to connect to the world of learning and access knowledge, aptitude and skills in the world of work.

3.1. E-learning Facilities

As global economic lockdown and recession continue schools and VTE teachers are diverting to web based services to educate their students. Whether it's through open resource projects or virtual classrooms, VTE instructors are finding innovative assets to connect with their students. Hence, there are quite number of e-learning platforms or facilities that could be utilized in teaching and learning of VTE programs in Nigeria School setting. Some of the e-learning facilities according to Chou in Abuloke, Poripo and Eteh (2017) include:

- **Scitable:** This is designed for advance secondary school and school science students, Nature Education dispatched scitable to give free online access to in excess of 180 diagrams of key logical and genetics concepts. The apparatus comprises of 220-article content library (regularly cited to individuals from the Nature Publishing gathering), in excess of 200 virtual classrooms set up by instructors all over the world, and a guide organization of specialists ready to address student's

questions. Professional Technical Educators and students can transfer their own content for investigation and conversation, while the content library gives various articles acknowledged as legitimate sources at the college and university level.

- **Edutopia:** The George Lucas Educational Foundation dispatched Edutopia with expectations of making instructive prescribed procedures for interactive media in the study hall. The webpage incorporates surveys, curated online journals, evaluation apparatuses and committed magazines for instructors at the K-12 levels.
- **Learn Hub:** Learn Hub is where individuals can make their own networks, share exercises, talk, make tests and mentor each other online with no expense. Schools make their own virtual study halls where understudies total tasks, mess around and share photographs and text. One of the incredible highlights of this site is that the site's report generator permits educators to keep tabs on clients' development. While the substance isn't as top to bottom as Scritable's, this is a decent site for government sanctioned test planning and fundamental K-12 training and education exercises.
- **Moodle:** Moodle is a free open source course the management platform intended to assist instructors with making better online assets. Presently notwithstanding giving exercise plan, task and test making devices for instructors, schools likewise access Outlook Love for email, Office Live workspace for record sharing, Window Messenger for talk and Window Live SkyDrive for 25GB of capacity. This tools or apparatus is somewhat further developed than a portion of the others in the business, yet it offers various versatile arrangements.
- **Edmodo:** Edmodo is a private miniature publishing content to a blog administration for schools that permits educators to alter security alternatives inside their virtual study halls. Teachers create a join code and understudies sign in to talk, connection to records, share notes and check their aggregate schedules for up and coming assessments, tests and Pro-D days.
- **ESL Video:** ESL Video permits language teachers to make tests from practically any video on the web. From here they can insert their tests into their study hall locales or divert understudies to the ESL Video space. Instructors tailor their tests to explicit learning units. While this device may not be as complex as a portion of the above administrations, its legitimacy originates from the way that instructors can consolidate mainstream society items in their exercise plans with almost little or no effort to ignite a love of the unit or module being taught.
- **Zoom:** *Zoom* is a web-based video conferencing tool with a local, desktop client and a mobile *app* that allows users to meet online, with or without video. *Zoom* users can choose to record sessions, collaborate on projects, and share or annotate on one another's screens, all with one easy-to-use platform.
- **E- Library:** E-library or Digital library is a physical site and/ or website that provide around the clock online access to digitized audio, video, and written material. It provides free copies of books, journals, etc. available to the users. A computerized library is a sort of data recovery framework.
- **Projector:** A *projector* is an output device that can take images generated by a computer and reproduce them by projection onto a screen. Showing presentations and information via an interactive projector gives you the ability to share notes digitally at the end of the lesson. The projector can help the teacher of VTE in teaching skills by projecting knowledge and skills already practiced and explaining at intervals. The students can ask questions and interact with the teacher at intervals.
- **PCs:** Personal computers are a multi-purpose computer whose size, capabilities and price make it feasible for individual use. They are intended to be operated directly by end users, rather than a computer expert or technician.

3.2. Benefits of E-learning in Vocational and Technical Education

Some of the advantage of e-learning include: increase in retention of knowledge, skill and attitude, exposes both teachers and students to new, innovative and proactive method of subject delivery, it can be used in teaching large group of learners, among others.

There are however challenges facing e-learning, such as high cost of internet facilities, poverty, lack of technical know-how, lack of electricity, lack of ICT skills on the part of lecturers/technologist, resistance to change, lack of commitment on the part of the Government, curriculum defect and attitude of users. The world of uncertainty especially with the Covid-19 pandemic has made it imperative for teaching and learning to embrace e-learning**.**

E-learning is a contemporary trend that has helped to bridge the gap of distance in learning. Therefore many people across the globe can learn and acquire knowledge and certify without physical contact with the educational institution. The following are some of the benefits that can be derived from the application of elearning in Vocational and Technical Education in South South Nigerian Universities:

3.2.1. E-learning has helped to break the barrier of distance in learning

With e-learning facilities people who are in different locations are able to have access to learning system without hindrance of distance. It provides learning materials to individual or group of people irrespective of time and location via a learning platform. Teaching and learning takes place at the convenience of the learner and the teacher. This make learning relatively easy for everyone including working class people, house wives, care givers and others who wish to acquires certificates, diplomas and degrees but are not able to, due to distance and time. Knowledge can be acquired within the comfort of the learner's environment. Lecturers can be arranged to suit the learner's free time and can be taken at any time and any number of times. Learning can be activated in groups as well as individually. It reduces barrier to study for those on fulltime jobs, the handicap, foreign students and others.

3.2.2. It encourages high level concentration during classes

Classes taught using e-learning facilities have less distraction from the environment since it is not done in the open class system. Learners have better concentration and it provides expeditious delivery of lessons. There is no procrastination in e-learning; it is a quick way of learning. It allows for visualization of complex collection of facts through multimedia presentations or simulation processes. Students who learn using e-learning facilities are more likely to retain their lesson than those who don't. Using e-learning, students have less pressure and this helps them remember what has been taught by the teacher and learnt by the student. E-learning gives the students the environment of choice to study as regards their comfort. In most cases victuals are used to teach and this makes the learning more concrete when concepts are visualized. This is very beneficial to vocational and technical education student' whose courses are practical oriented. So when teaching and learning, it is internalized and therefore can be replicated when required in work place after graduation.

3.2.3. E-learning avails the learner opportunity to access vast information

When e-learning is applied in teaching and learning students are exposed to unlimited amount of information through the internet. Any area, course or topic can be accessed via the internet. Current data are available for their study and this can enhance learners' understanding, which in turns lead to high productivity and greater insight on the subject of discourse which cannot be accessed through traditional teaching method is achieved. Inije (2012), asserted that, information and communication technologies (devices) are diverse set of technological devices and resources used for communication to create, disseminate, store and manage information. These technological resources that are available for teaching and learning of Vocational and Technical Education content include; e-mail, cell-phone, internet, intranet, extranet, computer, radio, YouTube, interactive CDs, satellite TV, video phone system, PowerPoint, video conferencing. Students and lecturer can cooperate and collaborate with other institutions and also exchanges ideas with students and experts in the wide world through e-learning facilities. There is easy access to extensive learning content (links, search functions, online libraries and others).

3.2.4. Provide digital based learning environment for students

The teacher and students are exposed to digital environment for teaching and learning. Computer-based medium, visual classrooms, online learning and portable based learning form part of the electronic content for tertiary institution using elearning facilities. These facilities equip the learner to be an information rich member of the society who thereafter makes use of such information as productive person. It simplifies and rearranges the entire learning cycle and makes it more powerful and locks in. The best web based learning stage rejuvenates various ideas which makes exercises more relatable and idea more clear. Onyesom (2014), observed that, great deals of instructional and administrative functions in Vocational and Technical Education are still carried out manually and traditionally. Exposing students using e-learning facilities prepares them to be able to compete with their counterparts in the labour market and in the world of work without the feeling of inferiority complex as a result of exposure.

4. Challenges of e-learning application in VTE

Vocational and Technical Education is faced with lots of challenges these includes inadequate technical and vocational education teachers, poor image and value given to technical and vocational courses, lack of guidance services for students, poor planning and implementation of curriculum by people from general education, inadequate funding of TVET in Nigeria, use of obsolete facilities for training TVET teachers and students in Nigeria and inadequate facilities and equipment. Some of these challenges can be solved by application of e-learning in VTE, though there are still challenges in e-learning application in VTE. The following are some of the challenges of the application of e-learning facilities in Vocational and Technical education delivery.

- **Underfunding:** Vocational and Technical Education programme requires enormous resources to procure and maintain human and material resources needed for effective and efficient application of e-learning facilities in the different programmes of vocational and technical education. VTE in most universities have different course areas such as Agricultural Education, Business Education, Home Economics and Industrial Education and others. These various programmes are skill oriented and therefore capital intensive. The various programmes require standard laboratories with state of the arts machines for practical classes to meet the goals and objectives of the programme. Unfortunately South South universities in Nigeria suffer the same fate as other institutions in Nigeria due to persistent underfunding. Recent records show that Nigeria allocates less than 10% of its annual budget to education (Vocational and Technical education inclusive) less than minimum of annual budget for developed countries. Over the years Nigeria has lagged behind in funding Vocational and Technical Education. Consequently facilities that can enhance the application of e-learning are not available. The problems confronting VTE include inadequate supply of technical teachers, inadequate supply of equipment and weak private public partnership. Another factor is the condition of service for technical teachers which is not different in vocational and technical programmes such as agriculture, home economics, technical and business studies at the secondary/technical and tertiary levels and this has continued to impede the smooth implementation of government policy on Technical and Vocational Education (TVE). Funding remains at the forefront for the effective management and improvement of Vocational and Technical Education in Nigeria. It was also noted that the funding of vocational and technical education in general is inadequate.

- **Lack of e-learning application skills by lecturers.** Another challenge bedeviling the Vocational and Technical Education in the application of elearning facilities is lack of basic knowledge/skills in e-learning usage and integrating ICTs in teaching and learning of VTE. Some lecturers are not conversant with e-learning facilities utilization skills. They require training in basic skills for e-learning facilities usage. Others may have the e-learning skills but encounter difficulties in integrating them into teaching and learning. For example they may not know how to convert their lecture notes in a courseware that can be passed across to students during teaching. Many new technologies for e-learning are appearing in the market and are bandwidth intense, for instance, software for capturing high quality video lectures and podcasting need huge bandwidth. Hence, there is need for investment in elearning facilities which can be a problem for many institutions in developing nations like Nigeria. Lack of funds and investment interest of education stakeholders in e-learning facilities as a priority are serious threats. Where elearning facilities are available they are usually insufficient to cater for the number of students thereby posing a big challenge to e-learning application. In some cases, some institutions have adopted Bring Your Own Device (BYOD) approach whereby the students are told to bring their own computers and laptops which they connect to institutions' network. Other institutions have not adopted the BYOD approach because it can introduce security risks to the institutional network. Tyagi (2011), affirmed that the capacity to utilize electronic learning productively relies upon essential PC abilities and competencies on what is accessible and how to utilize it, with the capacity to access course content. How much Lecturers are able to attain the e-learning skills and knowledge depends on many factors, such as their disciplines, academic status and ranks, age, access and interest towards pedagogical changes.

4.1. Irregular power supply/ power outage

Irregular supply of energy is one major challenge confronting the application of elearning facilities in Nigerian tertiary institutions for VTE teaching and learning. To use e-learning facilities for teaching and learn, power/ energy must be available to operate the facilities and for the internet to be accessed. Power supply in Nigeria is irregular and most times institutions do not have standby energy to power these facilities and so using them to teach is a big challenge. Jimoh-Kadiri (2008) asserted that it is difficult to keep high technology equipment such as the computer when electricity supply is not consistent and stable.

- **Lack of internet in institutions:**
  The internet is a uniform, global computer network connecting millions of computers users across the world. It is a voluntary network in which many computers connected have chosen to do so to share and exchange information in a quick and effective manner. The internet is one of the most unifying powers known to man. It is a worldwide computer network where one can find a lot of information and equally can communicate with other people all over the world. For instance you can look for articles in other libraries from your computer and communicate with colleagues and friends. The importance and usefulness of internet cannot be overemphasized. Olulube & Ubogu (2008) in the National Policy on Education recognizes the prominent role of Information Communication Technology [internet] in the modern world hence the integration of ICT into Education in Nigeria. Mammo and Ngulube (2015) opined that low bandwidth and unclear institutional policy constitute potential problems that are likely to hamper such e-learning access and eventual use. The cost of accessing internet facilities in Nigeria is still on the high side. Some students find it difficult to afford these facilities.

- **Large number of students in the programme/ lack of maintenance culture.**
  In most of the tertiary institutions the class size is very large compare to the facilities available for teaching and learning. Over the years Vocational and Technical Education has experienced increase in the number of students' enrolment as a result of the quest for skill oriented courses that can make one self-reliant and productive after graduation. As a result, the number of elearning facilities such as computers, laboratories and classrooms are always insufficient for effective teaching and learning of Vocational and Technical Education courses. In addition the few available facilities are not regularly maintained due to shortage of funding and the belief that government property is nobody's property. Students and even lecturers do not handle facilities with care thereby making them go bad within a short space of time. There is little or no concern on the part of government, lecturers and also students for the improvement of the present state of e-learning facilities in tertiary institutions. Students must be sensitized and oriented on good maintenance culture of educational facilities (e-learning facilities) for the benefit of effective teaching and learning.

4.2. Strategies for improving e-learning application in Vocational and Technical Education

- **Learn the basics of motivation**
  One of the practical strategies to improve e-learning in Vocational and technical education is by motivation of students. The instructor should sustain the learner's attention, make the lessons relevant, develop students' confidence and ensure that the lessons satisfy their yeaning. Keeping the course structure simple and comprehensible will help learners to get understanding of where they are heading. This would make them selfassured and confident in crossing any hurdles in their learning or training path.

- **There should be collaboration work amongst students**
  After students' participation in the e-learning course, the next phase is to encourage and increase collaboration among peers. The Professional Learning Communities (PLC), will be groups of students who collaborate regularly to be put in place. They should collaborate through emails, discussion boards, video conferencing, group phone calls, etc. to work on issues or topics related to the content or subject matter. Roles within the PLC are assigned to help encourage active participation of all the students. Students can use emerging technology tools such as wikis, blogs and podcasts to further collaborate in their respective groups. There can be crisscross collaboration.

- **The Structure used should be clear and consistent**
  Learning objectives should be meaningful and relevant to the content and should be well specified. Having meaningful, clear, and achievable learning objectives will motivate learners to engage themselves better. The instructor should structure the course in such a way that it can be understood easily. This enables students to have navigation intuition. The location of reading materials, assignments, tasks, collaborative opportunities, etc. always should be in the same location and format. The different modules should look alike.

- **Reflect and Revise**
  Another strategy to improve e-learning in Vocation and Technical Education is to reflect and revise what have been taught. There are several strategies that instructors can use to practice reflective strategies to improve the e-learning environment of Vocational and Technical Education students such as performance evaluation process and feedback. Assessing learners intermittently is another way of keeping them engaged, also by keeping records of things that happened in the cause of teaching and learning. Lastly, the course design rubrics of quality issues can be assessed.

5. Conclusion

Actual practice and observation have shown that in spite of relevance and benefits of e-learning application of facilities in teaching and learning of Vocational and Technical Educations courses, teachers are not able to utilize them in teaching and learning due to unavailability and where available, they are either inadequate or non-functional. Although e-learning application in teaching is very necessary in contemporary pedagogue, the relevant authorities and stakeholder in education have not provided the enabling environment and facilities to enhance its use in Vocational and Technical Education in institutions in South South Nigeria.

6. Recommendations

Based on the content of this paper, the following recommendations are made.

- Government and other stakeholders in education should provide facilities to enable the students learn using e-learning and teachers teach also using the facilities.
- Government should put in place policies that will encourage institutions to enforce use of e-learning facilities in teaching and learning.
- Authorities and government should make internet connectivity a priority for universities to be able to leverage on the promises and opportunities ICT present.
- Government policies and programs of e-learning in Nigerian University education should be financially supported by substantial public funding. Adequate budgetary allocation to education should be made to enable institutions provide and maintain the available facilities.
- University administrators on their part should embark on awareness and training of staff on the use of e-learning in teaching and learning with motivation attached.

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