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Promoting Distance Education through Information Communication and Technology (ICT) towards attaining Sustainable Development Goals in Nigeria.

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ABSTRACT

Distance Education is a good educational system to reach people who cannot attend class or face to face study with their teachers or facilitators. It is a form of correspondence type of education. This paper therefore studied how distance education can be promoted using ICT in order to achieve or attain Sustainable Development Goals (SDGs) in Nigeria. The study explained Education, Information Communication and Technology (ICTs). The study further explained Distance Education, Historical Development of Distance Education in the world and in Nigeria. Modes of Distance Education was discussed. Mass media and method of Distance Learning was also discussed. Distance Learning technologies and how to promote distance learning through the use of ICT towards attaining Sustainable Development Goals, was also discussed. The researcher concluded by emphasizing that distance education can be promoted through the use of ICTs towards attaining SDGs. The researcher suggested that distance learning centres should be well equipped by either the government, stakeholders or the management team of the Institution that manages it.

INTRODUCTION

Education can be seen as a means of acculturation by which an individual can be assisted to achieve development of his / her potentials so as to attain a perfect self-actualization and self-fulfillment. Thus, the use of technology has been of a great impact in Educational development. The rapid growth of technology in the field of education has increased the effectiveness of education in the society. It has also been noted that because technologies are used as delivery systems in Education, there have been rapid growth of distance learning which is an aspect of educational sector (Okafor 2016, Eze & Eze,2018)

The digital age also known as information communication and technology (ICT) age has greatly increased both the speed and amount of information for those with access to the internet, the fastest growing form of media and accessible information Distance education or distance learning therefore is the education of students or learners who may not always be physically present at a school. Traditionally, this usually involved correspondence course wherein the student corresponded with the school via post. Today it involves online education. Courses that are conducted (51percent or more) are either hybrid, blended or 100% distant learning. Massive open online courses (MOOCs), offering large-scale interactive participation and open access through the World Wide Web or other network technologies, are recent developments in distance education. A number of other terms (distributed learning, e-learning, online learning, etc) are used roughly synonymously with distance education (Euler and Von Berg 2018).

Increase in the knowledge of Information Technologies is on the rise worldwide,

therefore, labour market needs knowledge investments and knowledge distribution through formal and informal network which are critical to economic performance. This is a factor that requires urgent attention in developing countries like Nigeria. The aforementioned knowledge investments and knowledge distribution are supposed to be acquired from participants in an educational activities of an Institutions of learning such as in either primary, secondary, tertiary and distance learning programmes. ICT therefore is a good tool or channel in Distance Learning Programmes to achieve sustainable Development goals. ICTs are very powerful tools useful in diffusing knowledge and information which is a fundamental aspect of Educational process (Adebola, 2014).

Distance education is a planned and systematic activity that comprises the choice, didactic preparation, and presentation of teaching materials as well as the supervision and support of students learning. It is achieve by bridging the physical distance between students and teachers by means of at least one appropriate technical medium. Distance education is an educational process in which someone removed in space and / or time from the learner conducts a significant proportion of the teaching. Distance education is the application of telecommunication and electronic device which enables students and learners to receive instruction that originates from some distant location. Typically, the learner may interact with the instructor or program directly and may meet with the instructor on a periodic basis. Distance education is formalized instructional learning where the time / geographic situation constrains learning by not affording in person contact between students and instructor. In person education is formalized instructional learning where the time / geographic situation constrains learning by requiring synchronous person-to-person interaction. (Daniel, 2015. Ezeugbor & Onuorah, 2018).

Distance learning according to Ezeugbor and Onuorah (2018) was defined as: institution-based Education where the learning group is separated, and where interactive telecommunications syatems are used to connect learners and instructors. There are four main components to this definition. First is the concept that distance learning is institutionally based. This is what differentiates distance learning from self-study. While the institution referred to in this definition could be a traditional educational school or college. There are increasingly emerging non-traditional institutions that offer education to students at a distance. Businesses, companies, and corporations are offering instruction at a distance. Many educators and trainers are advocating the accreditation of institutions that offer distance learning to add credibility, improve quality, and eliminate diploma mills.

The second component of the definition of distance learning is the concept of separation of the teacher and student. Most often, separation is thought of in geographic terms: teachers are in one location and students in another. Also implied by the definition is the separation of teachers and students in time. Asynchronous distance learning means that instruction is offered and students access it at seperate times, or any time it is convenient to them.Finally, intellectual separation of teachers and learners is important. Obviously, teachers have an understanding of the concepts presented in a course that students may not possess. In this case, the reduction of separation is a goal or the distance learning system (Micheal & Harry 2013)

Interactive telecommunications is the third component of the definition of distance learning. Interaction can be synchronous or

asynchronous, at the same time or at different times. Interaction is critical but not at the expense of content. In other words, it is important that learners be able to interact with each other, with resources of instruction, and with their teacher. However, while interaction should not be the primary characteristics of instruction, it should be available, commonplace, and relevant. Telecommunications systems implies electronic media, such as television, telephone, and the Internet, but need not be limited to electronic media. Telecommunications is defined as "communicating at a distance." This definition includes communication with the postal system, as in correspondence study and other non—electronic methods of communication. Obviously, as electronic telecommunications systems improve and become more pervasive, it is likely that they will be the mainstay of modern distance learning systems. However, older, less-Sophisticated systems of telecommunication will continue to be important. The final concept is that of connecting learners, resources, and instructors. This means that there are instructors who interact with learners and that resources are available that permit learning to occur. Resources should be subjected to instructional design procedures that organize them into learning experiences that promote learning, including resources that can be observed, felt, heard, or completed (Micheal & Harry, 2013, Nwankwo, 2013, and Obiora 2012).

The history of distance education in Nigeria dates back to the correspondence education as a means of preparing candidates for General Certificate in Education, a prerequisites for the London Matriculation Exanimation. The first indigenous distance learning programme was the English by Radio programme of Nigeria Broadcasting Corporation that followed independence in 1960. The programme was primarily targeted at primary and secondary school levels and covered core courses at both levels with more emphasis placed on the teaching and learning of Science, Mathematics and English. The technology driven distance learning came into existence almost the same time with the first indigenous distance learning with the emergent of Educational Television programmes of the then National Te1evision of Nigeria (NTV). There was also Schools Educational Broadcast of the Radio Nigeria stationed in Lagos and relayed all through the federation. All radio stations were required to hook at specific times of the day during school hours for broadcasting of prograrnmes. In the last 31 years, University education programmes in the country begin to witness a lot of changes in terms of instructional delivery mode in some of our tertiary institutions. The Correspondence and Open studies Unit (COSU) of University of Lagos that started in 1974, which later changed to Correspondence and Open Studies now known as Distance Learning Institute was the first attempt made to establish a distance education unit as part of a University in Nigeria. It began initially to offer programmes in science education at first degree level in Biology, Chemistry, Mathematics, Physics and Postgraduate Diploma in Education (PGDE) for degree holders who did not possess teaching qualifications.

The National Teachers 'Institute, (NTI) started. as a distance education institution in 1976 (as the first dedicated distance education institution) with the support of UNESCO. It began by training Grade Two Teachers (TCII). In 1990, the Nigerian Certificate in Education (NCE) programme was introduced when the expectation was that the minimum teaching certificate in Nigeria was expected to be NCE. The Institute also introduced the PGDE programme in the year 2005. Ahmadu Bello University (ABU) also started its distance

education through a training programme known as Teachers-in-Service Education Programme (TISEP) for Grades Three and Two teachers and later the Nigerian Certificate in Education (NCE). Also in November, 1972, the University also established a University of the Air Programme for teachers in secondary schools and teacher training Colleges. The Distance Learning Institute of the University of Ibadan which started in 1979 as External Degree Programme of the university is another institution which adopted the distance learning mode.

The National open University of Nigeria (NOUN), was estab1ished in July, 1983, by an Act of the Nationa1 Assemh1y as the first distance learning tertiary institution in Nigeria when it became crystal clear to the then Federal Government that the ever growing demand for education by her people cannot be met by the traditional means of face-to-face classroom instructional delivery. The institution was closed down few weeks after its establishment and the Act that established the University was suspended in 1984 by the then Federal Mi1itary Government that overthrew the civilian governrnent. Many years after the closure, the compelling reasons that informed the earlier establishments of the university as well as the need to fill the gap created by Federal Government clamped down on mushroom outreach study centres of many conventional universities all over the country and there was the need to take advantage of emerging deve1opments in the field of ICTs which have revolutionized the techniques and methods of instructional deliveries in the distance learning mode. All these necessitated the reactivation of the suspended NOUN Act of 1983 in 2002. This paved the way for the resuscitation of the NOUN (Obuekwe & Eze, 2017, Ololulebe,Ubong,Egbezor,2017 & Bolupe 2018**)**

MODES OF DISTANCE LEARNING

Modes of Distance learning though the expansion of the Internet blurs the boundaries, distance education technologies are divided into two modes of delivery synchronous learning and asynchronous learning.

In synchronous learning, all participants are "present" at the same time. In this regard, it resembles traditional classroom teaching methods despite the participants being located remotely. It requires a timetable to be organized. Web conferencing, videoconferencing, educational television, instructional television are examples of synchronous technology, as are direct-broadcast satellite (DBS), internet, radio, live streaming, telephone, and web-based VoIP. Web conferencing software helps to facilitate meetings in distance learning courses and usually contain additional interaction tools such as text chat, polls, hand raising, emoticons etc. These tools also support asynchronous participation by students being able to listen to recordings of synchronous sessions. Immersive envirorirnents (notably SecondLife) have also been used to enhance participant presence in distance education courses. Another form of synchronous learning that has been entering the classroom over the last couple of years is the use of robot proxies (Rahman ,2016).

Asynchronous Learning: ln asynchronous learning ,instruction will be offered for the student to access it at their own time and place, participants access course materials flexibly on their own schedules. Students are not required to be together at the same time. Mail correspondence, which is the oldest form of distance education is an asynchronous delivery technology, as are message board forums, e-mail, video and audio recordings, print materials, voicemail,

and fax (Okop, Nweke, Okafor, Emeasoba & Eneh, 2021).

The two methods can be combined. This type of mixed distance and campus based education has recently come to be called "blended learning", or less often "hybrid learning". Many open universities use a blend of technologies and, a blend of learning modalities (face-to-face and hybrid) distance learning. Distance learning can also use interactive radio instruction {IRI), interactive audio instruction (IAI), online virtual Worlds, digital games, webinars, and Webcasts, all of which are referred to as e-Learning. (Rahman, 2016, Okop, Nweke, Okafor, Emeasoba & Eneh, 2021).

In order to buttress the above information on Synchronous and Asynchronous, distance education programme is dependent on good communication for successful learning to take place. Good communication promotes needed interactions (teacher-teacher and student-student) in teaching/learning situation. This is because interaction is essential to student' learning and to the overall success and effectiveness of distance education. Interaction in distance learning environment may lead to increased academic achievement and also greater retention rate among the students. In learning context, it is the interaction among two or more people for the purpose of task/instructional competitions or social relationship building. Media are used in distance education to ensure both asynchronous and synchronous communication. Asynchronous communication gives learners the freedom of choice in learning. This communication is not dependent on learners being present together at a specific time to conduct teaching and learning activities .Thus, Asynchronous communication provides learners with discussion that allow participant access to the conference or instruction at different times. Therefore, learners can work at their own convenience, when or where they want and at their own place thereby providing learners more time to reflect on their own ideas and encourage them to do more critical thinking (Rahman, 2016, Okop, Nweke, Okafor, Emeasoba & Eneh, 2021).

On the other hand, synchronous communication occurs in real time as all participants in the interaction, including instructors must be present at the same time, although they may not necessarily be at the same physical location. Thus, synchronous communication serves the role of a thinking device for collaborative construction of knowledge and enhances leaners' high-order thinking skills and creative abilities (Remedios & Richardson 2013)

Mass Media and Communication

Mass Media and methods of distance learning according to Common wealth of learning(CLI)(2011), Adegbile & Oyekanmi, 2010, Euler & Von Berg (2018), mehmet, Faith, Mehmet & Kursat, 2019) is stated as follows:

Radio and Television: The rapid spread of film and radio led to proposals to use it for distance education. Many colleges and universities broadcast educational programs for the public schools through radio and television. Experts in given fields broadcast lessons for pupils within the many schoolrooms of the public school system, asking questions, suggesting readings, marking assignments, and conducting tests. This mechanizes education and leaves the local teacher only the tasks of preparing for the broadcast and keeping order in the classroom.

Internet: The widespread use of computers and the internet have made distance learning easier and faster, and today virtual schools and virtual universities deliver full curricula

online. The capacity of internet to support voice, video, text and immersion teaching methods made earlier distinct forms of telephone, videoconferencing, radio, television. And text based education somewhat redundant. However, many of the techniques developed and lessons learned with earlier media are used in Internet delivery. Between 2000 and 2008, enrollment in distance education courses increased rapidly in almost every country in both developed and developing countries. Many private, public, non-profit and for-profit institutions worldwide now offer distance education courses from the most basic instruction through to the highest levels of degree and doctoral programs.

Paced and self-paced models**:** Distance education can be delivered in a paced format similar to traditional campus based models in which learners commence and complete a course at the same time. Paced delivery is currently the common mode of distance education delivery. Alternatively, some institutions offer self-paced programmes that allow for continuous enrollment and the length of time to complete the course is set by the learner's time, skill and commitment levels. Paced courses may be offered in either synchronously or Asynchronous. Each delivery model offers both advantages and disadvantages for students, teachers and institutions.

Distance education can be classified into four groups along the dimensions time dependency and Number of participants. First is MOOCs (Massive Open Online Courses): Open-access online course (i.e., without specific participation restrictions) that allows for unlimited (massive) participation; Second is SPOCs (Small Private Online Courses): Online course that only offers a limited number of places and therefore requires some form of formal enrollment; Third is SMOCs (Synchronous Massive Online Coursess): Open-access online corse that allows for unlimited participation but requires students to be "present" at the same time (synchronously); Fouth is SSOCs (Synchronous Private Online Courses): Online course that only offers a limited number of places and requires students to be present at the same time (synchronously) (Common wealth of learning(CLI)(2011).

Paced models are a familiar mode as they used almost exclusively in campus based schools. Institutes that offer both distance and campus programmes usually use paced models as teacher workload, student semester planning, tuition deadlines, exam schedules and other administrative details can be synchronized with campus delivery. Student familiarity and the pressure of deadlines encourages students to readily adapt to and usually succeed in paced models. However, student freedom is sacrificed as a common pace is often too fast for some students and too slow for others. In addition life events, professional or family responsibilities can interfere with a student's capability to complete tasks to an external schedule. Finally, paced models allows students to readily form communities of inquiry and to engage in collaborative work (Euler & Von Berg (2018).

Self-paced courses maximize student freedom, as not only can students commence studies on any date, but they can complete a course in as little time as a few weeks or up to a year or longer. Students often enroll in self-paced study when they are under pressure to complete programs, have not been able to complete a scheduled course, need additional courses or have pressure which precludes regular study for any length of time (Adegbile & Oyekanmi, 2010).

Distance learning technologies according to Adegbile & Oyekanmi 2010, Schulmeister 2016, Obuekewe & Eze (2017), Michael &

Harry (2013), Euler & Von Berg (2018) are the various technologies used in distance learning this can be roughly divided into four categories: print, audio (voice), computer (data), and video. The following types of the applied telecommunication media can be used: telephone, fax, audio-conference electronic mail, access to databases, Skype and satellite, hand phone, IPhone, laptop, instagram, twitter, blog, e-mail, fax, telephone and audio conference.

Print materials may serve as the primary source of instruction, or they may be supplemental. The primary source, distance students might use a textbook and read various units on a specific timetable. Other technologies, such as e-mail, could then be used to ask questions and send assignments back to the teacher. As a supplement to instruction, text materials may take the form of worksheets or study guides that are used in conjunction with video or voice technologies. It is important to note that the supplemental print materials may be disseminated via scanner used to transmit the print materials back and forth between the students and the teachers. There are many advantages and disadvantages to incorporating print materials.

Audio or voice technologies offer cost-effective ways to enhance distance learning courses. The audio component of a distance learning course can be as simple as a telephone with voicemail, or it can be complex as an audio conference with microphones, telephones, telephone bridges and speakers. Voice mail is becoming extremely common. It allows students to leave messages for instructors regardless the time and allows instructors to leave messages for individual groups. Voicemail can be used to administer quizzes (an option which requires programming) and it also serves as an alternative to e-mail for those students who do not have computer. Audio files and CDs are inexpensive, easily duplicated and very versatile. They can be used to deliver lectures, panel discussions or instructions for the distant learners.

With the increased popularity of the internet, computer technologies are receiving more and more attention as a means of delivering distance learning. The primary computer technologies used for distance learning include, e-mail, online collaborations, and web-based learning, for a long time electronic mail has remained the only internet application in education. Electronic mail is still the most frequently used computer technology in distance learning. Sending e-mail messages is a common and inexpensive way for students to communicate with instructors. In some cases, an entire distance learning course may be structured using e-mail as the only method of communication. In other cases, e-mail may be used to supplement audio or video technologies. The advantages of e-mail communications include versatility and convenience, but it requires an internet connection and includes the complexity of learning to use e-mail communications include versatility and convenience, but it requires an internet connection and includes the complexity of learning to use e-mail software and attachments. E-mail communications are asynchronous, meaning that they do not take place simultaneously. Synchronous communications are possible through online chat (a two way, interactive exchange on the internet) shared whiteboards (two or more people connected to the internet can communicate through graphic images on the shared whiteboard) and videoconferences. The web potentially offers a worldwide forum in which to teach courses. Courses material can be dynamically updated. The Web-based learning model is basically free from limitations of space and time while it reaches students around the world very easily. The advantages of computer technologies are: they allow self-paced

instruction, can incorporate text, graphics, audio and video, they allow high level of interactivity, provide written record of discussions and instruction, they are inexpensive and worldwide accessible. Its disadvantages are as follows: they require hardware and software, generally rely on written communications, they require substantial planning can have computer viruses and its performance are notoriously unreliable.

Video techniques used in distance learning are often characterized by the transmission media (videotapes, satellites, television cables, computers and microwave). Videotapes and DVDs offer popular, easy-to-use formats for instructional materials and the hardware is easily accessible. In addition to easy hardware access the tapes and discs are quite inexpensive. Disadvantage of videos and DVDs include the fact that they are not interactive and sending them via mail can be expensive. Satellite transmission is one of the oldest, most established techniques for videoconferencing. Two sets of equipment are needed for satellite systems. The uplink (a large satellite dish) transmits the video and audio signal to the satellite. The downlink (a small dish antenna) receives and displays the signals. When satellite videoconferences are used for distance learning, a studio classroom must be properly wired for the lightning, microphones and cameras needed to produce an acceptable lesson. Satellite videoconferencing may be very expensive.

Microwave transmissions provide a cost-effective method for video conferencing in more localized areas. Mostly they transmit video signals to areas not more than 20 miles apart. Cable and public broadcast have been used to distribute instruction for years. Almost all public cable television systems allow schools to transmit television courses. This type of connection can be used to transmit distance learning thereby help in promoting distance learning towards achieving sustainable development goals, Nigeria.

ICTs has been seen as the instrument upon which distance education can be achieved successfully. This shows that by using ICT in carrying out distance education among the people will help in achieving sustainable Developing goal because it will encouraged quality education for all. Using ICT in promoting distance education will help in attaining sustainable development goal 4 which stated that there should be inclusive and equitable quality education and promotion of lifelong learning opportunities for all.

In a distance learning programme where the use of ICT is really promoted as formally discussed, there will be high enrollment of learners or students because by the time they are taught with the use of ICT, many people will be happy learning .This is because there are many advantages attached to the usage of ICT, such as easy to interact with people in other cities or states, easy to pay for goods while you are in your home, easy to communicate with your customers or clients even when they are far away. There are also many profits attached to usage of ICT in distance learning centres. Most of the students will be able to even further their education to the level that will make them a fulfilled human being, most of them will continue with their preferred course in distance education programmes till they acquire the highest degree. Thus, this is a way of attaining the SDGs Goal 4 in our country. (Ezeugbor & Onurah 2018, Nwachukwu, Andrew & Ossai 2013 & UNESCO 2015).

Conclusion

Distance education can be promoted through the use of ICTs towards attaining sustainable development Goals. The

researcher noted that for Distance education to succeed, the use of ICT is so paramount. Distance education cannot thrive well without well-equipped apartments. Therefore to achieve sustainable development goals 4, there is need for proper distance learning programmes. The centre must be well equipped with reliable electricity supply and good instructional materials such as good internet, satellite, telecommunication media such as telephone, fax, audio-conference electronic mail, print materials such as e-mail Audio files, CDs, Videotapes cables, instagram, twitter, blog and other useful learning devices. This will pave way for easy learning which will eventually lead to achieving and maintaining the sustainable Development Goal in the country**.**

Suggestions

1. Awareness of distance education should be created by the government so that people who cannot afford to be attending classes due to some reasons can have opportunity to also be educated. This will help to achieve sustainable development Goals 4.
2. The distance learning centre should be well equipped by either the government, stakeholders or the management of the institution that owns the centre.
3. Mode of delivery and access to this programme should be flexible, innovative, interesting and creative so that learners or students will find it easy while learning.

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