Tech-20 the Perfect Epidemic to Covid-19 Pandemic and its Influence on Education: Offensive and Defensive Measures of New Media Technologies

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Abstract

Just like every other virus, there is a recent outbreak of COVID-19 which hampers with the school academic activities. This virus been an influenza, epidemic and airborne disease had affected a lot of lives, affecting national economy as well as shutting down all schools at all levels. Thus, there is a need to introduce technologies which can help students continue with their learning from their different isolation centres. This study investigated (i) various technologies that can be used for learning from their isolation centres; (ii) influence of these technologies in combating the learning gaps established by COVID-19; and (iii) readiness of students to use these technologies. It was concluded that mobile learning, google classroom and web-based authoring system can be used to resolve the academic activity crisis established via the pandemic. Thus if these technologies are utilized by students and teachers for both the teaching and learning process, there could be tremendous improvement in the academic performance of students as well as job performance of the teachers across all levels of education.

***Keywords**: TECH-20, EPIDEMIC, COVID-19 PANDEMIC, INFLUENCE, EDUCATION*

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Introduction

There has been recent outbreak of corona virus also known as COV19. This has affected the economy of the world generally as it affects all nations. Aside the economy, its negative influence on education cannot be underestimated as schools at all levels were compulsorily shut down in many nations of the world. Students and their teachers have been made to desist from the school premises so as to curb or control the spread of this pandemic virus. If COVID--19 teaches public-health officials one thing, it is that there are now tools available to help contain an infectious disease before radical measures like quarantines and curfews are needed (Park, 2020). The use of technology is needed in all areas including our educational settings. There is a lot of emphasis on integrating technology in the classroom through innovative teaching strategies that focus on enabling students to achieve the desired learning objectives (Hwang, Lai, & Wang, 2015). Technology facilitates student engagement in learning (Northey, Bucic, Chylinski, & Govind, 2015). Technology has impacted in most of the sectors, including education field.

Education was defined by Soetan, Onojah, Alaka and Aderogba (2020) as a process of acquiring knowledge through study or imparting knowledge by way of instructions or some other practical procedures. Students with in self-isolation period need more than ability and skills in order to perform successfully, they also need the sense of value to use the technologies well and to regulate their learning. The dreams of change and progress of any nation rely on the capacity of its qualitative education being the most valuable instrument for attaining sustainable development and it's a sure way to various successes of any nation that unlock the divergent opportunities particularly in science and technology (Ala, 2020). Learning is fun when it is associated with technologies this in turn makes students to understand and perform better. This has scientifically proven that retention of information is higher when it is communicated using both visual and verbal communication (Bates, 2017). Educators are fast realizing that the use of computer assisted teaching and learning could be convenient for the users (Ebrahimi, 2016). The growth of technologies is based on world's development in all aspects. As a result, the need for the use of Information Communication Technologies (ICT) in teaching/learning is inevitable (Idrus & Salleh, 2017). The integration of several innovative technologies into the educational process could solve several educational challenges. ICT provides the basic technology for assisting teachers and learners to improve their skills (Rahamat Shah, Din, & Aziz, 2017).

The process of impacting knowledge has always been a major priority for early adopters of innovation in computing technology. It does not therefore come as a surprise that educational practitioners and theorists have begun to eagerly explore how social media can be harnessed to describe and implement new paradigms for communication, learning, and education. Most of the social media platforms have been assessed in order to find out their suitability in enabling innovative behaviors that support the acquisition,

access, manipulation, processing, retrieval, presentation and visualization of information within a teaching and learning space (Abdulraheem, 2013). Social media has exploded as a category of online discourse where people create content, share it, bookmark it and network at a prodigious rate. Because of its ease of use, speed and reach, social media is fast changing the public discourse in society and setting trends and agenda in topics that range from the environment and politics to technology and the entertainment industry (Asur & Huberman, 2010). In the last ten years, the online world has changed dramatically, thanks to the invention of social media, young men and women now exchange ideas, feelings, personal information, pictures and video sat at truly astonishing rate. Seventy-three percent of wired American teens now use social media websites (Oberst, 2010).

Technology has opened many educational doors to children and learners at all levels irrespective of their status. Technology give leaners the opportunity to learn under any circumstances even at different locations. Adegbija, Fakomogbon and Adebayo (2013) stressed that emerging technologies have enhanced extensively the prospects that promote the learning process in ways which are not obtainable before now thereby moving from instructional delivery to a remarkable point globally. Technology is a global phenomenon that contributes immensely to human existence and enhances the socio-economic relation of many nations of the world (Ezemenaka, 2013). The practical application of scientific discoveries applied in almost every aspect of human life. Technology is a body of knowledge that is devoted to creating tools and managing resources (Ramey, 2016). Technology is ubiquitous in the contemporary world, and has the capacity of influencing human existence. There is no contradicting about the fact that students may not have a better standard of living without utilizing or benefitting from one aspect of technology or the other.

The use of social media by Undergraduates is a growing area of research for educationists and social scientists. Hamid, Chang and Kurnia (2009) maintains that there are beneficial designs and styles of employing the use of these sites at school level so as to maximize their benefits. This may involve the introduction of contents and focuses on how to share, interact, and collaborate and socialize by its use among students. There appears to be different top reasons to justify using social media in higher institutions of learning. Its usage will facilitate communication among and between students in virtual cities. Amongst others, Facebook appears to be the most likely and probably the most favorite site as a means of communication for reaching students (Mack, Behler, Roberts, & Rimland, 2007). Also, social media Websites have assisted in solving a few students' problems, with the aid of interactive properties of these sites by encouraging participation in academic programs (Ractham & Firpo, 2011)[52]. It has also been reported that using online technologies can encourage online discussion among Undergraduates outside the classes, beyond the traditional class setting (Gray, Chang, & Kennedy, 2010). Most of the students have mobile phones and those who do not can access the course materials via their parent mobile phones because

they could be in door 247 with their parent at this pandemic period. Course materials could be shared via whatsapp and other relevant means.

The changes and service brought about by ICT have been quite transformative to the extent that even the socialization of human species could be incomplete without being equipped with the necessary skills, knowledge and motivation required to understand, cope with and benefit from the impact of ICT on all aspects of life (Babagana, Idris, Chado, Ndagi, & Jibril, 2016). ICT stimulates government all over the world to delve into the great potentials of ICT and use it as a vehicle for wealth creation, economic recovery and educational development. The application of ICT in education has presented a remarkable development in contemporary teaching and learning activities. Shitu, Gambari and Obielodan (2016) reported the relevance of ICT in education and asserted that the increasing demand of educational institutions for new innovations of teaching attest to how reliable ICT is in enhancing the process of teaching and learning. One key for reaching the goal is to apply the learning process (e-learning) and mix it with traditional lecture, namely, blended learning (Nasir, 2018). Blended learning is a learning approach based on the characteristics and the completeness of Learning Management System (LMS) into the corresponding software to support e-learning with a mixed approach of lectures (Hidayat, 2018).

In the fast and dynamic society especially in this era of COVID-19 pandemic where students can no longer do their convectional learning, there is no doubt to the fact that the rapidly increasing innovations in teaching and learning and their affordability may scintillate the affairs of education and enable learning to take place irrespective of time and location. Onasanya (2019) pointed out the breakthrough in ICT particularly in the 21st century and assert that the inception of new trends in educational technology facilitates the creation of various forums for educational interactions. Learning may take place through different platforms of social media, internet-based tools and services that enable learners to collaborate, with one another, generate content, gather and disseminate information online. Examples of social media in education are Classroom Blogs, Wikis, Googles, Instagram, Facebook, Social Networking Sites, Twitter, WhatsApp, Pinterest, Next Vista, Teachers domain, School Tube, iTunes Store, Blossoms (Classroom Aid, 2017).

There is documented fact that students spend several hours on the various social media sites. These sites that began out as being a hobby for several computer literate people have converted to a social norm and existence-style for individuals from around the globe. Teenagers and young adults especially utilize these sites to be able to contact their peers, share information, reinvent their personas, and showcase their social lives (Nicole, 2007). There is therefore need to examine the effects of the social media on the performance of these students in their studies while they are denied of the traditional face to face classroom strategy due to the school lockdown due to the COVID19 virus pandemic which cause across many nations in the world including Nigeria. There are conflicting results on the effect of social media

on the grade level of students. While some studies concluded that there is negative impact of the social media on the general performance of the students, some studies did not find this association. Few studies actually found the use of social media beneficial to the students that are engaged in their use as most students will prefer to use the platform for social engagement and activities different from adopting it for their studies.

Emerging technologies have a considerable impact on education (Falade & Alimi, 2015). For quite a number of years, innovations in educational technologies have tremendously affected the way people acquire and disseminate knowledge. Educational technologies such as virtual classroom, digital readers, on-demand video, flipped learning, mind mapping, digital textbooks, big data and social media, remote learning, holographic technology, adaptive learning, maker spaces, mobile learning, Cloud computing, Tablet computing, Massive Open Online Courses, Instagram in Education, Twitter in the Classroom, Cell-phone in the Classroom with text messaging assignment, Open Content, Podcasting, Flipped Classroom Resources, iPad in Education, Learning Analytics, Social Learning Tools, Edmodo.com, room 21, game and gamification are some of the emergent instructional technologies in educational technology that shape the outlooks of educational practice in the 21st century (Nimritta, 2017; Harward, 2016).

Additionally, Harward (2016) came up with other innovations and techniques in instructional technology practices such as adaptive learning, multimodal learning and smaller class size. In the delivery of instruction for instance, adaptive learning identifies ways to improve the learning experience. It is all about personalizing the learning experience in which teacher reduces the time it takes learners to become proficient, eliminating the needs to cover contents that they already understand. In this context, the learner only focusses on what is ultimately needed.

Social media tools have become ubiquitous, students use them all the time. The advancement of modern technologies tries its best to accommodate the needs of people, especially the younger generation. SNSs are being used by teachers and students especially in the West as a communication tool. Professors and teachers use forums and groups to extend classroom deliberations. Some of them usually use Twitter to communicate announcements and information to their students. It is a bi-directional process as students too are using these mediums to share comment with their teacher. Social networking sites although has been recognized as an important resource for education today, studies however shows that students use social networking sites such as Facebook for fun, to kill time, to meet existing friends or to make new ones. Although it has been put forward that students spends much time on participating in social networking activities, with many students blaming the various social networking sites for their steady decrease in grade point averages it also shows that only few students are aware of the academic and professional networking opportunities the sites offered (Cabero & Marín, 2014)[42]. On larger perspectives, on social network sites, members

are not online with the intention of discovering new acquaintances but to interact with old friends which already exist on their list.

The most visited and highly talked about social networking websites world over today are Facebook, twitter and instagram. For students and even the general public, they provide personalized and interactive services based on users' interest and activities on the web. Undergraduates use Facebook not only to stay in touch with existing friends and make new ones but also to exchange information about classes, concerts, parties, or whatever else interests them. People who make use of these sites create identities and social networks basically with text composing identities by selecting and arranging dozens of labels and filling out form fields. A well-crafted Facebook page not only gives the facts of a person's life, such as birthday and hometown, but also a look at how that person wants to be perceived by his or her peers. Clearly, Facebook and MySpace, along with other social networking sites, have much to offer information technologists (Helou, Rahim, & Oye, 2012).

Another trend in educational technology is the issue of mobile learning. The development and invention of internet-enabled devices has created new ways for educators to communicate and share opinions with learners (Mahat, Ayub, & Wong, 2012). However, mobile device enables learners to receive and share lecture note and other learning materials either on-line or offline. Mobile learning is a new form of education that integrates e-learning with mobility in the process of delivering or receiving the instructional contents (Falade & Alimi, 2015). Mobile learning is the use of mobile devices as a tool in a situation where learners are geographically dispersed to promote collaborative learning and to engage learners with content as an alternative to computers and lecture notes as well as a supplement to campus lecture. Ogun state government of Nigeria commences Digital classes for primary, secondary school students. In view of government's directive on the ban of high density gathering due to the COVID-19 virus which subsequently informed the closure of public and private schools across the state, the Ogun state government aids the commencement of electronic visual learning on the state-owned television station, OGTV.

It is an initiative with the ministry of education science and technology to ensure that learners are still undergoing the learning process while on the unplanned impromptu academic recess. The class tagged OgunDigiClass which would daily feature top-notch educators who would handle core topics in English and Mathematics at both Primary and secondary school levels. It will be publicly streamed on OGTV at local stations as well as DSTV, GoTV etc. There is also room for students who do not meet up with the televised sessions as they could also visit www.ogundigiclass.ng to watch the recorded version of the classes (Somorin, 2020). This electronic visual commences 24th March, 2020 and will be on Throughout the duration of the closure of schools. This platform if well utilized could bridge the gap in learning as a result of the COVID-19. Conversational technology is one of the new innovations in educational technology is derived from the work of Locke

(2013) relating to conversational exchanges. Conversational technologies encompass a wide range of systems and software, many of which are e-mail, instant messaging, Web pages, discussion forums, video and audio content/streaming, wikis, and blogs. Another platform designed to curb the drastic negative effect of the pandemic on students learning is the tutor for physics developed by Handy Solverin. It is a physics help with various physics concept which are accessible through the website at tutor4physics.com.

Google Classroom (GC) is required in teaching and learning when it involves the learning activities related to computers and mobile devices (Kumar & Bervell, 2019). GC has functionalities to help teacher and student jobs, such as the report on the results of observation; ask questions/quizzes online; reviewing the literature and other sources of information to measure the understanding of learners; planning investigations; analyze and interpret data; propose answers, explaining a phenomenon through a short essay; make predictions; and communicate the results (Nizal, et al., 2016). Google Classroom has the potential to streamline communication and workflow for students by providing a single access point to discussion threads and assigned work. There are several advantages of using the google classroom for instructional strategy as it makes learning faster and reliable, as well as quick assessment system. Google Classroom can help students to keep their files more organized because all their work can be stored paperlessly in a single program; Faculty can more quickly identify which students may be struggling with their assignments due to the tracking mechanisms associated with assigned tasks and Grading processes can be simplified because of the grading features associated with student submissions (Ifktah, 2016). Most of the student who had started using the platform agreed that Google Classroom is a useful application for submitting their assignment. It means that Google Classroom is easy to be used as supporting learning tool.

Another development in the aspect of use of technologies for learning is the Artificial intelligence with Virtual reality and Augmented reality. Virtual reality may be seen as a mediated environment which creates sensation in a user of being present in a physical surrounding. It is a creation of virtual environment presented to individual senses in such a way that an individual realizes it as if he/she has been completely there in reality while it is vague (Kehinde, 2017). Virtual reality is a computer interface that permits the user to interact in real time, in a tridimensional space generated by a computer, using their feelings, through special devices (Kimer, 2012). There are several definitions of Virtual reality (VR), in essence, they refer to the immersive and interactive experience based on graphic images in 3D generated in real time by computer, in other words, it is a simulation generated by a computer, about a real or just an imaginary world. A user can notice the virtual world, through a window built by the monitor screen or by projection screen or it can be inserted in the real world through a helmet (HMD) or multi projections rooms (caves) and interaction devices (Kimer, 2012). VR in education can be seen as a discovery, exploration and observation process,

besides the eternal construction of the knowledge. The specific characteristics of the virtual reality can transform into a tool in service for everybody who seeks for an education evolution. Use of technological advances have made dreams to become reality. Virtual reality can be used in education, discovery, exploration and building of knowledge about places and situations. The great potential of the virtual reality is exactly on these possibilities, not only through classes or physical objects, but also through the virtual manipulation of the target to be explored, analyzed and studied.

Sommeraurer and Oliver (2018) referred to Augmented Reality (AR) as technologies that dynamically blend real-world environments and context-based digital information. Lando (2017) described AR as the technology that merges virtual content with the physical world in such a way that the two complement one another. Similarly, AR can be defined as a Medium wherein digital information overlays the physical world depending on the perspective of the individual interacting with and experiencing the AR Medium (Sommeraurer and Oliver 2018). AR is an emerging technology in education with high relevance for teaching, learning, and creative inquiry, it can be adopted in the teaching and learning process to engage students and their teachers in their learning wherever they are. This connectivity of the physical world resources augments students' experience and understanding (Dunleavy, Dede, & Mitchell, 2009) hence the name Augmented Reality. The shift to Augmented reality is to teach students on their terms by integrating technology that can exceed their expectations in order to motivate and engage them in a way that meets their needs and interests. Augmented reality technology can be revolutionary as it has the ability to create a real-life experience when used in terms of instructional content and for learning purposes (Sommeraurer & Oliver, 2018). Another platform is the web-based authoring system which incorporates a module for testing the student and hence assessing students' performance. The web-based authoring system will be designed for teachers to upload part or full of the instructional content. The web-based authoring tools allow users to ask questions from the lecturer to cater for different learning styles and individual differences.

The instructional effects of authoring systems have provided a platform for diverse opinions from various scholars. Web-based authoring system has been proved to have a significant effect in enhancing student grades (Lazzari, 2009). The use of web-based authoring system as an Educational tool has provided students and educators in higher institutions with a wide range of new and fascinating learning experiences. GC is a free application platform from Google to support teaching and learning program. GC has supported other Google applications, such as document processing (Google docs, Google sheet, and Google presentation), Google Drive, YouTube, Google Calendar, and Google mail (Gmail). YouTube has a video sharing site that has already pasted the link in the GC, Google form is a tool to create questionnaires and exams for synchronous, Google Calendar supports agenda and planning activities, and Gmail acts as the main entrance for all Google tools (Stiglitz, 2016). Teachers need to place technology into

the hands of students carefully by selecting the right mediums and technological tools should be constantly evolving to enhance problem-solving, innovation, decision-making, and teamwork. All these and more can be achieved when both teachers, students, parents, curriculum planners and other education parastatals are introduced to the integration of various technologies for learning.

Purpose of the Study

This purpose of this study is to

(i) determine the various technologies that students can use for learning from their isolation centres;
(ii) investigate the influence of these technologies in combating the learning gaps established by COVID-19; and
(iii) examine the readiness of students to use these technologies for learning in bridging the learning gaps.

Results and Discussions

This study investigated the various technologies that can be used for learning from their isolation centres. Although there are several technologies that can be used for learning in this pandemic period, the mostly appropriate include televised learning and mobile learning. This is because most houses have televisions even though the power source could be a barrier but this is still the weighted technologies appropriate for the learning at this point in time to replace the conventional classroom learning which the students are exposed to before the school shutdown due to the outbreak of COVID-19 virus. Just like the televised learning or televised classes referred to as digital classes organized by the Ogun state government, this could be organized in modules for all the subjects. This will as well engage the students and keep them well isolated in their respective houses. This will as well stop the students in partaking in any evil act resulting from idle hands which could be the devils' workshop. Learning institutions are modernizing their campuses with innovations in technology in order to meet up with the ever-changing demands of the digital-native students (Perez, 2015). Thus, it has been evidently clear that teaching and learning is enhanced when technology is appropriately integrated in all the facets of education

In addition to the televised learning, another is the mobile learning. This is the use of mobile devices for learning. This could be in form of learning apps which the content or topics are been integrated into such apps. There could also be a video package which can be shared through various media for learning. Such media could be the use of social media platform to allow the social distancing which is prescribed due to the COVID virus. Moreover, another relevant learning platform during this season is Google Apps for Education which is a suite of cloud-based applications that Google provides free to educational institutions. Unlike traditional computer programs which must be installed on the user's computer, cloud-based applications are available to users from any Internet-connected computer using a browser. Because the software and data exist on the web, cloud-based programs can run seamlessly from a wide variety of computers and mobile

device. Students and teachers can adopt the google classroom platform whereby teachers will upload documents of the intended lesson on the platform. It will allow the normal conventional classroom to be held virtually outside the four walls of the classroom. The students can ask question on the platform, they can enquire their unclear areas as well as organize quiz, assessment and interact with their peers and the teachers on such platform. This google classroom platform also ease assessment as teachers can set questions for the students and they will be able to attest t the questions and get immediate response regarding their performance. The assessment will be similar to the computer-based testing where the teachers would not have to go through the stress of marking as the platform will do justice to that.

Google Classroom takes the web-based applications, namely the Google Apps for Education, one step further for education by compiling them in to one virtual, interactive platform designed for students as an online classroom. Shaharanee, Jamil, and Rodzi (2016) stated that Google Classroom is meant to help teachers manage the creation and collection of student assignments in a paperless environment, basically leveraging the framework of Google Docs, Drive and other apps. Higher education institutions can produce experts and academics for the future who can adapt to the changing patterns of the work (Ahmad, 2018). Google classroom allows teachers to spend more time with their students and less time on the paperwork, and it is now even better (Iftakhar, 2016). Since these applications and the associated work files reside in the cloud, we had access to our work from any Internet-connected computer, providing maximum flexibility to our team. Web-based authoring system can also be embraced during this period. Web-based authoring system is a platform whereby materials or learning objects can be published on the web, can be run on a standalone computer or can be embedded as a content component into a learning management system. Authoring tools are categorized as single-purpose authoring tools, activity tools, course development and presentation tools, general presentation tools, test and evaluation tools. Course and learning materials produced with authoring tools are mostly used for teaching in an online environment. They are also used in traditional learning environments more frequently because it is easier to save, edit, re-use and share when compared with printed learning materials (Khademi, Haghshenas, & Kabir, 2011).

The influence of these technologies in combating the learning gaps established by COVID-19 was examined. The several technologies will in no doubt influence students learning activities. Students will be able to perform their learning responsibilities without necessary coming in contact with one another physically thereby preventing them from contacting the virus and as well keeping in touch with their classroom settings activities. Catapano (2014) explains that Google Classroom is additionally designed for students to share ideas and resources with one another. Lecturer and students can participate in online Classroom discussions, and everyone can post links to informative resources within discussions or other sharing mechanisms. It means that the students can get discussion about the assignment or related

topic about material in Translation subject. The educational technology, at the moment, is not transformative alone, student learning can improve only through a teacher; therefore, it is absolutely essential that teachers' acceptance of technology is present. Therefore, it is pertinent to engage both the teachers/instructors /facilitators and students in the use of technologies for learning across all levels of their education.

The study also determined the readiness of students to use these technologies in this isolation period. Most of the students will be ready to embrace technologies for their learning as this will bridge the gap in completing their goal for the session. Most of the students agreed that they felt positive feelings in using this application to submit their assignments. They felt curious, encouraged, dynamic, challenged, and enthusiastic. This is supported by Keith and Joanne (2018) who stated that Google Classroom is easy to use and it relaxed the learning atmosphere. The successful incorporation of any technology depends not only on its awareness and availability but also the extent to which students are ready to adopt it. This finding is in support of Murugan, Sai and Lin (2017) who established through research finding in this study which showed that most of the UiTM students have the technological readiness to use mobile phones. The use of the Web as an educational tool has provided teachers with a wide range of new and exciting teaching experiences that are not possible in traditional classroom (Nam & Smith-Jackson, 2017), this experiences includes ; accessing information at any time and place, provide opportunity for online presentation of information, encourage interactive task-based activities, effective dissemination of information, and long-distance education. Besides their instructional value, Web-Based Learning Resources (WBLRs) are potentially powerful tools for enhancing learning experiences and improving the learning outcomes.

Conclusion

In this pandemic period of COVID19 which had shattered the curriculum and timeline of the academic session thereby mandating all students and teachers to stay at home due to the lock down rule by the appropriate government and school authorities to control the spread of the virus, there is need to find a way of engaging the students even in their different homes. Technologies like mobile learning via apps, google classroom and web-based authoring system. With the integration of these technologies, the school gate could be locked but the classroom activities will still be active for both students and their teachers.

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