Pedagogical Mutation in Tertiary Institutions amid Pandemic Situation: A Digital Transformation.

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Abstract

Pedagogical Mutation during peculiar situations like the Covid-19 Pandemic became mandatory for ensuring social distancing while continuing with education delivery in Tertiary Institutions. Thus, Digital Technology aided Education Process was introduced as situational remedy in many developing Countries like Nigeria, though cumbersome to Teachers and Students, but has brought about a commendable Digital Transformation in Nigerian Tertiary Institutions (NTI) and henceforth used to supplement the older conventional way of teaching and learning. This paper discusses the impact of Digital Transformation in the Society, and issues of Covid-19 induced Digital Technology advancement in the Tertiary Institutions. The paper recommends the availability of effective Communication Tools and improved Technology-enabled learning, capable of bridging Digital gaps in the Education System and the Society at large.

Keywords: Pedagogical mutation, Covid-19 Pandemic, Digital transformation, Tertiary Institutions.

Introduction

An epidemic over a wide geographical area, affecting a large proportion of the population is said to be a pandemic. The outbreak of Covid-19 pandemic wasa health crisis which undoubtedly affected the social, political, economic, religious, as well as the Education structures of many countries across the Globe.Covid -19 is perceived by many

Educators as a quintessential adaptive and transformative challenge of which there is no specified guide for appropriate response. Thus people device alternative means to normalise livelihood. A major response to Covid-19 by the Federal Government of Nigeria among others was 'social distancing' which entails the lockdown of several Institutions and places where people are most likely to converge so as to limit the spread of the virus. Paramount among these is the closure of Schools at all levels of Education in the Country, which was considered essential and appropriate during the initial outbreak that lasted for about six months.

While conventional face-to-face teaching and learning activities were suspended during the Pandemic, social media platforms, such as the Video-conferencing and Zoom, were widely adopted (Ali, 2020; Kohnke & Moorhouse, 2020). With the disruption of studies due to the closure of Educational Institutions, teaching and learning have become online in many Tertiary Institutions, even in some Secondary Schools. Before the advent of the COVID-19 Pandemic, the World Bank (2020) has recorded Global issues of teaching and learning, evidenced by poverty. However, the important place which Education occupies in any Nation suggests that Educational activities could not be absolutely suspended. There was the need for teaching and learning to continue. In this regard, the Federal and State Governments as well as religious Organizations were quick to introduce Educational programs on Radio and Television during the lockdown. However, there were limits to which these could meet the challenge of teaching and learning as a result of economic and social constraints on the part of Teachers, Parents and Students. It thus becomes imperative for Schools to adopt modern Technology in teaching and learning.

In Nigeria, only some Private and very few Public Schools have access to internet connectivity for learning and teaching purposes, there is online inequalities within the Education Sector (Ozili, 2020; Ebrahim, 2020). Where present, its utilization may be disturbed by power interruptions or failure, poor connectivity, exorbitant cost which constitute serious challenges to online teaching and learning. The advent of Covid-19 has been very devastating on the lives and economy of Countries Globally, with the developing Countries suffering more. The spread of COVID-19 necessitated the temporary closure of Schools in more than 160 Countries Worldwide (Mhlanga &Moloi, 2020) andleft about over 1.6 billion Children and youths out of School (World Bank, 2020). There has never been a Global record of Pedagogical Mutation in Education, where the traditional approach of teaching has been threatened across the Globe like during the COVID-19 Pandemic (Suryaman, et al., 2020).

Nevertheless, the Pedagogical Mutation has brought about Digital Transformations in Education sector (Rospigliosi, 2020). While Digital Transformation is affecting and changing various sectors significantly, the Education System is being encouraged to take advantage of new Technologies and Tools to develop strategies and actions to play an active role in the Digital Transformation Process (European Union, 2019). By so doing, the Education Sector, especially the Tertiary Institutions will become drivers of Digital Innovation required to manage the shift in paradigm caused by the COVID-19 Pandemic.

Impact of Digital Technology in Human Society

We live in the information age, where there is a Global social, political, economic, spatial and cultural changes, as influenced by the Technology and information in the

ociety (Alberts and Papp,1997).This information age has brought forth various high tech Industries and has fundamentally changed the way we relate and communicate in the Society. It has according to Groover (2021) led to the provision of new types of economic activities, improve automatization and aids economic production. Socially, it has aided and facilitated human relationshipsthrough social media; politically, it is used for the diffusing of democratic norms, for grassroots political activism, for political campaigning and the Arab Spring (Christou, 2019). Technology has even improved social spaces, Wi-Fi, public hotspots(European Commission,2021).

Historically, Digital Technology is considered to have developed from the invention of the Transistor, which became commercially available in 1947. Transistors are usedto amplify, control and generate electronic signals (Riordan, 2021). According to the United Kingdom Research Institute (2021) in 1969 the precursor of the internet, ARPANET was established, which consisted of a few research and military Computers, and was a US Defence Industry network (UKRI 2021).Computer Technology and internet was characterized by Technological rivalry in the military Industries of Countries, and proved by the competitions between the USA and USSR during the cold war in various Sectors, which included the Space Race. The Space Race led to the development of Satellite Technology, and this laid the groundwork for the development of the computer (Spadoni, 2020).The Computer allowed for the storage of information and automation process that is not possible by humans. The Computer eventually found itself to human consumers and has changed the way in which people live their lives. The development grew to include household consumers by 1992 and now has billions of users Worldwide (Jefferson University,2021). Other Digital Technological Inventions include;the email,

video games consoles, portable computers , compact discs, cellular phones, digital cameras, smartphones, social media websites ,bluetooth, 3d printers 3d printers, bitcoin, driverless cars, and Virtural Reality(UKRI).

Computer has enabled automation. Automation is the process where Technology, programs, robotics, or processes are applied in order to minimize human intervention (IBM, 2021). This is common in manufacturing processes; Robots are slowly replacing human Personnel. This has resulted to faster and better production. However, human workers are still needed in order to oversee the Machines (Groover, 2021). Besides physical production, automation has cyber applications. Processes such as network security, information processing, screening and assistance can be done by artificial intelligence and bot programs, such as with cloud Technology (remote networking and servers)(Fiot,2020). Automation save crucial amount of time, increase workloads, thus potentially resulting to better management of infrastructure (IBM, 2021).

Socially, the internet has birthed the creation of various internet subcultures and phenomena including meme and viral video sharing (Shifman, 2013). The Video gaming Industry is a significant part of leisure, and there also is the e-sports Industry. Video gaming streamers and social media personalities have become influencers, having millions of followers Worldwide, and changing the face of advertising and marketing of the entire commercial Sector (McKinsey,2020). Other social effects of Digital Technology include forms of communication such as; cellular phones, text,instant and video messaging. Christofidou (2021) recorded that this has reduced physical communication and has helped people widen their Social Network. The smartphone has effected and improved the way people interact (Merriam Webster,2021).Convening

information and social relationshipshave changed with the use of Websites such as Facebook (Jarrett,2015). People can now easily communicate with others around the World via Video link using their smartphone or Cameras without being necessarily physical (Sarwar & Soomro, 2013).Communication has become almost instantaneous using Computers and the Internet. Customer service supportcaneven be accessed via the Internet in some Countries to lower labour cost (Dossani & Panagariya, 2005).

Educationally, Digital Technology enhances Knowledge and Science, There is e-learning in various Countries Bezhovski & Poorani (2016) in place of physical presence in the Classroom. Culturally, Digital Technology allows for the exposition and distribution of various types of Arts and Culture from around the world, prominence of Digital Media is; graphic design, memes, or animation, which is a massive Industry. The Internet also has a tremendous political role. Besides information and enlightenmentin the spread of political ideas and theories, it plays a role in political campaigning.The internet was considered crucial in facilitating the spread of democratic norms (Christou, 2019).

Economically, much of International Trade are done in some aspect through the internet (OECD,2019). The internet allows for the instant exchange of information and data across the Globe, and thus coordination of various types of Economic and Social activities. It has become the medium for entertainment Sector, for example, Video and music streaming platforms such as Netflix or You tube aspreferred to traditional media such as Newspapers, Television or Radio which are increasingly becoming obsolete in the rising role of the internet (Enli&Syvertsen,2016). The internet is home to various e-commerce Companies, such as Amazon and Alibaba, which according to Day (2014) have become an important retail and trade where sellers can sell their products locally

and globally, which may be impossible through physical means.

Digital Technology and Education process

A prominent trend in education is the digital revolution. The global implementation of the digital revolution is uplifting (Bereznoy, 2018).This affects the employment of, and requires the development of new competencies among teachers enablethe restructuring of the entire educational system. Globalization may also impact indigenous populations or the environment negatively, audiences can learn about other cultures or environmental issues which potentially aid this plight. Digital technology also enhances knowledge and Science through e-learning in various countries Bezhovski & Poorani (2016) in place of physical presence in the classroom.

Modern Education is improbable without the search for recent materials and methods of teaching and learning. This is owed to the social changes caused by the pervasive propagation of Digital Technologies into all spheres of life, including Education. Educationists within various Disciplines, explore Digital Media and the areas of Study they affect, discuss Digitalization and ways of mediatizing, trying to understand the technical side of the issue and explain the possible transformation processes that affect social behavior in Schools, Universities and other Educational Establishments (Dittler,2017). When it comes to Digitalization, first of all we mean the infrastructure, hardware and software, the list of Internet platforms and others. Digital Technologies are being use every day; they are less visible than weighty Computers from the recent past. Schools, Universities and other Educational Institutions - which in the recent past have been the mainstays of written and book Culture - are also facing the challenges of Digital Transformation.

There is better awareness among Educators around the World of the privileges accompanying skillful use of modern Information and Communication Technologies (ICT) in general Education. Information and Communication Technologies contribute to solving problems wherever Communication and Knowledge are of particular importance, like the development of learning processes, the implementation of joint Projects and Communication in the School network, the improving of interaction between School and Parents and improving the organization and management of the Educational process. This is not surprising, since the opportunities that ICT provide for improving modern Society and an innovative Economy are now available for Education (UNESCO2011).

Issues of Covid-19 Induced Digital Transformation in Tertiary Institutions

Various issues arouse from the Pedagogical Mutation caused byCovid -19 and the imperative of Digital Technology in Tertiary Institutions,these include;

Continuity of Education Process in Tertiary Institutions during Covid-19 Pandemic

Education is perceived as the bedrock of the Civil Society, and it is sought after by every Society with the hope that it will grant them the enablement to stay afloat in a dynamic World. COVID-19 Pandemic is a health crisis. The impact of COVID-19 Pandemic on Nigerians and several aspects of their lives cannot be over-emphasized (SAIRR, 2020; Sekyere et al., 2020; Ebrahim, 2020). Various means have been devised to respond to Covid 19 pandemic situation; Organisation for Economic Co-operation and Development (2020) as stated in Suryaman, et al., (2020) explained that UNESCO approved the implementation of an online platform for learning to enable Communication between Educators and Learners and ensure continuity in learning. It thus became mandatory for the first time, for Students and Educators in many Developing Countries

to communicate officially through an online platform for academic purposes (Sobaih, Hasanein, & Abu Elnasr, 2020).The corona virus Pandemic has driven many Tertiary Institutions to move to online teaching and learning process, and this has influenced the interaction between both the Students and the Teachers (Coman, Tîru, Mesesan-Schmitz, Stanciu, & Bularca, 2020). Due to the Pandemic, many Tertiary Institutions were restricted to mainly interact with students online (Sobaih,Hasanein, & Abu Elnasr, 2022).

The internet-based learning during the COVID-19 Pandemic was considered as an option given that it is an alternative to traditional learning, enables the implementation of distance or online learning where access to Technology is not limited, Verawardina&Jama (2018) as it became an essential element for maintaining the activities in Tertiary Institutions (Coman, Tîru, et al, 2020).The online applications forcollaboration and Communication that can be harnessed for teaching and learning include; Google Classrooms, Microsoft Teams, Canvas, and Blackboard used for creating instruction, training and Skill development for an organized Class (Petrie, 2020) the use of a flipped Classroom for providing learning resources before the Class to encourage the development of Skills such as critical thinking, problem-solving, as well as self-directed learning skills Pokhrel & Chhetri (2021); and the online Classroom time is used to deepen understanding through discussions with Peers and Faculty (Doucet, Netolicky, Timmers, &Tuscano, 2020).

Preparedness of Staff and Students for Digital Instruction and learning amid Pandemic

Issues were significantly encountered in the demand and delivery of Educationamid the Covid-19 Pandemic as most Teachers and Students were not trained to apply social media in Education (Kaplan &Haenlein, 2016). The Pandemic caused

Schools to lockdown their Campuses and forced Teachers and Students to initiate online learning (Bao, 2020). Many Schools mandated Teachers and Students to adopt Digital instruction during the long-term suspension of face-to-face learning activities (Peng et al., 2020). There are more and more questions about individual Digital competence, resources and Organizational capabilities.

It is important to understand the consequences of Digital Transformation for the Educational Organization itself and how Teachers should react to this (https://www.goethe.de/ins/ru/ru/spr/mag/21272715.html). The suspension of Classes with continuity in learning amid the Pandemic became the pervasive phenomenon among Schools (Jung et al., 2021). Teachers and Students were mandated by their Schools to adopt Digitalresources, in carrying out the teaching and learning activities (Al Lily et al., 2020). A sizeable number of Educational Institutions in Africa were caught unawares by the shift to online learning, with close to non-existent Digital Models for learning (Muhuro & Kang'ethe, 2021). Such Institutions, had to build online platforms in such a way that they integrated external applications into their learning models, and this led to delays in the academic Calendars (Adeyon & Soykan, 2020; Dhawan, 2020).It is good for the Teacher, like any person in any other Profession, to have the knowledge of Digital Literacy, that is, the basic Knowledge, Skills and attitudes necessary for development in a Digital Society.

In many Developed Countries today, a level of Digital literacy is necessary forjob appointmentof any person, including a Teacher, moreover, Digital literacy is a key factor in improving Professional ICT competencies. It is evidenced that this sudden transformation into online learning has posed substantial challenges for Educational

activities Globally, and particularly in environments with limited resourceswhere Educational Institutions, Teachers, and Students are generally not ready for this mutational disruption to traditional teaching and learning methods (Ferri, Grifoni, & Guzzo, 2020; Dhawan, 2020; Muhuro & Kang'ethe, 2021).

Interruption of social communities and Digital inclusion in Pandemic situation.

The disruption to regular gatherings of people and emergence of online learning became a main disruption of social communities in Pandemic situations. It is argued by Ferri, Grifoni, & Guzzo, (2020)that while the mutational online learning amid Covid-19 Pandemic has a bit graduated students into the spheres of dependability and independence; it has but harshly narrowed interaction amongst students, and between educators and students. Even though advocates of digital transmutation have debated that ICT gadgets could beused tosupplement the social aspects involved in learning Dube (2020) nevertheless, its utilization cannot sufficiently replace human contact as an effective online learning, rightly put by Masinde & Roux (2020), it requires a thoughtful infusion of human factors. To boost the feeling of belonging insocieties where people live in mutually supportive communities like in African Countries,it isof importance that online learning be made to intentionally foster collaboration amongst students.

Assessment of students during Pandemic situations

Assessment is vital tool in measuring students' progress in performance. There is the issue and concerns about the professional ethic of students' assessment and digital technology in Tertiary Institutions during Pandemic situations. Thomas (2017) noted the confusion of educators with regards to measuring students learning ability via online learning due to its limited assessment monitoring mechanism.There has often been worry

over the rise of 'contract cheating' in Tertiary Institutions, a situation where students impersonate to write tests and examinations at a price (Alin, 2020; Harper, Bretag, & Rundle,2020). In Pandemic situations like the Covid -19 induced Digital Learning, measures to regulate and maintain academic integrity digitally were lacking in most Tertiary Institutions as there have been evidences of dishonesty in assessment (Baran & Jonason, 2020). Thus, educators are often left to believe in the honesty and independence of students in doing assignments.

Workloads demands of the Pedagogical Mutation and Digital inadequacies

There are bound to be worrisome issues with regards to the academic workloadsamid the swift transformation in Education during Pandemic situations. In the case of covid-19, a sizeable number of tertiary institutions in Africa were trapped cold by the swing to online culture, with close to inexistent digital models for learning (Muhuro & Kang'ethe, 2021). Such institutions, had to clutch online platforms in such a way that they integrated external applications into their erudition models, and this led to delays in the academic calendars (Adeyon & Soykan, 2020; Dhawan, 2020) .Caution that in Africa, there is lack of verification that highlights success stories of online learning even if thetexts is filled with promises of what online learning is able to deliver Kaisara & Bwalya (2021) however online learning is not a novel phenomenon, this sudden transformation into Digital learning has posed notable challenges for educational activities globally, and particularly in resource-scarce environments. Didactic tertiary institutions, teachers, and students are generally not arranged for this unexpected disruption to customary traditional teaching and learning methods (Ferri, Grifoni, & Guzzo, 2020; Dhawan, 2020; Muhuro & Kang'ethe, 2021).

No single social media platform can offer complete functions for various subjects among Schools (van Bommel et al., 2020). Teachers may require Students to use Zoom for meetings (Kohnke & Moorhouse, 2020), Rain Classroom for in-Class exercises and interactions (Li et al., 2021), Moodle for forum discussions (Dascalu et al., 2021), and Google Forms for quiz evaluation (Afiah & Pujiastuti, 2021). Though these Social Media Platforms help facilitate knowledge transmission when face-to-face instruction are not applicable, however, information leakage occurs because of the inconsistency of the information platforms and interrelationship issues of the Mutation in Education amongst Educators, Students, and Social Media (Allen et al., 1996; McDermott, 2022).

Conclusion

The blend of conventional learning and Digital open online learning as rightly put by L´opez-P´erez et al., (2011) has evolved an adaptive and progressive Technology development.The ability of, and importance of Digital Technology in Education is often underestimated, which allows, along with images and texts, to supplement the lessons taught with other formats, such as Simulations, Video, Audio, etc., taking into account the social aspect of the changes taking place in learners. If Educational materials werecreated as open Educationresources, then they can be easily included in the Classroom. However, it would be a mistake to think that Digital Technologies automatically provide a solution to all problems in the Educational system and, by themselves, contribute to improving the learning environment. Because the teaching style - be it collaborative learning, a project method, a front-end lesson, or a teacher-centered lesson - doesn't depend on Technology. However, their use more often leads to a change in the corresponding teaching style. It is only a positive, purposeful development of

interactionbetween students and teachers that is possible to make the learning process better and more flexible. Thus, "Digital Technologies" should be considered as one of the means of improving the quality of Education and as one of the amplifiers of the power of human "natural intelligence". But in no case can the development of the practice of their application be the goal of Education. Here, there is a substitution of "means"; the true goal of the system of upbringing and Education - the constructive elevation of a person, isa harmonious and comprehensive development. The COVID-19 Pandemic, though a Global threat has impacted the World, including Education (Karalis & Raikou, 2020). The Pandemic has initiated a mutation in Education mode of teaching which is hope to be maintained and improved upon to future (Taglietti et al., 2021).

Recommendations

The Study recommends the following:

1. Teacher training Tertiary Institutions should design their curriculum to train Teachers in Skills required for Digital teaching to enable their competency to use Technological devices in delivering instruction.
2. Frequent in-service trainingson the use of modern Technological devices in teaching learning situations should be encouraged in Tertiary Institutions.
3. Digital Technology usage should be designed and made compulsory for Educators.
4. Educators should be encouraged to supplement the conventional face-to-face teaching with digital teaching.
5. Government and Stakeholders should endeavor to make necessary provisions to encourage Digital Transformation in Tertiary Institutions.

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