Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

UTILIZATION AND COST IMPLICATIONS OF ILEARN VIDEO CONFERENCING IN E-LEARNING FOR DISTANCE LEARNING PROGRAMS IN GOVERNMENT-OWNED UNIVERSITIES IN SOUTH-EAST NIGERIA

Nwafor, Alphonsus Onyeachonam, Ph.D., Enekwe, Rosepetra Chiazokam, Ph.D. and Rev. Br. Prof Ekene Osuji
Department of Educational Foundations, Faculty of Education, Godfrey Okoye University, Enugu
DOI: https://doi.org/10.5281/zenodo.14717793

Abstract: This study examined the utilization and cost implications of ilearn video conferencing in e-learning for distance learning programs in government-owned universities in south-east Nigeria. The objectives were to find out the extent of utilization of iLearn video conferencing in e-learning in distance learning programmes and to determine the cost implications of utilizing e-learning in distance learning programmes of government-owned universities in South East, Nigeria. This study utilized a descriptive survey research design. The study population consisted of 12,928 respondents from ten government-owned universities in South East Nigeria; 12,752 students and 176 lecturers. The sample size for this study consisted of 1,451 respondents, comprising 1,275 students and 176 lecturers. Data were analyzed using mean ratings and standard deviations to provide a clear summary of responses. The t-test was employed to test the hypotheses, given the unbiased selection of the sample. The findings showed that the extent to which iLearn platform in e-learning is utilized in distance learning programmes of government-owned universities in South East, Nigeria is low and that the cost implications of using e-learning in distance learning programmes in government-owned universities in South East, Nigeria, included expensive uninterrupted internet facilities, high cost of maintaining computers and other devices used in e-learning, high cost of downloading resource materials and conducting research online, as well as expensive Megabyte (Mb) data and licensing or subscription fees for software tools. The study concludes that there is need for government-owned universities in South-East Nigeria to enhance the utilization of iLearn and other e-learning platforms while addressing the cost-related barriers that limit access and efficiency. It was recommended among other things that all stakeholders should implement initiatives to ensure that students in distance learning programmes have access to the necessary devices for e-learning, such as laptops or tablets.
Keywords: Utilization, Cost implications, ilearn video conferencing, E-learning, Distance learning programs

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

Introduction

Background of the study

The integration of technology into education has revolutionized traditional learning systems, providing flexible and innovative solutions to address the challenges of accessibility, quality, and affordability in higher education (World Bank, 2021). Among these technological advancements, e-learning has emerged as a transformative tool, enabling the delivery of education beyond the constraints of physical classrooms. E-learning encompasses a variety of digital platforms, tools, and methodologies that facilitate learning and interaction between educators and students in virtual environments (Anderson, 2019). This has become especially critical in distance learning programs, which aim to provide education to learners who may be geographically dispersed or unable to attend conventional classroom settings due to personal, financial, or logistical barriers.

In Nigeria, the demand for higher education has grown exponentially, driven by population growth, increased awareness of the importance of education, and government policies aimed at enhancing access to tertiary education (Okebukola, 2020). However, the conventional university system has been unable to accommodate this growing demand, resulting in the establishment of distance learning programs as an alternative pathway for many students. Government-owned universities in South-East Nigeria, like other parts of the country, have adopted distance learning programs to address this educational gap. These programs leverage technology to provide students with access to lectures, learning materials, and assessments, ensuring they receive a quality education comparable to their on-campus counterparts (Adewale et al., 2022).

One prominent e-learning tool utilized in distance learning is iLearn, a video conferencing platform that facilitates real-time interaction between instructors and students. iLearn has become a vital component of the e-learning ecosystem, offering features such as live video lectures, virtual classrooms, collaborative tools, and recording functionalities that enhance the learning experience (Ibrahim & Usman, 2021). The platform allows students to participate actively in their education, fostering engagement and a sense of inclusion despite the physical separation from their instructors and peers.

Despite its benefits, the utilization of iLearn and similar video conferencing tools in distance learning programs is not without challenges. The level of adoption and integration of such tools varies among universities, influenced by factors such as institutional capacity, technological infrastructure, digital literacy, and funding (Adewumi et al., 2023). For government-owned universities in South-East Nigeria, these challenges are further compounded by issues such as inadequate internet connectivity, inconsistent power supply, and limited access to devices for both students and instructors (Okoli, 2021). As a result, the extent to which iLearn is effectively utilized in these programs remains a subject of inquiry.

In addition to utilization, the cost implications of adopting e-learning tools like iLearn are significant for both institutions and students. For universities, the expenses involve acquiring and maintaining the necessary technology infrastructure, training staff, and ensuring the reliability of the e-learning platform (Kpolovie et al., 2020). For students, the costs may include internet subscriptions, purchasing compatible devices, and accessing online resources. These financial demands can potentially affect the sustainability of e-learning in distance

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

learning programs and the ability of students from economically disadvantaged backgrounds to participate fully in these programs.

Understanding the extent of utilization of iLearn video conferencing and its cost implications is essential for addressing the challenges and maximizing the benefits of e-learning in distance learning programs. Such insights can inform policies and strategies aimed at enhancing the quality, accessibility, and affordability of education in government-owned universities in South-East Nigeria (Uwakwe & Nwafor, 2022). Additionally, this study aligns with global efforts to leverage technology in education to bridge the digital divide, promote lifelong learning, and achieve the United Nations Sustainable Development Goal 4, which focuses on ensuring inclusive and equitable quality education for all (UNESCO, 2020).

Statement of the Problem

The primary problem that motivated this study is the limited evaluation of the utilization and cost implications of iLearn video conferencing as an e-learning tool in distance learning programs within government-owned universities in South-East Nigeria. Despite the increasing global relevance of video conferencing platforms in enhancing virtual learning, there has been insufficient research on the extent to which iLearn is being utilized as a means of instructional delivery in these institutions. Key areas such as the availability of the necessary infrastructure, the financial burden on both students and institutions, and the training provided to users of the platform remain underexplored.

Additionally, logistical challenges faced by distance learning students, such as traveling long distances to collect physical lecture materials or attend mandatory in-person classes, underscore the potential of iLearn video conferencing to serve as a more accessible and cost-effective alternative. However, barriers such as inadequate internet access, high data costs, and limited digital literacy may hinder its full implementation. Therefore, the critical question driving this study is: To what extent is iLearn video conferencing being utilized in e-learning for distance learning programs in government-owned universities in South-East Nigeria, and what are the cost implications for stakeholders?

Purpose of the Study

The purpose of this study is to examine the utilization and cost implications of ilearn video conferencing in e-learning for distance learning programs in government-owned universities in south-east Nigeria. Specifically, the study seeks to:

1. Find out the extent of utilization of iLearn video conferencing in e-learning in distance learning programmes of government-owned universities in South East, Nigeria.
2. Determine the cost implications of utilizing e-learning in distance learning programmes of government-owned universities in South East, Nigeria.

Research Questions

The following research questions guided the study:

1. To what extent is iLearn platform in e-learning utilized in distance learning programmes of government-owned universities in South East, Nigeria?

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

2. What is the cost of implications of using e-learning in distance learning programmes in government-owned universities in South East, Nigeria?

Statement of Hypotheses

The following hypotheses tested at 0.05 level of significance guided the study:

1. There is no significant difference in the mean ratings of lecturers and students on extent of utilization of iLearn platform in e-learning in distance learning programmes of government-owned universities in South East, Nigeria.
2. There is no significant difference in the mean ratings of lecturers and students on the cost implications of e-learning in distance learning programmes of government-owned universities in South East, Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Framework

E-learning

Technology has transformed the world into a global village, significantly influencing various aspects of human life. Advances in technology in the 21st century have positioned e-learning as a critical tool for research, teaching, and learning within higher education institutions (Ojaega & Igbiendion, 2012). Consequently, these technological developments have brought about significant and continuous changes that appear to have improved nearly all aspects of daily life. E-learning, as described by Kassa and Balunywa (2013), involves the application of electronic media, networks, and information and communication technology (ICT) to enhance teaching, learning, and skill acquisition. The integration of ICT into educational processes has given rise to a new mode of instruction referred to as electronic learning or e-learning. Supporting this perspective, Ja'ashan (2020) asserted that the rapid advancement of technology, the globalization of higher education, and the elimination of learning barriers among students have introduced innovative approaches and perspectives in educational practices, with e-learning being a key example of such technologies.

E-learning broadly refers to the use of electronic media and ICT in education. According to Congruz-Bacescu (2013), e-learning is defined as the utilization of internet technologies to provide diverse solutions aimed at improving knowledge and performance. It encompasses any activity or virtual process that facilitates the acquisition of knowledge, skills, or competencies. Essentially, e-learning describes learning environments that extensively utilize ICT resources to enable instruction. The term itself highlights the "electronic" nature of the process, represented by the "e" in e-learning. Amedu (2014) further elaborates on e-learning as the dissemination of information and knowledge using various electronic communication and information-processing technologies, including computers, the internet, email, mobile communication devices, satellites, and other related technologies. The primary aim is to enhance education and improve the learning experience of students through technology.

Akorful and Abaidoo (2015) describe e-learning as a form of digital education mediated by technology, utilizing various hardware and software resources to foster interaction between teachers and students. These resources include applications like word processors, cloud technologies, and other digital tools, as well as hardware such as computers, printers, tablets, and digital projectors, which collectively enhance the teaching and learning process.

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

In this context, e-learning refers to any educational process that heavily relies on ICT to support online instruction and facilitate learning.

E-learning can be seen as a broad term that includes any educational technology enabling instruction and learning over the internet. Escobar and Silva (2020) describe it as a web-based program that allows learners to access information and knowledge anytime and from anywhere, making it a highly flexible mode of learning. Kotoua, lkan, and Kilic (2015) define e-learning as the process of acquiring skills and knowledge through electronic technologies such as computer-based learning systems and internet-based networks. Depending on the delivery method or component emphasized, e-learning may also be referred to by terms such as virtual education, web-based training, technology-enhanced learning, or digital educational collaboration.

Both graduate and undergraduate students significantly benefit from e-learning tools, which streamline the learning process for instructors and learners. These platforms enable students to share information, complete assignments, provide peer feedback, and post comments. This collaborative environment fosters the development of higher-order thinking skills, supporting a deeper learning experience. Through e-learning, the exchange of knowledge and techniques becomes a foundation for collaborative learning, benefiting both students and educators.

Distance learning programmes

The primary components of distance learning, also known as distance education, are the physical separation of instructors and students during teaching and the use of different technologies to support communication between students and teachers. According to Forson and Vuopala (2019), distance learning programs are thought to have a significant role in socioeconomic growth. Subsequently, it is anticipated that policies implemented to fortify or revamp the remote learning initiative will be meticulously crafted to guarantee enhanced involvement from this segment of the education industry in developing nations (Ojo, Rohmi, and Kayode, 2011). The conventional definition of distance learning is any instructional process wherein the instructor or coordinator and the learners are geographically separated. However, there might be communication between the instructor and the student or learner, or none at all. As to UNESCO (2015), the phrase "open and distance learning" refers to methods that prioritize expanding the reach of education and training; releasing students from location and time limitations while providing both individual and group learners with adaptable learning possibilities.

According to Ezeonwurie (2016), distance education is a kind of education where a large amount of the instruction is given by a teacher who is physically or chronologically distance from the students. Because they are becoming more and more popular as a way for more students to have greater access to higher education, online and distance learning have gained significant attention in the field of education in recent years (Tapfumaneyi, 2013). In Nigeria, the growing use of online and remote learning is seen as a significant and important breakthrough in education (Osipita, 2016). It is noteworthy to note that the Nigeria National Policy on Education includes information and communication technology (ICT) among the policy guidelines creating online and remote learning (Federal Republic of Nigeria, 2013).

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

The idea of distance learning denotes a teaching strategy intended to reach students in a variety of settings, including their homes, workplaces, and retail stores. The only goal is to provide students access to learning materials so they may earn their credentials without having to physically attend courses, or to offer possibilities for lifelong learning, regardless of the time or place at which they want to study. According to Vander (2017), a distance learning program physically divides a lecturer from their students. The author went on to say that instructors using this approach may give instruction online via the use of an e-auditorium, e-boardroom, e-classroom, internet facilities, video phone system, and teleconference technologies like Zoom, webinar, etc. Furthermore, the study center model of remote e-learning, the correspondence model, and the educational broadcasting model are examples of the submodels of distance education that Nwosu (2012) and Nwogu (2016) highlighted. The models were designed to be replacements for one another over time. At the moment, Nigeria's online and remote learning programs are delivered mostly via print materials and in-person interactions in dual or single modes (Ayo, Odukoya, and Azeta, 2014). According to Osipita (2016), since remote learners are required to take face-to-face exams regardless of where they live, the distance education system looks comparable to conventional education. The system's integration of e-learning ought to progress to e-examination.

Online learning is essential because effective learning need more than simply student-to-student interaction. Talebian, Mohammadi, and Rezvan (2014) have identified six different types of engagement in distance learning education: (1) teacher-content; (2) content-content; (3) student-teacher; (4) student-student; (5) teacher-teacher; and (6) student-content. Theories that advocate for the use of new technology in the classroom are based on the notion that students are active agents that search for and create knowledge in relevant situations. Sarkar (2012) also said that a lot of collaboration tools may be used for communication and collaborative learning, especially in e-learning.

E-Learning through the Use of The Ilearn Platform in Distance Learning Programmes

In distance learning programmes, the use of the iLearn platform for e-learning has shown to be advantageous. iLearn is an online learning management system (LMS) that gives educational institutions a digital space to organize material, offer courses, and help students and teachers communicate. Online education is made more accessible, interactive, and successful when the iLearn platform is used for e-learning in remote learning programs (Jayakodi, Bandara, and Meedeniya, 2016). It offers a full-featured virtual classroom that facilitates interaction, teamwork, evaluation, and individualized instruction for both teachers and students. Some methods that the iLearn platform may improve e-learning in remote learning programs were discovered by Eteng and Ntu (2015):

1. Course Delivery: With iLearn, educators can easily design and present online courses, giving students convenient access to course materials at any time and from any location. Students may learn at their own speed with the use of interactive learning resources, videos, lecture notes, and presentations that instructors can post.
2. Integration of Multimedia: Videos, audio files, and interactive simulations may all be integrated with the platform. By giving students a variety of information to interact with, this improves the learning process and makes it more dynamic and engaging.

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

3. Communication and Collaboration: Using tools like message boards, chat rooms, and discussion boards, iLearn helps students and teachers communicate and work together. In the virtual classroom, students may engage in online conversations, ask questions, and get prompt response from their teachers, fostering a feeling of community.
4. Feedback and Assessments: The platform provides a range of evaluation instruments, such as online tests, assignments, and quizzes, to appraise students' progress. Assessments are simple to make and grade, giving teachers the ability to provide students rapid feedback. This prompt feedback encourages self-directed learning by assisting students in identifying their areas of strength and growth.
5. Monitoring and Analytics: iLearn offers tools for monitoring and analytics that allow teachers keep an eye on their students' progress, completion rates, and trouble spots. By adjusting their teaching methods and offering students individualized assistance, teachers may use this data to help students succeed in the remote learning program.
6. Mobile view: A lot of iLearn systems provide mobile apps that enable students use their smartphones or tablets to view course materials and take part in discussions. This adaptability makes learning easier and more accessible by allowing students to participate in their studies even while they are on the road.
Anywhere in the world may participate in live communication thanks to the iLearn platform. According to Aribon (2021), online calling over the internet includes video conferencing. It lets people communicate and work together via a video device, computer, mobile device, or web browser. When students engage with diverse audiences in different places, video-conferencing education technique helps them enhance speaking and listening abilities as well as presenting skills (Ejinwa, 2018). According to Jayakodi, Bandara, and Meedeniya (2016), technology-enhanced learning is still a developing field of study and plays a significant role in the current educational system. The iLearn platform makes online learning more accessible and efficiently enables communication between instructors and students. Video conferencing, according to Fatani (2020), is an asynchronous method for groups to communicate data, speech, and video. Video conferencing may be used as a substitute platform to improve online learning since it facilitates face-to-face contact in a digitally globalized culture, according to research by Ramadhani and Machmud (2021). Online learning may benefit from the use of video conferencing tools such as Zoom, Google Meet, Microsoft Teams, and Skype (ThanhKhuong et al., 2021).
According to Al-Samarraie (2019), when in-person contacts are not feasible, lecturers and students embrace video conferencing as a learning tool that facilitates successful communication. For the instructors to use these platforms in the lecture hall, they still need to be taught and coached.In addition, it made it possible for individuals to work and interact with others without difficulty no matter where they were in the world (Sydow, 2020). Video conferencing solutions are becoming more and more popular these days, particularly for online education. Since the beginning of the epidemic, more educational institutions have started using video conferencing facilities as a backup plan for carrying on with instruction while preventing students, instructors, and other staff members from physically traveling to distance locations. Meetings, screen-sharing, whiteboarding, audio and video preview displays, video recordings, chat boxes, and response icons can all be done with the majority of conferencing

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

solutions. Nevertheless, certain features, such word clouds, user file sharing, and poll creation, may still be added to the program to provide a more participatory setting. According to a research by Ejinwa (2018), students at the National Open University of Nigeria, a distance learning school, do not use video conferencing for studying.

As a modern and cutting-edge e-learning platform that puts the university near to the students by giving them immediate or real-time access to learning materials, classmates, lecturers, and facilitators, the online videoconferencing platform is known as the "i-learn" videoconferencing platform. iLearn meets crucial needs for elementary education's online teaching and learning. With the help of an easy-to-use video authoring tool, instructors may build personalized video courses for their students, resulting in interactive and adaptable learning for them. Through video classes, iLearn facilitates effective and efficient interactive and adaptable learning. According to Jayakodi, Bandara, and Meedeniya (2016), this application offers a platform for educators and learners to interact while facilitating students' ongoing development via the provision of adaptive learning materials. By assessing each activity's difficulty level (or the student(s)' competence level) based on their success in the lesson's earlier activities, iLearn gives its users competency-based adaptivity (Jayasiriwardene & Meedeniya, 2022). According to these writers, by making the process interactive, this program promotes active learning and overcomes the problem of passive learning associated with online learning. Additionally, by using less resources on the device, iLearn enables it to function even on a smartphone with just basic capabilities. Additionally, it has an easy-to-use interface that even non-technical people may utilize to quickly get acquainted with (Bandung, Subekti, Tanjung & Chrysostomou, 2017).

The Ilearn learning platform may be accessible by various mobile devices, smartphones, and the internet. With the use of multimedia learning resources like smart boards, which offer course material in an engaging manner, students may study in real time in an engaging manner. With the new virtual classroom, students may ask questions about unclear or difficult subjects to their fellow students or facilitators and get prompt, real-time answers. According to Songkram (2015), the learning platform provides students with the following learning possibilities.

1. Tablets and mobile devices may be used to access the learning platform.
2. It enables students to study while they work, according to the university's slogan of "work and learn."
3. It makes education adaptable to students' everyday schedules.
4. In the different communities, students may converse with other students who share their interests.
5. Students may read and download previous lectures for continuous review and recitation.

The i-Learn video and audio-conferencing technology has really transformed the educational experience by providing students with a plethora of academic options that are not often seen at traditional universities. In addition to audio lectures, the online learning platform provides students with multi-dimensional video lectures. During these sessions, students may see and listen to their facilitators as they break down the course's major ideas for simple comprehension in real time. The financial implications of purchasing and using e-learning facilities are a significant factor in the use of the ilearn platform and, in fact, all e-learning facilities in education.

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

Cost-Implications of Using E-Learning in Teaching and Learning

There are financial ramifications to the appeal and desire for improved technology education in Nigerian universities. Shultz (2013) asserts that the increased investment in education is an effort to boost the labor force's ability to generate material things, with the ultimate goal of increasing productivity per worker. The assumption that spending on education would more than pay for itself via the economic activity it would produce is one of the specific issues with the investment view of education, however, that has emerged. However, Chike-Okoli (2013) cautioned that due to the economy's limited ability to absorb new information, the amount of education that would financially pay for itself in a developing nation will inevitably be constrained.

According to Adam (2013), cost refers to the entire cost of ownership for things like computers and their peripherals, video equipment, specialized tools like digital microscopes, electrical wiring, internet access, lighting, air conditioning, space, network equipment, software, manuals, books, videos, audio tapes, and other supplies. Not to mention the cost of upkeep and skill development. Even when providing remote learning courses might be expensive, providing traditional courses can also be expensive. According to Ruth and Shi (2011), e-learning may provide economies of scale and be reasonably priced. According to research by Ruth and Shi (2011), program expenses ought to go down as programs become more effective. Technology hardware and software; transmission the ongoing cost of renting transmission access; maintenance repairing and updating equipment; infrastructure the telecommunications infrastructure and foundational network at the originating and receiving campuses; and disposing of outdated hardware turn out to be an unforeseen additional expense are some of the cost components of a distance education system. These problems provide ethical, economical, and environmental difficulties. Additionally, Ruth and Shi (2011) noted the following problems with time and personal expenses:

1. Production: In order to create and modify instructional materials, staff and technology assistance are needed.
2. Support: Other expenditures that are necessary to make sure the system functions properly, such as overhead, facilities, advising/counseling, administrative fees, registration, and local support
3. Personnel: to staff each of the above-mentioned roles.

Therefore, the total cost of ownership for computer-based approaches consists of the following: fixed costs, which include retrofitting physical facilities, hardware and networking, software, upgrades, and replacements; variable or recurrent costs, which include professional development; connectivity, which includes internet access and phone time; maintenance; and support, which includes supplies and utilities. It is necessary to identify fixed costs from variable expenses and comprehend the balance between the two in order to calculate cost efficiencies. There will be financial benefits to scaling up a technological project if its fixed costs are high and its variable costs are low (Markus, 2018).

According to Markus (2018), a number of variables might affect how much e-learning will cost for teaching and learning. Here are some crucial things to remember:

1. Technology and Infrastructure: A solid and dependable technical infrastructure is necessary for the implementation of e-learning. This include software, internet access, learning management systems (LMS), and other digital tools in addition to hardware including computers, tablets, and smartphones. These

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

technologies may need a substantial upfront expenditure, particularly for institutions that are just getting started or don't have enough funding.

2. Content Development: Producing interactive modules, multimedia materials, and tests as well as other high-quality digital content for e-learning may be expensive. Subject matter experts, multimedia producers, and instructional designers with a high level of competence are needed to provide interesting and useful information. Institutions may have to spend money on specialists or set aside resources in order to create or modify material to meet their unique requirements.
3. Training and Professional Development: Teachers and staff personnel need the proper training in order to guarantee the efficient implementation and exploitation of e-learning. Training on the use of digital technologies, LMSs, and instructional techniques unique to online or blended learning contexts are all included in this. Providing thorough training programs may be expensive due to the need to pay for continuing assistance, workshops or online courses, and the hire of trainers.
4. Technical Support: To handle technical problems and guarantee the proper functioning of e-learning systems, it is essential to maintain technical support services. Organizations could have to hire a specialized IT support staff or contract out technical support services. These expenses include things like employee pay, equipment upkeep, and software upgrades.
5. Licensing and Subscriptions: Access to certain learning platforms, learning management systems, or specialized software may include licensing fees or subscription expenses, depending on the e-learning materials and technologies employed. Depending on the size of the installation or the number of users, these costs may change.
6. Infrastructure and Bandwidth: Smooth e-learning requires sufficient internet access. Institutions must budget for the expenses of updating or maintaining enough bandwidth to enable instructors and students to access digital materials at the same time. Occasionally, educational institutions would have to make investments in infrastructure upgrades or enter into agreements with internet service providers.
7. Equity and Accessibility: It is crucial to guarantee that all students, irrespective of their financial circumstances, have equal access to online education. The financial effects of giving students who don't have access at home gadgets, internet connection, or other resources may need to be addressed by institutions. Techniques like loaner programs or subsidies might be used to bridge the gap in access to digital resources.
8. Continuous Upkeep and Upgrades: To stay up to date with security regulations and technology breakthroughs, e-learning systems need to undergo routine maintenance, updates, and upgrades on a regular basis. It's critical to budget for recurring costs associated with software licensing, system upkeep, security precautions, and enhancements.

It is crucial to remember that while e-learning implementation initially costs money, there may be long-term cost benefits. Savings might result, for instance, from less travel expenditures, the removal of costs associated with physical infrastructure, or the flexibility of online courses to scale to suit greater student groups. According to Rechards (2015), e-learning may be a more affordable option than conventional classroom-based training since

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

it does not need physical facilities, travel costs, or printed materials. It goes without saying that this lowers expenses for both students and educational institutions. The financial implications of adopting e-learning in teaching and learning, according to Nwabufo (2012), are complex and rely on a number of variables, including the scope of the implementation, the size of the institution, the infrastructure that is already in place, and the particular demands. Institutions wishing to guarantee successful and long-lasting e-learning programs must carefully assess their needs, establish goals, and manage finances appropriately. The necessity for lecturers and students to get training on the usage of technology-based e-learning equipment is a significant factor in e-learning costs. In light of this, this research will examine how instructors and students are trained in online learning.

Theoretical Framework

This study is anchored on the **Bruner's Constructivist Theory (1961).** This theory provides the foundation for understanding the role of technology in enhancing students' learning experience, fostering interaction, and improving achievement.

Bruner's Constructivist Theory (1961)

Jerome Bruner (1915-2016) is regarded as one of the founding fathers of constructivism, and his theory is one of several that explain the constructivist framework. Bruner's constructivism hypothesis, first in 1961, was informed by prior research by Lev Vygotsky and Jean Piaget. His theoretical framework lends credence to the notion that learners create new ideas or concepts based on previously acquired information. Learning is an active process of change that gets meaning from experience (Bruner, 1960). Bruner hypothesized three modalities of representation for children's cognitive development: enactive representation (action-based), iconic representation (image-based), and symbolic representation (language-based).

Bruner's constructivist theory says that when confronted with new information, it is beneficial to shift from enactive to iconic to symbolic representation; this is true even for adult learners. Bruner's study also shows that a learner, even at a young age, can acquire any subject if the teaching is well arranged, which contradicts Piaget and other stage theorists. In terms of symbolic representation, the use of words may help to grow the notions they represent while also removing the limits of the "here and now" concept. Bruner sees the newborn as a clever and active problem solver from birth, with intellectual talents roughly comparable to those of a mature adult.

According to Bruner (1966), a philosophy of education should address four key aspects: (1) A aptitude for learning. (2) the organization of a body of information that allows the learner to easily comprehend it. (3) the most effective ways to communicate information, and (4) the type and timing of incentives and punishment. Good knowledge structure approaches should result in simplified, new concepts, and increased information manipulation. Bruner's learning theory influences teaching in the following ways: (1) spiral curriculum, which entails translating material into children's modes of thought at a young age and then reintroducing these topics later in a different form; (2) interpersonal interaction, which allows learners to develop cognitive growth through questioning and prompting; and (3) discovery learning, which involves various forms of obtaining knowledge for oneself through the use of one's own mind. Through such discovery, students establish which factors are

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

significant, what information should be sought about those variables, and what should be done with the knowledge found.

Bruner's constructivist theory is pertinent to this research since it proposes that education should foster learner autonomy. As a result, constructivism is well-suited to an e-learning environment. Its immediate application to teaching is that the facilitator's awareness of the learners' learning modes (enactive, iconic, and symbolic) will aid in the planning and preparation of suitable instructional material and media based on the difficulty level of the learners. Students are required to do academic tasks on their own utilizing computers and other electronic devices, without assistance from the instructor. As a result, teaching here helps students develop critical thinking and problem-solving abilities, which can subsequently be applied to a variety of real-life circumstances. Here, students are encouraged to utilize their existing experiences and frameworks to acquire new knowledge; to categorize new material in order to find parallels and contrasts as they construct their own knowledge. While students are doing this, the instructor delivers feedback geared toward intrinsic incentives, since grades and competitiveness are ineffective in this sort of learning process; instead, learners perceive success and failure as information rather than reward and punishment. The design of e-learning courses allows for constructivism because it involves active learners who investigate their surroundings and construct their knowledge based on the presentation of relevant experiences by lecturers who serve as facilitators.

In alignment of Bruner's theory to the present study, it is evident that e-learning environments in universities can provide fertile ground for fostering the kind of independent, self-directed learning that Bruner advocates. Through the implementation of well-structured e-learning platforms, students are given the tools and space to build their knowledge autonomously, while educators assume the role of facilitators who guide the learning process rather than direct it. This aligns with the objective of evaluating the impact of e-learning on student achievement and engagement in this research, as it highlights the importance of designing courses that empower students to take charge of their learning.

Empirical Review

Aribon (2021), conducted a study on the use of video conferencing applications in facilitating behavioural engagement during synchronous learning in the time of pandemic. Two research questions guided the study. The researcher adopted descriptive survey research design. The population for the study was 462 Grades 11 and Grade 12 students and five (5) teachers who were invited to answer a self-report questionnaire. The researcher translated the questionnaire into a Google Form format since classes are conducted online. The results indicated that teachers provided opportunities for behavioural engagement to happen during synchronous learning by making the features always available for the students to use. Further, the study showed a very weak relationship between the challenges encountered by the students and the students' perception of the use of video conferencing applications contradicting other literature suggesting that the two variables affect each other. Moreover, this study found out a moderately strong relationship between the frequency of use of the features and the students' perception on the use of video conferencing application during synchronous learning.

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

Sedgwick and Spiera (2019) investigated the use of videoconferencing as a medium for qualitative interview. The purpose of the study was to present the experience of using videoconferencing technology to collect data from undergraduate nursing students. The research method used was quasi-experimental. The method of data collection was the use of focused ethnography completed to investigate the use of videoconferencing for qualitative interview. Data collection occurred over the course of eight months. The population of the study consisted of all undergraduate nursing students from a large western Canadian university. The sample for the study has eighteen nursing students. After clarifying the purpose of the interview, the researcher asked the students questions to elicit cultural information. The interview lasted between thirty minutes and one hour for each respondent. The findings show that it was difficult to interview respondent when using videoconferencing. They also found out that it was very difficult to use videoconferencing to interview respondents with substantial different experience because of lack of physical presence. It was also observed that lack of physical presence might have negative influence on the degree of sharing of information. The researches also reported poor internet connectivity, low bandwidth resulting to poor image quality, transmission lag and video ghosting.

At the National Open University of Nigeria, Alatokun and Ayotola (2016) evaluated how satisfied students were with e-learning. This research sought to identify the variables affecting students' inclinations to utilize online learning. Survey research was used as the study's design. A structured questionnaire was used in this study's data gathering instrument, and it was given to 400 of the sample's questionnaires. The cost and use of e-learning were shown to be strongly correlated. The current research is comparable to the examined empirical study. Nevertheless, it focused on a particular area of the current study project, which is identifying the variables that affected students' intentions to utilize e-learning rather than the volume of e-learning that occurs in university classrooms. Although the previous research only looked at NOUN, the current investigation will also be conducted at universities in South East Nigeria.

In order to determine why ICT, use in Nigerian secondary schools is so low, Adoni and Kpangban conducted research in 2015. There are 176 students enrolled. The questionnaire was utilized as the data collection tool, and the study's design was a descriptive survey. Findings: 85 respondents, or 47% of the total, mentioned the high cost of ICT facilities. They said that a large number of students cannot afford the price of a computer, much alone the hefty monthly internet costs. The current research is connected to the previous one in that both focus on the use of e-learning. The current research was conducted at universities, while the previous study was conducted in a secondary school. This is where the differences lie.

Research Method

This study utilized a descriptive survey research design. The study was conducted in the South-East Zone of Nigeria. The study population consisted of 12,928 respondents from ten government-owned universities in South East Nigeria; 12,752 students and 176 lecturers. They are five federal and five state universities respectively (Source: NUC-ODL, 2022/2023 Academic Session). The sample size for this study consisted of 1,451 respondents, comprising 1,275 students and 176 lecturers. Due to the manageable size of the lecturer population, the entire group was included in the study. For the student population, a proportionate random sampling technique

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

was employed to ensure that the sample accurately reflected the composition of the various subgroups within the student body. Data were collected using a researcher-structured questionnaire titled "Utilization of E-learning as an Instructional Delivery Mode Questionnaire (UELIDMQ)." The questionnaire was administered by the researcher with the assistance of four research assistants, who were trained in questionnaire administration and respondent interaction. Data were analyzed using mean ratings and standard deviations to provide a clear summary of responses. The t-test was employed to test the hypotheses, given the unbiased selection of the sample. Responses to each research question were weighted using a four-point grading system, with mean ratings of 2.50 or above indicating agreement or great extent, and ratings below 2.50 indicating disagreement or less extent. The null hypothesis was rejected if the computed t-value was equal to or higher than the critical t-value at the chosen confidence level; otherwise, it was not rejected.

Data Presentation and Results

Analyses of the data and results obtained in the study are presented in this section. The data which were obtained by administering the instrument used in the study were summarized and analyzed in line with the research questions and hypotheses. The analyses were, therefore, based on the two research questions and two hypotheses of the study.

Research Question 1: To what extent is iLearn platform in e-learning utilized in distance learning programmes of government-owned universities in South East, Nigeria?

Table 1: Mean responses and standard deviation on the extent to which iLearn platform in e-learning is utilized in distance learning programmes of government-owned universities in South East, Nigeria. (n = 1443)

SN	Items	Lecturers		Students		Overall		Dec
	Extent iLearn platform of e-learning is being utilized in ODL	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	
	'ilearn' video conferencing platform is used in ODL of your university.	2.11	0.81	2.07	0.84	2.07	0.83	LE
	The video quality of ilearn videoconferencing platform clear when viewing.	2.09	0.87	2.05	0.84	2.05	0.84	LE
	The audio quality of ilearn video-conferencing clear when viewing	2.13	0.83	2.05	0.81	2.06	0.81	LE
	Connection to the ilearn video conferencing portal done easily.	2.02	0.84	2.03	0.83	2.03	0.83	LE
	Technical problems are encountered while using 'ilearn' platform.	1.77	0.84	2.00	0.84	1.97	0.84	LE
	Time allocated for each real time 'ilearn' videoconferencing interaction with the lecturer adequate for good understanding.	2.08	0.89	2.05	0.85	2.05	0.85	LE
	University organize training for lecturers and students on use of 'ilearn' video conferencing platform.	2.07	0.82	2.05	0.83	2.05	0.83	LE

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

	Zoom meetings of lecturers and students done as part of the ilearn platform of your university.	2.96	1.21	2.56	1.13	2.61	1.15	GE
	Grand $\bar{x}$ and SD	2.15	0.89	2.11	0.87	2.11	0.87	LE

The results in Table 1 detail the mean responses and standard deviations concerning the use of the iLearn platform in e-learning for distance learning programs at government-owned universities in South East Nigeria. The data indicate that item 24 had a mean response of 2.61 (SD = 1.15), which is above the cut-off point of 2.50, signifying a high level of utilization. In contrast, the mean responses for the remaining items were below 2.50. Overall, the grand mean responses were low for both lecturers ($\bar{x}$ = 2.15, SD = 0.89) and students ($\bar{x}$ = 2.11, SD = 0.87). The combined mean response ($\bar{x}$ = 2.11, SD = 0.87) also fell below the 2.50 threshold. This suggests that the iLearn platform is not widely utilized in e-learning for distance learning programs at these universities.

Research Question 2: What are the cost implications of using e-learning in distance learning programmes in government-owned universities in South East, Nigeria?

Table 2: Mean responses and standard deviation on the cost implications of using e-learning in distance learning programmes in government-owned universities in South East, Nigeria (n = 1443)

SN	Items	Lecturers		Students		Overall		Decision
	Cost implications of using e-learning in ODL programmes	**$\bar{x}$**	**SD**	**$\bar{x}$**	**SD**	**$\bar{x}$**	**SD**	
	Ensuring uninterrupted internet facilities in ODL of university can be expensive.	3.33	1.08	2.82	1.19	2.88	1.19	A
	Maintaining computers and other devices used in e-learning is expensive.	3.41	0.99	3.11	1.10	3.15	1.09	A
	Downloading resource materials and conducting research online cost much money.	3.44	0.93	3.14	1.11	3.18	1.09	A
	Megabyte (Mb) data needed for browsing the internet for academic activities is expensive.	3.32	1.10	3.11	1.14	3.13	1.14	A
	Certain software tools may require high cost of licensing or subscription fees.	3.37	1.03	2.81	1.14	2.88	1.14	A
	Computers and other electronic gadgets needed to access e-learning are expensive for students in ODL.	2.15	0.85	2.11	0.87	2.12	0.87	D
	Providing comprehensive training and ongoing technical support can add to overall cost of e-learning.	1.98	0.84	2.04	0.85	2.03	0.85	D
	Ensuring accessibility for all students, including those with disabilities, may involve additional cost.	1.98	0.84	2.01	0.86	2.00	0.86	D
	Maintaining a technical support team to address issues related to e-learning platform is costly.	1.99	0.82	2.05	0.90	2.04	0.89	D
	Grand $\bar{x}$ and SD	2.78	0.94	2.58	1.02	2.60	1.01	A

The analysis results presented in Table 2 highlight the mean responses and standard deviations regarding the cost implications of utilizing e-learning in distance learning programs at government-owned universities in South East Nigeria. The data indicate that the mean responses for items 25 to 29 exceeded the cut-off point of 2.50, indicating

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

agreement (A). Conversely, the mean responses for items 30 to 33 were below 2.50, indicating disagreement (D). The overall grand mean responses were high for both lecturers ($\bar{x}$ = 2.78, SD = 0.94) and students ($\bar{x}$ = 2.58, SD = 1.02). The combined overall mean response ($\bar{x}$ = 2.60, SD = 1.01) also surpassed the cut-off point of 2.50. These findings suggest that the cost implications of implementing e-learning in distance learning programs at these universities are significant. The costs include expensive, uninterrupted internet facilities, high maintenance costs for computers and other devices used in e-learning, the high cost of downloading resource materials and conducting online research, as well as expensive data (Megabyte (Mb)) and licensing or subscription fees for software tools.

Hypothesis 1: There is no significant difference in the mean ratings of lecturers and students on extent of utilization of iLearn platform in e-learning in distance learning programmes of government-owned universities in South East, Nigeria.

Table 3: T-test of Mean Ratings of Lecturers and Students on Extent of Utilization of Ilearn Platform in E-Learning in Distance Learning Programmes of Government-owned Universities in South East, Nigeria

Respondents	N	Mean	Std. Deviation	t-cal	Df	Sig.	Dec.
Lecturers	171	2.15	0.89	2.07	1441	0.50	NS
Students	1272	2.10	0.31				

Table 3 shows that the t-value for the difference in mean ratings of lecturers and students on extent of utilization of iLearn platform in e-learning in distance learning programmes of government-owned universities in South East, Nigeria is 2.07 at 0.05 level of significance and 1441 degree of freedom. Since the significance value (Sig. =0.50) is not less than the benchmark of 0.05, the null hypothesis is accepted as stated. Hence, there is no significant difference between the mean ratings of lecturers and students on the extent of utilization of iLearn platform in e-learning in distance learning programmes of government-owned universities in South East, Nigeria.

Hypothesis 2: There is no significant difference in the mean ratings of lecturers and students on the cost implications of e-learning in distance learning programmes of government-owned universities in South East, Nigeria.

Table 4: T-test of Mean Ratings of Lecturers and Students on the Cost Implications of E-Learning in Distance Learning Programmes of Government-owned Universities in South East, Nigeria

Respondents	N	Mean	Std. Deviation	t-cal	Df	Sig.	Dec.
Lecturers	171	2.78	0.59	4.19	1441	0.00	S
Students	1272	2.58	0.52				

Table 4 shows that the t-value for the difference in mean ratings of lecturers and students on the cost implications of e-learning in distance learning programmes of government-owned universities in South East, Nigeria is 4.19 at 0.05 level of significance and 1441 degree of freedom. Since the significance value (Sig. =0.00) is less than

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

0.05 level of significance, the null hypothesis is not accepted as stated. Hence, there is significant difference between the mean ratings of lecturers and students on the cost implications of e-learning in distance learning programmes of government-owned universities in South East, Nigeria.

Summary of Findings

The results of data analysis revealed that:

1. The extent to which iLearn platform in e-learning is utilized in distance learning programmes of government-owned universities in South East, Nigeria is low. There is no significant difference between the mean ratings of lecturers and students on the extent of utilization of iLearn platform in e-learning in distance learning programmes of Universities in South-East.
2. The cost implications of using e-learning in distance learning programmes in government-owned universities in South East, Nigeria, included expensive uninterrupted internet facilities, high cost of maintaining computers and other devices used in e-learning, high cost of downloading resource materials and conducting research online, as well as expensive Megabyte (Mb) data and licensing or subscription fees for software tools. There is significant difference between the mean ratings of lecturers and students on the cost implications of e-learning in distance learning programmes of government-owned universities in South East.

Conclusion

This study examined the utilization and cost implications of iLearn video conferencing in e-learning for distance learning programs in government-owned universities in South-East Nigeria. The findings reveal that the extent of utilization of the iLearn platform in these programs is low, with both lecturers and students expressing similar perceptions regarding its limited adoption. This highlights a gap in the effective integration of e-learning tools in distance education, potentially hindering the realization of the full benefits of modern educational technologies in these institutions.

In addition to the low utilization, the study identified significant cost implications associated with e-learning adoption. These include the high expenses of maintaining uninterrupted internet access, the cost of acquiring and maintaining computers and other necessary devices, and the substantial fees required for downloading resource materials, conducting online research, and subscribing to essential software tools. Interestingly, there was a significant difference in the perceptions of lecturers and students regarding these cost implications, suggesting that the financial burden might be felt differently across these stakeholder groups.

Overall, the findings emphasize the need for government-owned universities in South-East Nigeria to enhance the utilization of iLearn and other e-learning platforms while addressing the cost-related barriers that limit access and efficiency. Addressing these challenges is critical for improving the delivery of distance learning programs, fostering equitable access to education, and leveraging the potential of e-learning to achieve educational goals in the region.

Recommendations

From the findings of the study, the following recommendations are made:

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

1. Educational stakeholders including government bodies, universities and educational institutions, students, parents and guardians, technology manufacturers, non-governmental organizations (NGOs), community organizations, and private sector partners should implement initiatives to ensure that students in distance learning programmes have access to the necessary devices for e-learning, such as laptops or tablets. This could involve providing affordable devices, partnering with manufacturers, or establishing device loan programmes.
2. Universities should establish a centralized digital repository for educational resources, including e-books, lecture materials, and multimedia content. Encourage ODL lecturers and faculty members to contribute to this repository, fostering a collaborative and resource-sharing environment.

References

Adam, L. (2013). Information and Communication Technologies in Higher Education in Africa: Initiatives and Challenges. *Journal of Higher Education in Africa*, *1*(1), 195-221.

Adewale, S., Ayodele, B., & Olayemi, T. (2022). Distance learning in Nigerian universities: Opportunities and challenges. Journal of Educational Technology, 15(3), 45-58.

Adewumi, O., Odukoya, J., & Fagbohun, K. (2023). E-learning adoption in Nigerian higher education: A case study of public universities. African Journal of ICT Development, 10(2), 22-34.

Adoni. & Kpangban, J. (2015) E-learning and Distance Education in Nigeria. The Thurkish Online Journal of Educational Technology 4 (7) 441-448.

Al-samarraie, J. (2019). Al-samarraie-2019-A Scoping Review of videoconferencing Systems in HE.pdf. *International Review of Research in Open and Distributed Learning*, *20*(3), 122.

Amedu, S.O. (2014). Assessment of the use of e-learning facilities by Home Economics Teachers in Delta State, Nigeria. *Journal of Education and Practice.* 5(16), 207-212.

Anderson, T. (2019). The theory and practice of online learning (3rd ed.). Athabasca University Press.

Aribon, M.A.R. (2021). The use of video conferencing applications facilitating behavioural engagement during synchronous learning in the time of pandemic. *Proceedings of the 29th International Conference on Computers in Education. Asia-Pacific Society for Computers in Education*

Ayo, C.K., Odukoya, J.A., & Azeta, A. (2014). A review of open and distance education and human development in Nigeria. *International Journal of Educational Technology*, *9*(6), 63-67.

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

Bandung, Y., Subekti, L.B., Tanjung, D., & Chrysostomou, C. (2017). *QoS analysis for WebRTC videoconference on bandwidth-limited network.* Paper presented at the 2017 20th International Symposium on Wireless Personal Multimedia Communications (WPMC).

Bruner, J.S. (1961). Towards a theory of instruction Cambridge, Mass: Harvard University Press.

Ejinwa, E. (2018). Evaluation of the use of e-learning as an instructional delivery mode in the National Open University of Nigeria, South East, Nigeria. *Unpublished Doctoral Thesis.* Department of Educational Foundations, Enugu State University of Science and Technology (ESUT).

Escobar Fandi~no, F.G. & Silva Velandia, A.J. (2020). How an online tutor motivates E-learning English. *Heliyon 6*(8), 11-19.

Eteng, U. & Ntui, I.A. (2019). Access to e-learning in the Nigeria University System (NUS): A case study of University of Calabar. *The Information Technologist: An International Journal of Information and Communication Technology,* 6(2): 1-10.

Ezeonwurie, O.A. (2016). Challenges of distance learning: Implication for business education. *Journal of Business education*. 3(1) 268-276.

Fatani, T.H. (2020). Student satisfaction with videoconferencing teaching quality during the COVID-19 pandemic. *BMC Medical Education, 20*(1), 1–9.

Federal Republic of Nigeria. (2013). *National policy on education*, Lagos, NERDC.

Forson, I.K. & Vuopala, E., (2019). Online learning readiness: perspective of students enrolled in distance education in Ghana. *Online J. Dist. Educ. E-Learn. 7*(4), 277–294.

Ibrahim, M., & Usman, Z. (2021). Exploring the effectiveness of video conferencing tools in higher education: A Nigerian perspective. Journal of Digital Education, 12(1), 18-27.

Ja'ashan, M.M.N. H. (2020). The challenges and prospects of using e-learning among EFL Students in Bisha University. *Arab World English Journal, 11* (1) 124-137.

Jayakodi, K.M., Bandara, D. & Meedeniya, (2016). An automatic classifier for exam questions with WordNet and cosine similarity, in: *International Multidisciplinary Engineering Research Conference,* MERCon2016, IEEE Explorer, 12–17.

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

Jayasiriwardene, S. & Meedeniya, D. (2022). A knowledge-based adaptive algorithm to recommend interactive learning assessments, in: 2022 *2nd International Conference on Advanced Research in Computing*, ICARC, 379–384,

Kotoua, S., Ilkan, M. & Kilic, H. (2015). The growing of online education in Sub Saharan Africa: case study Ghana. *Proc. Soc. Behav. Sci.* 191, 2406–2411.

Kpolovie, P. J., Aworuwa, F., & Nnadi, C. (2020). Financial implications of e-learning in Nigerian universities. Global Education Review, 9(4), 90-112.

Markus, B. (2018). *Learning pyramids*, FIG Working Week, Cairo, Egypt.

Nwosu, L. (2012). Fundamentals of computer and educational technology. *http://www.sciepub.com/reference/8319*

Ojo, O.D., Rotimi, O. and Kayode O.F., (2011). Cost effectiveness of open and distance learning in Nigeria. Responses from focus group discussions, NOUN.

Okebukola, P. (2020). The future of education in Nigeria: Pathways to quality and access. Nigerian Educational Review, 25(2), 5-15.

Okoli, C. (2021). Barriers to e-learning adoption in Nigerian tertiary institutions: A focus on South-East Nigeria. Journal of African Higher Education Studies, 8(1), 39-51.

Osipita, O. (2016). Towards improving distance education in Nigeria with virtual technology. *Interlink Continental Journal of Educational Research and General Studies, 2*(1), 1-6.

Ramadhani, N.R., & Machmud, M.T. (2021). Students' Perspective and Attitude Towards Distance Learning Using Video Conferencing Learning Platform During COVID-19 Pandemic in Indonesia. *Journal of Education KhonKaen …*, *44*(2), 41–56.

Ruth, S. & Shi, M. (2011). Distance Learning in Developing Countries: Is Anyone Measuring Cost-Benefits? TechKnowLogia, May/June, © Knowledge Enterprise, Inc.

Sarkar, S. (2012). The role of information and communication technology (ICT) in higher education for the 21st century. *Science, 1*(1), 30-41.

Songkram, N., 2015. E-learning system in virtual learning environment to develop creative thinking for learners in higher education. *Procedia-Social and Behavioural Sciences*, 174, 674-679.

Top Journal of Educational Technology
Vol.9, Issue 2; March-April 2024
ISSN: 2994-0869
Impact Factor: 6.53
1252 Columbia Rd NW, Washington DC, United States
https://topjournals.org/index.php/TJET; mail: topacademicjournals@gmail.com

Talebian, S., Mohammadi, H.M. & Rezvanfar, A. (2014). Information and communication technology (ICT) in higher education: advantages, disadvantages, conveniences and limitations of applying e-learning to agricultural students in Iran. *Procedia-Social and Behavioral Sciences*, 152, 300-305.

Tapfumaneyi, K.D.K. (2013). The role of open and distance learning (ODL) in development in Africa. *International Journal of Advanced Research, 1*(5), 557-564.

ThanhKhuong, N., Thi Hong Tham, N., & Chi Minh, H. (2021). Acceptance and use of video conferencing for teaching in Covid-19 Pandemic: An Empirical Study in Vietnam. In *Asia CALL Online Journal* (12(5): https://asiacall.info/acoj.

UNESCO, (2015). *Open and distance learning:* Trends, policy and strategy consideration. Paris: UNESCO.

UNESCO. (2020). Education for sustainable development: A roadmap. United Nations Educational, Scientific and Cultural Organization.

Uwakwe, I., & Nwafor, A. (2022). Bridging the digital divide: A critical assessment of e-learning policies in Nigeria. International Journal of African Development Studies, 13(2), 77-89.

World Bank. (2021). The role of technology in achieving educational equity. Retrieved from https://www.worldbank.org/education.