



## CHALLENGES AND INNOVATIONS IN VOCATIONAL AND TECHNOLOGY EDUCATION IN COVID – 19 ERA IN NIGERIA

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### ABSTRACT

This paper addresses the challenges and innovations in vocational and technology education in Covid-19 Era in Nigeria and hence, an in-depth analysis of the construct of vocational and technology education was examined, with emphasis of its importance, challenges and as well as its conception of innovation and the challenges of using innovatively strategic teaching practices during Covid-19 Era. Furthermore, the efficiency, sustainability of the innovation brought about by Covid-19 suggests that a complete return to pre-pandemic vocational education policy and practice is not to be reasonably expected. In conclusion, the paper stressed that innovation is the driving – force behind the economic growth and key to solve further global challenges. And hence the need to repackage vocational and technology education curriculum and programme in tandem with global trends in technological breakthrough that characterize innovative era. The following recommendations were made among others that states and the federal government of Nigeria should increase the budgetary allocations to vocational and technology education sector. In a similar vain, the designers of vocational and technology curriculum should consult widely with the native communities to be able to come up with an innovated curriculum that would raise a new generation that would contribute immensely to the growth and development of the Nigerian nation.

**KEYWORDS:** Vocational and Technology Education, Covid -19 Era, Challenges, Innovations, Nigeria

### 1. INTRODUCTION

Vocational and Technology Education is an educational system that offers courses leading to the acquisition of specific skills to enable individuals to perform certain jobs. According to Egumu, Akpotohwo and Ogeibiri (2017), vocational and technology education refers to educational process which involves, in addition to general education, the study of technologies and related sciences, skills and knowledge relating to occupations in various sectors of economic and social life.

Vocational and technology education is directed towards the preparation for occupational life since the recipients are equipped to face the challenges in the world of work. It entails the transmission of the knowledge and acquisition of skills that are related to various occupations of white-collar jobs but become employer of labour. Vocational and technology education plays an orientation role towards the world of work and its curriculum emphasizes on the acquisition of such employable skills, which is a fundamental necessity for driving the industrial and economic growth, and it is a key to building this type of technical and entrepreneurial workforce which a Nigerian need to create wealth and emerge out of poverty. Nwogu and Nwanoruo (2011) added that, vocational and technology education gives individuals the skill to live, learn and work as productive citizens in a global society. The emergence of Corona virus known as the COVID-19 pandemic devastated all sectors of the global economy.

The Covid-19 pandemic made it quite clear that the world is an interconnected global village with its attendant risks to lives of all the people and economics of the nations. The lockdown has interrupted the conventional classroom, teaching and learning practices (British Council, 2021).

### 2. CONCEPT OF VOCATIONAL AND TECHNOLOGY EDUCATION

Vocational education is that form of education that is aimed at preparing the individual to acquire knowledge, skills and competencies that will enable him perform well on such occupational tasks. According to Vocational education, it deals with the training or retraining designed to prepare individuals to enter into a paid employment in any recognized occupation or to be self-reliant (Ojimba, 2012). Vocational education is education / training given in schools or classes under supervision and control.

It refers to systematic learning experiences that are designed to fit individuals for gainful employment in recognized occupations as semi-skilled workers or technicians or sub-professionals. Technology education, essentially aims at developing techniques, devices, procedures and the process for doing things. Vijay (2017) stated that, Technical Education is instrumental in making the remarkable contribution to economic growth of the developing countries by way of suitable manpower production according to the needs of the Industry, Society and the Global World as a whole. The terms vocational education and technical education are often interchangeably used (Oweh, 2014) but they are separate and distinct terms (Okeye & Arimonu, 2016). The name varies in different universities but the National Universities Commission Benchmark for Bachelor's Degree in Technical Education, industrial, Technology Education governs all.

Vocational and technology education is viewed as an organized programme of Education that prepares learners for entrance into a particular chosen vocation (Adegbenjo, 2013). Vocational and technology education according to Ikemike (2016), is an education designed to prepare individuals for gainful employment as skilled or semi-skilled workers in a recognized occupation such that, such individuals could be self-reliant. Oguntuyi (2013) opined that, vocational and technology is an educational training which encompasses knowledge, skills, competencies, structural activities, abilities, capacities and all other structural experiences for securing jobs in various sectors of the economy or even enabling one to be self-dependent by being a job creator. Vocational and technology education remains the popular means by which trained manpower is produced for economic and industrial growth of both developed and developing countries.

Vocational and Technology education is the hub of the economy of any nation just as the wheel rotates around the hub, the economic sector of Nigeria rotates around vocational and technology education considering the current socio-economic, scientific and technological development of Nigeria. Vocational and Technical education facilitates the acquisition of applied skills and basic scientific knowledge. The NPE (2004) asserted that vocational education is a form of education that equips individuals with skills, abilities and competencies to equip themselves economically and contribute to the development of their society.

The NPE (2004) also expressed the vision of vocational and technical education as follows;

- ❖ To provide trained manpower in applied science, technology and commerce particularly at sub-professional grades.
- ❖ To provide the technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development.
- ❖ To provide people who can apply scientific knowledge to solve environment problem for the use and convenience of man.
- ❖ To give an introduction to professional studies in engineering and other technologies.
- ❖ To give training and impart the necessary skills leading to the production of craftsmen, technicians and other skilled personnel who will be enterprising and self-reliant.
- ❖ To enable our young men and women to have an intelligent understanding of the increasing complexity of technology.

### **3. CHALLENGES OF VOCATIONAL AND TECHNOLOGY EDUCATION**

Vocational and technology education cannot contribute greatly to the reduction of unemployment and poverty, because it is handicapped by diverse challenges confronting it. Ozoemena (2013) emphasized that the vision of vocational education has not been achieved; it has failed in developing a self-reliant individual due to several challenges facing vocational education robbing the nation of some contributions its (or her) individual would have made to the economy. Among these challenges are:

#### **1. Inadequate Funding of Vocational and Technology Education Programme**

Over the years, government has been paying lip service and little attention to agricultural education. Government of Nigeria has not been able to meet the 26% UNESCO budget requirements on education (Ordu, 2017). Inadequate funding is a major problem responsible for poor development of vocational and technology education today. In addition to this, the little fund provided relapse and are embezzled by top officials in charge of its implementation. Okeke and Eze (2010) added that, insufficient finance is a realistic and practical factor inhibiting the implementation of vocational and technology education sector. According to them, too much noise is made on the pages of newspapers and television about vocational and technology education, but little is done to improve the teaching and learning of the programme in Nigeria.

**2. Inadequate Equipment and Training Infrastructure**

Lack of adequate machines, equipment and tools in vocational and technology education has created a serious impact to the level of knowledge and basic work skills, which the students supposed to achieve in the area of vocational production. Okeke and Eze (2010) stated that most vocational and technology education departments, in our higher institutions of learning do not have well-equipped laboratories, workshops and usable infrastructures. Where these exist, they are grossly inadequate, obsolete and in a dilapidated state. Due to inadequate funding, institutions are not able to employ additional personnel. Also, lack of funding for tertiary institutions leads to inadequate and outdated library books and journals, inadequate scientific materials, nonexistent fund for conferences and exchange programme for academic staff. auditoria, desks, staff offices, seminar/conference/board rooms, laboratories, workshops, studios, farms, computer laboratories and services, network connectivity, multi-media system, public address system, slide, and video projectors etc. According to Ogunode and Agwor (2021), reasons for inadequate infrastructural facilities are inadequate funding of secondary schools, poor infrastructural facilities planning, and poor qualities of infrastructural facilities, institutional corruption, ineffective monitoring and evaluation of infrastructural facilities, increased in student population, damages of facilities by students of secondary school.

**3. Inconsistent Government Policy on Vocational and Technology Education**

Inconsistency in the formulation and implementation of vocational and technology education policies has been a major setback to the advancement of vocational and technology education. Lack of follow-up and continuity in government as a result of selfishness and corruption has been one of the key factors facing vocational and technology education and national development.

**4. Poor Staff Training and Retraining Programme**

Poor training and retraining programme is a major problem facing Vocational and technology education lecturers working in higher institutions of learning across the country. Many lecturers are still teaching with the knowledge and skills acquired during their higher education. Teachers need constant training and retraining programme to upgrade their knowledge and skills. Most vocational and technology education teachers in our colleges and university have never since their graduates have enlisted in re-training programme in order to keep abreast with the ever-dynamic innovations associated with the ever-ending needs of the society. The training of teachers is supposed to be a continuous exercise to ensure consistent improvement in the quality of their output. Vocational and technology education lecturers need constant training and retraining programme to upgrade their knowledge and skills.

**5. Lack of Motivation for Vocational and Technology Education Teachers**

Teachers are the pivot on which educational process hinges. They can influence the teaching/learning outcomes either positively or negatively because they determine the quality of instructional delivery and also influence the quality of Education when it comes to implementation of the curriculum and educational policies. Teachers are to be considered when addressing issues such as quality assurance, qualitative delivery (teaching), quality context and quality learning outcomes (Onucha, 2002). Study carried out by Ezechi (2016) showed that science teachers in Nigeria are not motivated. Science teachers are faced with poor condition of service, their allowances are not paid regularly, and they are not given opportunities for developmental programmes and were not granted funds for creativity. All these have affected teacher's performance in contributing towards learning. Omorogbe, and Ewansiha, (2013) opined that teacher salary is very important as a predictor of student's achievement because it has a capacity to uplift the other aspects of teacher quality.

**6. Irregular curriculum modification**

The world is a dynamic society and everything in it including education is dynamic, hence the revolution in science and technology. This is the society where human needs, method of production of goods and services, our taste for goods and services, and of course, preferences for our daily needs, etc. have been influenced by innovations in science and technology. Innovation in science and technology has on its own opened up new challenges in various occupational fields to the effect that such methods of that were applied two decades ago are no longer the methods of application to deliver similar functions today. This is applicable in all fields of human endeavor and those who are keying in are doing so through changes and modifications of academic programmes. The absence of regular programme evaluation is greatly affecting the programme and her products.

Some of the courses and course contents have been in some programme units since their introduction irrespective of the fact that such courses and their skills are no longer relevant in industries. The lack of regular evaluation of vocational and technology education programme has, to a large extent, resulted in the lack of regular modification of

#### 4. CONCEPTS OF INNOVATION

Innovation is the process of doing new things. To innovate is to look beyond what we are currently doing and develop a novel idea that helps us to do our job in a new way. Innovation in the view of Jeremiah and Alamina (2017) is a deliberate novel and specific departure from old practices that would have been perceived better way of doing something. Brewer and Tierney (2012) viewed innovation as the successful introduction of a new thing or method. According to Serdyukov (2017), Innovation can be directed toward progress in one, several, or all aspects of the educational system: theory and practice, curriculum, teaching and learning, policy, technology, institutions and administration, institutional culture, and teacher education. Innovation means a deep thought that brings new ideas, renewing, changing or generate new plans or theories. It also means a vision which tends to creating new prototypes, either from extinct products or present ones, this serves as a platform in which new ideas are being created.

Innovations in vocational and technology education programme are ultimately directed at changing qualitative and/or quantitative factors of learning outcomes:

- ❖ qualitative: better knowledge, more effective skills, important competencies, character development, values, dispositions, effective job placement, and job performance; and
- ❖ quantitative: improved learning parameters such as test results, volume of information learned, amount of skills or competencies developed, college enrollment numbers, measured student performance, retention, attrition, graduation rate, number of students in class, cost, and time efficiency.

#### **Innovative practices in Vocational and Technology Education**

Innovative practices in vocational and technology education were discussed under the following subheadings;

1. Innovative practices in vocational education Curriculum
2. Innovative practices in vocational and technology education Teaching and Learning

##### **1. Innovative Practices in Vocational and Technology Education Curriculum**

Curriculum is a plan developed with the intention that when it is properly executed, the educational goals will be achieved. It represents the total experiences to which all learners must be exposed; the content, performance objectives, activities for both teachers and learners, teaching and learning materials and evaluation guide are provided (Ejidike & Oyelana 2015). Curriculum of vocational and is expected to equip learners with skills that will make them self-reliant, prepare them to enter into jobs and progress in them. This means that the curriculum should prepare the learner for entrepreneurship. Unfortunately, Adeyegbe (2004) emphasized that the curriculum operated in Nigerian schools was based on European culture which significantly differed from the Nigerian culture where it is implemented as a result, students find it difficult to relate what they already knew to what they were to learn due to cultural settings. In other words, the curriculum could not achieve the purpose for which it was meant.

The vocational and technology education curriculum has under gone some innovations and modifications in the area of contents pattern, implementation and revision. It is only through this standardization of the curriculum that the programme can boast of having the capacity of preparing and equipping the youths for effective employee and reliability. It can be deduced that the need for the innovations of the curriculum was as a result of three major issues shaping the development of nations worldwide and influencing the world of knowledge today which were identified as globalization, information and communication technology (ICT) and entrepreneurship (Federal Republic of Nigeria, FRN, 2009). The contents of the innovations in the vocational and technology education curriculum should be relevant to the needs of the nation.

##### **2. Innovative Practices in Teaching and Learning in Vocational and Technology Education**

The core objective of teaching is passing on information or knowledge to the minds of the learners. Any method using computers or modifying the existing conventional chalk-talk method are innovative if they ultimately serve the attainment of core objective of teaching (Okoye, 2012). In the conventional methods of teaching, the teacher controls the instructional process, the content is delivered to the entire class and the teacher tends to emphasize factual knowledge. In other words, the teacher delivers the lecture content and the students listen to the lecture. Thus, the learning mode tends to be passive and the learners play little part in their learning process (Aniodoh, 2001).

Any teaching method without destroying the objective could be considered as innovative methods of teaching. The researchers believe that the core objective of teaching is an innovative practice could be a pathway created to further the interest of the student and the institution. The analysis reveals some of the suggestions that the teaching community can practice in the classrooms.

Teaching with technology engages students with different kinds of stimuli- involve in activity based learning. Technology makes the material more interesting. Collaborative teaching, sometimes called cooperative teaching or team teaching also considered as an innovative teaching, it involves educators working in tandem to lead, instruct and mentor groups of students. Problem-Based Learning (PBL) is a teaching method in which complex real-world problems are used as the vehicle to promote student learning of concepts and principles as opposed to direct presentation of facts and concepts. In addition to course content, PBL can promote the development of critical thinking skills, problem-solving abilities and communication skills (Jayashree, 2017).

### **Issues, Challenges and Innovations of Vocational and Technology Education in Covid 19 Era in Nigeria**

Sequel to the rising concerns about the spread of COVID-19 and the need to contain the virus, a growing number of tertiary institutions have shut down in regards to conventional classroom delivery (Ali, 2020). Sahu (2020), stressed that, the effect of the pandemic is alarming in the educational system of the nation. The period of COVID-19 pandemic is a typical example of times when conventional teaching paradigm could not work in schools. The pandemic has exposed the weakness in teaching and learning in education with particular reference to vocational and technology education because the typical teaching paradigm fails. In order to mitigate the losses in learning, e-learning has been implemented in schools and higher learning institutions to ensure a smooth process of teaching and learning. The term e-learning comprises a lot more than online learning, virtual learning, distributed learning, networked or web-based learning. According to Dhawan (2020), there was an overnight shift from conventional classrooms into digital learning in order to tackle the conditions and adapt to the changing situations (Akther, 2020). Hence, this study identifies the challenges and innovations in vocational and technology education in Covid-19 Era in Nigeria.

Sequel to the rising concerns about the spread of COVID-19 and the need to contain the virus, a growing number of tertiary institutions have shut down in regards to conventional classroom delivery (Ali, 2020). The COVID-19 pandemic has created one of the largest disruptions of education systems in history (The Economic Times News, 2020), affecting nearly 1.6 billion learners in over 190 countries and all continents. Closure of schools and other physical, brick and mortar, learning spaces has severely impacted education norms globally (UNESCO, 2019). The period of COVID-19 pandemic is a typical example of times when conventional teaching paradigm could not work in schools. During this period, as a measure of social distancing, students and teachers are not allowed to interact physically. Schools are closed down for many weeks thus teaching and learning are disrupted (UNESCO, 2020). The negative impact of the pandemic on education in Nigeria forced government to shift attention from the traditional method of educational service delivery to the technologically-based method otherwise called the e-learning as a way of combating the pandemic.

The e-learning according to Ngampornchai and Adam (2016), is the learning supported with electronic technology such as online classes and portals to access the courses outside the classroom. The e-learning is classified as computer-based and internet based (Arkorful & Abaidoo, 2014). The computer-based involves the use of ICT while the internet-based is purely online. The computer-based includes the use of computer software and hardware (Algahtani, 2011). The e-learning required the utilization of some tools for instructions in higher education for its effectiveness. According to Pande, Wadhai, and Thakare (2016), Weblog, Social bookmarking, Wiki, RSS, Podcasting, Instant messaging, Text chat, and internet fora are essential tools for any e-learning. According to Adalokun, (2020), reported that Computer illiteracy among the students and educators is one of the major hindrances of e-Learning in vocational and technology education programme. Before the coronavirus pandemic, students who do not have access to good internet and computers already fall behind academically.

Furthermore Adalokun (2020), stress that many do not have the needed access and are not competent in computer operation that formed the basis of e-Learning. Dumbiri and Nwadiani (2020) added that, some instructors are not familiar with e-learning facilities utilization skills and they require training in basic skills for e-learning. For the vocational and technology education curriculum, it is a big challenge to migrate to distance and online learning, because vocational and technology education focuses more on practical skills and work- readiness. Practical skills acquired through learning-by-doing, which occurs in school-based workshops and laboratories or through hands-on experience at the workshop (Yeap, Suhaimi, and Nasir, 2021). Lack of access to equipment, technology, and other tools is the major hindrance that students were facing during the lockdown.

## **5. CONCLUSION**

The global society of this dispensation is dynamic and knowledge driven by her members and so the Nigerian society must advance in that line. Along with the changes are various challenges the human race is facing which makes our education weak and fragile, and became worse when the outbreak of COVID-19 pandemic changed the way of delivering education from conventional methods to e-learning.

Innovation is needed to cope with economic, social and environmental dynamism and instabilities. Hence, the curriculum of vocational and technology education programme needs to be modified and restructured to adequately meet the needs of education system in Covid-19 Era in Nigeria. The efficiency, sustainability and legacy of the innovations brought about Covid-19 suggests that a complete return to pre-pandemic vocational and technology education policy and practice is unlikely not to be reasonably expected. (BC, 2021)

### Recommendations

To solve the challenges confronting vocational and technology education in Covid- 19 Era in Nigeria, this paper recommended the following:

1. Government should increase the budgetary allocation to vocational and technical education. Since the government cannot do it alone, corporate organizations, parents and alumni associations should assist in providing some of the equipment needed in the training of vocation students.
2. The designers of the vocational education curriculum should consult widely with the native people to be able to come up with an innovated curriculum that would raise a new generation of graduates that are going to contribute greatly to the growth and development of the Nigerian nation.
3. Government should develop a strategic plan for the successful implementation of e- learning in vocational and technology education programme and view technology as a positive step towards evolution and change.
4. Academic personnel of every institution must be adequately trained through seminars and conferences. Those who are not computer literate must make use of staff development to update their computer's knowledge.
5. Vocational and technology education students' final project must be constructive not research or abstract write-up which must be strictly monitored by their supervisors.
6. Schools should make provision for affordable materials and components for practical out of the departmental fee paid by the students to aid the less buoyant one.
7. Supervisors in the tertiary school board need to be effective in doing their work to ensure that different schools meet up with that required facilities and utilization as to become standard during teaching and learning process.

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