



STRATEGIC MANAGEMENT AND DELIVERY OF TECHNICAL EDUCATION IN COVID-19 PANDEMIC SITUATION

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Abstract

This study focused on the overview of flu pandemic, the pandemic preparedness planning, pandemic tools and strategies, technological enhanced learning, roles of technological education and digital tools for lecturers and students, challenges of teaching in a digital era, the future of higher education in Nigeria and the conclusion. The review paper started by reflecting on how pandemic became known as far as 1917 in China and then outlined some recent developments in the spread of the pandemic; the roles of technological education in the pandemic, how current and emerging technologies could influence future e-learning provision in higher educational institutions and the post pandemic and technological view of responses, tools and strategies. Literatures were reviewed and the study concluded that the use of new technologies by lecturers and students such as social web and wireless technologies will give lecturers the opportunities to perform more difficult tasks better than how they were performing their roles before the pandemic. Those who incorporate new technologies in their curricula and adopt a role that is supportive of learning with flexibility will be more effective and efficient in their academic activities and will enjoy easy and fast access to online resources, social networking and mobile learning. Therefore, our institutions of higher learning should have strong support for new innovations and technologies while they must ensure that new technologies are embedded in their educational programmes.

Keywords: *COVID-19, Digital era, Pandemic strategies, Strategic management, Technical education.*

Introduction

Over the years, Corona virus was treated as simple non- fatal virus till 2002 but, the deadly virus (COVID-19) was first identified and isolated from pneumonia patient in Wuhan, China in 2019. On the 27th of February 2020, Nigeria confirmed its first case of coronavirus disease (COVID-19) before the pandemic started spreading across the 36 states of the country (Centre for Disease Control and Prevention, 2019). This was the early experience of COVID-19 in Nigeria. The spread of the Pandemic has continued up to the present moment throughout the world. The pandemic has seriously affected the Nigerian economy including educational sector where in our country, many workers have lost their jobs and investments; many businesses have closed down while many lives have been lost as a result of this deadly pandemic.

It was on the 19th March, 2020 that the Federal Ministry of Education granted an approval for the closure of all schools from Monday 23rd March 2020 to prevent the spread of the Corona virus (COVID19). As a result of the schools closure, this COVID-19 outbreak has disrupted our educational system because of the fear of its spread. The academic calendar and curriculum delivery of many polytechnics have been seriously affected and prolonged, majority of these polytechnics were unable to write the first semester examinations, the students would have to stay longer than necessary to complete their academic programmes, the academic and professional examinations have been disrupted while our graduating students who are ready to go for their service year have been delayed by the lockdown.

As reported by United Nations Educational, Scientific Cultural Organisation (2020), that billions of students across the globe were affected by schools' closures due to the COVID-19 outbreak, students were unable to attend schools in the normal way they were doing before the outbreak in the whole world including Nigeria while schools were forced to switch from the traditional way of teaching and learning to digital access. As at the moment, the pandemic has no treatment or solution and it kills very rapidly. As it is now, we must be cautious of the spread of the pandemic especially in the educational institutions of higher learning and ensure that we incorporate and follow the pandemic protocols in our teaching delivery. Though, some of our polytechnics are over-populated in terms of students and staff strengths but the big question is how do we cope with this over populated situation and still observe the COVID-19

protocols and at the same time improve on the standard of education in our respective institutions of higher learning?.

Truly, the Government has relaxed the general lockdown and advised schools to re-open but there are more to this new development.

Methodology

The study adopted descriptive research design and reviewed relevant literatures while relevant concepts of strategic management and delivery of technical education were discussed. The study reviewed journals, books and other relevant materials.

Pandemic Preparedness Planning

In preparedness for the major outbreaks of the pandemic, the State Public Health Emergency Operations Centres were established in almost all the 36 states of Nigeria. The NCDC continued to support every State with medical supplies, transportation of samples, training of health workers, risk communications and other response activities and worked closely with the Federal Ministry of Information and Culture, as well as the National Orientation Agency to educate Nigerians on how to protect themselves. It was gathered that the NCDC received guidance and support from WHO, Africa Centres for Disease Control and the West African Health Organisation and worked with the Nigerian Institute of Medical Research, Medical Laboratory and Science Council of Nigeria to carry out the necessary and related laboratory research for the rapid response and the pandemic preparedness (Nigerian Centre for Disease and Control, 2020).

It was also revealed by the Nigerian Pandemic Task Force (PTF) that the Nigerian government modeled its pandemic alert phases in line with the World Health Organization (WHO) Pandemic Alert phasing protocols. The purpose was to contribute to an effective national and local level response to an influenza pandemic, reduce influenza-related mortality, minimize disruption of critical social, economic and medical services during a pandemic, mitigate pandemic-related impacts on critical infrastructure and facilitate post-pandemic recovery operations.

The preventive measures to curtail the spread of the pandemic in Nigeria during the period of the pandemic include the following among others:

- frequent hand hygiene through hand washing or use of alcohol-based sanitizer;

- use of face mask in public places;
- observing physical distancing of at least two metres;
- creation of isolation centres;
- distribution of protective kits; and
- invention, fabrication and distribution of various life supports and protective equipment; such as ventilators and hand washing equipment

However, we need to provide answers to the following questions if we must change our mode of delivery from the traditional face-to-face lecture delivery to remote teaching and learning during and after the pandemic:

1. How has the COVID-19 pandemic and the subsequent lockdown affected the academic calendar and curriculum delivery in our polytechnics?
 2. What strategies have we adopted to overcome the effect of the pandemic on the academic calendar and curriculum delivery?
 3. Why is it so difficult for some of our higher institutions to re-open their schools after the relaxation of the lockdown?
 4. What lessons have we learnt from the effect of the pandemic and how would these change our orientations and mode of curriculum delivery in the future?
 5. How has the pandemic affected the learning environment, infrastructure, curriculum content and teaching techniques?
 6. How adequate, efficient and effective would the administration of the Nigerian Polytechnics deliver qualitative technical education while observing the COVID-19 protocols of physical and social distancing, washing of hands and the use of face masks in the learning environment?
 7. How do we ensure effective TVET programmes in the institutions?
 8. How can our lecturers who are reluctant to change in line with the new trend of technology upgrade themselves in the area of online teaching?
 9. How can the instructional tools and strategies help in implementing online teaching in our various institutions?
 10. How do we overcome internet related issues in terms of costs and resources?
- The answers to these questions shall be discussed in my conclusion and recommendations.

Pandemic Tools and Strategies

National Centre for Immunization and Respiratory Diseases (2017) reported that the United States government has developed three tools of pandemic phases and risk assessment activities for preparedness, response, and recovery. These

tools are: Pandemic Intervals Framework (PIF) which is used to guide influenza pandemic planning and provides recommendations for risk assessment, decision-making, and action in the United States; the Influenza Risk Assessment Tool (IRAT) is an evaluation tool developed by the Centers for Disease Control and Prevention (CDC) and influenza experts that assesses the potential pandemic risk posed by influenza A viruses that currently circulate in animals but not in humans while the third tool is the Pandemic Severity Assessment Framework (PSAF) which is an evaluation framework that evaluates both the transmissibility and clinical severity of a pandemic. In another development, documents were developed to guide the United States' preparedness and response in an influenza pandemic on the National Strategy for Pandemic Influenza, National Strategy Implementation Plan and CDC Response Framework; with the intent of stopping, slowing or otherwise limiting the spread of a pandemic to the United States; limiting the domestic spread of a pandemic, mitigating disease, suffering and death; and sustaining infrastructure and mitigating the impact to the economy and the functioning of the society (CDC, 2019).

In Nigeria here, efforts have been made to develop tools of pandemic and risk assessment activities for preparedness and response to guide influenza planning in line with those of the United States Government (Presidential Task Force, 2020).

What is Technology-Enhanced Learning (TEL)?

Kirkwood and Price (2014) defined the term Technology Enhanced Learning (TEL) as the application of technology to teaching and learning. It is a broad category that isn't particularly defined, but it is any technology that enhances the learning experience. The term can be used to describe both analogue and digital technologies, but more recently, digital TEL is taking over education in the form of different types of educational software. TEL improves the standard of education and allows the students to learn at their own pace. Technology in education enables students to adjust to their own pace of learning. With TEL, lecturers are no longer limited to the textbooks that the school library provides but by using other resources such as video, audio and interactive learning; students have many different ways to learn while lecturers can find creative ways to teach their students in an engaging way. Technology has changed the learning environment so that learning can be more meaningful and

attractive. According to John and Wheeler (2005) we need good lecturers to make good use of technology in order to get success. We need to build up knowledge of how ICT is related to lectures' pedagogy and beliefs about teaching and learning in a technologically-enriched environment.

Presently, it is more difficult to survive the educational working world without technology. Therefore, being computer literate is more important than some of the more traditional skills that are taught in our educational institutions of higher learning.

Roles of Technological Education and Digital Tools for Lecturers and Students

Technology plays a fundamental role in the processes of teaching our students at all levels of education. Different digital educational tools have been developed with the purpose of giving autonomy to the students, improving the administration of academic processes, encouraging collaboration, and facilitating communication between lecturers and the students. According to Kirkwood and Price (2014), they described educational technology to include different types of media that deliver text, audio, images, animation, and streaming video while technology applications may include audio or video tape, satellite TV, CD-ROM, computer-based learning, local intranet/extranet and web-based learning. These are some of the common and most popular tools or application packages used in teaching and learning in our various educational institutions of higher learning:

Edmodo

Edmodo is an educational tool that connects lecturers and students where the lecturers can create online collaborative groups and provide educational materials, assess students' performance, and inform their parents on their performances.

Socrative

Socrative is a system that allows lecturers to create exercises or educational games which students can solve using mobile devices, such as smartphones, laptops, or tablets.

TED-Ed

TED-Ed is an educational platform that allows creating educational lessons with the collaboration of lecturers, students, animators where people can have an active participation in the learning process of others.

ClassDojo

ClassDojo is a tool to improve students' behavior where lecturers provide their students with instant feedback so that good disposition in class is 'rewarded' with points and students have a more receptive attitude towards the learning process. The information that is collected about student behavior can be shared later with parents and administrators through the web.

EduClipper

This platform allows lecturers and students to share and explore references and educational materials. It provides the opportunity for lecturers to organize a virtual class with their students and create a portfolio where all the work carried out is stored.

Animoto

Animoto is a digital tool that allows lecturers to create high-quality videos in a short time and from any mobile device, inspiring students and helping to improve academic lessons. It is friendly and practical.

Cloud Technology

The cloud technology exists on the internet. It is a storage space where people can place their digital resources such as software, applications and files.

Artificial Intelligence (AI)

Artificial intelligence (AI), is otherwise known as machine intelligence. Artificial intelligence (AI) is a branch of computer science concerned with building smart machines capable of performing tasks that requires human intelligence.

Mobile Technology

Mobile technology is mainly based on wireless technology of the wireless devices such as the use of laptops, tablets and mobile phones.

However, some of these tools are just gaining popularity in Nigeria and as educational technology improves, the application of these new tools will also improve especially in Nigerian institutions of higher learning.

Instructional Strategies

There are various instructional strategies that can help the lecturers implement online teaching in our institutions of higher learning. The strategies play a fundamental role in enhancing students learning and may include:

1. **Online voice presentation and management:** the voice of the lecturer is very important in the delivery of lectures. In the traditional or face-to-face teaching system, the common instructional strategies include: the use of body language, physical demonstration, use of flip chart, students' group discussion and physical presentations. In the online era, the use of simple and clear languages and slow voice in lecture delivery is very essential.
2. **Interactive online classes:** Smith and Diaz (2004) opined that discussing case studies and asking questions can enhance online learning. The online class participation can be a way of involving students' class participation.
3. Getting teaching aids from the management through collaboration with the ICT Centre and telecommunication providers.
4. Lecturers getting feedback from the student through class assessment is another strategy.
5. The constant review and assessment of teaching policy by the relevant authorities is very essential.
6. Offering constant training and frequent practicing of using remote learning tools.
7. Upgrading and acquisition of more knowledge in the learning and teaching software and transferring such knowledge to the students by the lecturers.

The challenges of teaching in a digital era

There are challenges of teaching in this period of the pandemic and these may include the following among many others:

1. We have the challenge of changing the mode of lecture delivery from face-to-face to remote teaching and learning by the lecturers and students in the pandemic period;
2. Many of our classrooms are not ICT compliant;

3. Human capital. Some of our lecturers are not digital compliant in lecture delivery but rather they are analog in nature and could not adapt to the use of IT for lecture delivery.;
4. The disruption of academic calendar has equally affected lecture hours which may put the lecturers and the students to teach and learn under pressure;
5. Most of the schools are not full residential while about 50% of the students' population or less can only be accommodated into the hostels where they can be easily monitored;
6. The movements within and outside the state of those students staying outside the school cannot be easily monitored and controlled;
7. The observation of the pandemic protocols of physical and social distancing by students staying outside the school cannot be assured by the management.
8. Online teaching was not effective in most public institutions while many students complained about cost of internet data and many lecturers will have to run through the lectures again whenever they resume;
9. With social distancing standard, more lecture rooms, hostel accommodation, etc. will have to be constructed or expanded while there may be drastic reduction of the student population at the point of admission by adopting the carrying capacity rule as stipulated by the regulatory agency.
10. The type of institutions' portal available in many of our polytechnics cannot be compared with what is obtainable in the western world where they provide student services beyond teaching activities.
11. Taking care of sanitation, facemasks, etc. for students and staff has implications on the running cost or overheads of our institutions.

The Future of Higher Education in Nigeria

Digital technology will play a key role in shaping the future of higher educational institutions in Nigeria based on the following points:

Technology needs to be more incorporated into everyday activities and experiences of the lecturers and students so that it becomes part and parcel of all the stake holders (Wheeler, 2005).

In order to be more relevant and competitive in the ICT era, lecturers need to understand the impact of the emerging technologies on the future of their work. Lecturers must be able to incorporate new innovations to increase efficiencies, and improve on their academic and research performance.

It is expected that lecturers need to cope with new ideas and new technologies without been pushed or influenced to do so. In some cases, lecturers would have to struggle and eventually fail with technology because of lack of knowledge, ideas and focus but they can overcome these challenges through adequate and constant training and practices. The relevant authorities must offer better support to academics in order to overcome these challenges. Appropriate training, support services and dialogue will invariably overcome many of these issues (John & Wheeler, 2008).

Lecturers need to know and appreciate the relevance and application of these new technologies. In order to adopt new technology, lecturers must first see the applications of the technologies and understand the benefits of the relevant tools of technology.

Lecturers are expected to be continually adaptive to change as it occurs and must look beyond the present technology and gain greater confidence in the use of new technologies.

There is the need for more academic research work to be carried out in order to cope with the modern or new technologies.

In order to sustain new technology in the current period of pandemic and beyond, institutions must be able to raise and secure adequate funding of new technologies and innovations.

New technologies that are relevant across the entire schools' curricula must be provided for the lecturers by the relevant authorities

The evolution of artificial intelligence, cloud technology and 5G to cloud computing, technology has the potential to revolutionize or transform the future of the world.

Methodology

This study adopted descriptive research design. The study reviewed relevant literature and books on the concepts and theories of strategic management to opine on the use of new technologies by lecturers and students in Institution.

Conclusion

The use of new technologies by lecturers and students such as social web and wireless technologies will give lecturers the opportunities to perform more difficult tasks better than how they were performing their roles before the pandemic. Those who incorporate new technologies in their curricula and adopt

a role that is supportive of learning with flexibility will be more effective and efficient in their academic activities and will enjoy easy and fast access to online resources, social networking and mobile learning.

Therefore, our institutions of higher learning should have strong support for new innovations and technologies while they must ensure that new technologies are embedded in their educational programmes.

In the management of the protocols and delivery of lectures, all these protocols should be observed in the sitting arrangement in the classroom, laboratories and halls of residence whereby all these structures should not accommodate more than the half of its full capacity.

Recommendations

In order to ensure that technologies are successfully adopted and implemented, institutions of higher learning must demonstrate the relevance of each technology and such technology must be used effectively to support and enhance learning beyond its present usage. It could be possible that some of our lecturers are reluctant or not wanting or willing to embrace new technology as a result of their background or orientation but the roles of technological education must be well understood that the adoption and implementation of technology by institutions of higher learning is an essential tool for pandemic preparedness which may require them to invest time and effort into learning how to do new things by bringing new technological innovations into their teaching methodology.

We need to commit our educational institutions to new innovations that are pragmatic and ensuring empirical research that is generalizable.

Our Institutions should buy into new technology by making adequate budget for staff training and upgrades, making adequate provision for equipment repairs and maintenance.

Awonusi (2020) suggested hybrid of face-to-face and remote learning because the practical works need close monitoring and face-to-face supervision. Therefore, our institutions can run two parallel systems at the same time during and after the pandemic.

Our institutions should adopt the use of IT equipment in lecture delivery and in the management of students' records;

Training the lecturers and instructors on the use of IT facilities for effective teaching;

Our institutions must establish ICT Centre for the management and deployment of the ICT infrastructure;

The admission policy should be reviewed with a view to addressing student population in conformity with carrying capacity and the stipulated technical and management ratio;

There is need to increase our vocational training skills and entrepreneurial training and make more TVET programs attractive;

Government should increase funding for infrastructural development to accommodate COVID-19 distancing protocols;

The National Education Policy must address academic progression of technical students particularly the entry points at the polytechnic;

There is the need to bridge the gap between technical and polytechnic education. Therefore, it is my personal view and believes that if we must be relevant in the future and be more effective and also efficient in our teaching career, we must change along with technological changes. Moreover, our personal and the societal goals with respect to future plans can be achievable if we adapt to new technologies, enhance and extend our learning experiences in advanced technologies to higher educational institutions in Nigeria.

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