

## ENHANCING TECHNICAL VOCATIONAL EDUCATION VIA MULTIMEDIA PRESENTATION FOR SUSTAINABLE ECONOMIC RECOVERY IN NIGERIA

Mamudu Abubakar\*, Adamu C. Christopher\*, Ahmed Shehu\*, Aliyu Samuel\*, Abdullahi Aliyu Yassar\* & \*\*Usman Garba Aliyu.

\*Minna Institute of Technology and Innovation

\*\*Department of Industrial and Technology Education  
Federal University of Technology, Minna

### Abstract

*This paper focuses on the role of technical vocational education via multimedia presentation for sustainable economic recovery in Nigeria. One of the most important uses of vocational and technical education is that it makes it easy for instructors to incorporate multimedia into their teaching. There are different multimedia tools. Three of the most popular ones are Multimedia on Television, Multimedia Websites and Multimedia Information Kiosks in which students take in information. Multimedia technology empowers the educational process by means of increased interaction between teachers and the students. Apart from the fact that multimedia can provide educators and students with endless possibilities of quality teaching and learning, taking vital considerations of the pedagogical strengths and limitations of Multimedia, it can be used to its fullest potency, and reach the eminence of 'New Educational Technology tool'. Technical and vocational education is based on the needs of the labour market and that government responds to the needs of Vocational and Technical Education through sufficient provision of adequate facilities, equipment and resources. Recommendations were given for further improvement.*

**Keywords:** Vocational and Technical Education, Economy, Sustainable Development and Multimedia

### Introduction

Multimedia provides a complex multi-sensory experience in exploring our world through the presentation of information through text, graphics, images, audio and video, and there is evidence to suggest that a mixture of words and pictures increases the likelihood that people can integrate a large amount of information (Mayer, 2001). Advantages of multimedia design compared to using a single medium might result from the ability to choose among media to present well-structured information (Yang, 2008), using more than one representation to improve memory (Nuru, 2007), encouraging active processing (Van ark, 1992), and presenting more information at once (Sweller, 1999). Students learn best by seeing the value and importance of the information presented in the classroom. If the students are not interested in the material presented, they will not learn it. In order to achieve the ultimate goal of student learning it is important to use a combination of teaching methods and to make the classroom environment as stimulating and interactive as possible. Students learn in many different ways. Some students are visual learners, while others are auditory or kinesthetic learners. Visual learners learn visually by means of charts, graphs, and pictures. Auditory learners learn by listening to lectures and reading. Kinesthetic learners learn by doing. Students can prefer one, two, or three learning styles.

Because of these different learning styles, it is important for teachers to incorporate in their curriculum activities related to each of these learning styles so that all students are able to succeed in their classes. While we use all of our senses to take in information, we each seem to have preferences in how we learn best. In order to help all students learn, we need to teach to as many of these preferences as possible (Asogwa & Diogwu 2007). When we think about a typical university course, it is rare to find all three of these approaches to learning incorporated into a class. While it may seem impossible to do this, it can be done through thoughtful planning and preparation. It does force us to conceptualize the class differently—with a focus on the variety of ways in which students learn. The various inventories on learning styles allow teachers to gain insight into which areas they can use further development in and which are already well developed. It is dangerous to apply only one learning theory to teaching. If teachers do this, they are not allowing students to develop their skills in other learning styles that are applicable to real-life situations. In this paper, the researchers discuss the definition of multimedia, multimedia and learning, analysis towards visual, auditory, and kinesthetic learning styles, the usefulness of multimedia-based education, teachers and their roles in multimedia environment, and situation of multimedia tools in Iran.

Vocational technical education is defined by different authors in different ways. Okoro, (1999) defined vocational education as all those experiences whereby an individual learns to carry on successfully any useful occupation. These experiences may be organized and institutionalized or unorganized and haphazard. Simply put, vocational education may be looked at as a series of controlled and organized experiences arranged to prepare a person for socially useful employment. The statement explains that all education is vocational in so that the individual may serve happily and far as it prepares for satisfactory living.

In the views of Thompson (2002) vocational education aims at the development of human abilities in terms of knowledge, skills and understanding so efficiently in carrying on the activities in the vocational pursuits of his choice. Winer (2000) in his contribution opined that vocational education is designed to develop skills, abilities, understanding attitudes, work habits and appreciation encompassing knowledge and information needed by workers to enter and make progress in employment on a useful and productive basis. It is an integral part of the total education programme and contributes towards the development of good citizens by developing their physical, social civic, cultural and economic competencies.

For vocational education to be self-reliant and productive, it needs not be operated in a vacuum. It has to be hooked unto factors that will help learners and all stakeholders in vocational technical education to be practical and not only theoretical in their approach to making vocational technical education meaningful and life-long. These factors according to Ezekiel and Usoroh, (2009) are:

- i. Appreciation of dignity to work;
- ii. Utility and culture in vocational education;
- iii. Democracy in vocational education;
- iv. Plights of school dropouts;
- v. Economics of vocational education;
- vi. Needs of youths and adults;
- vii. Needs of the society; and
- viii. Basic rights of the citizenry

Vocational technical education can also be defined as an educational training which comprehends knowledge, skills, competencies, structural activities, abilities, capabilities and all other structural experiences acquired through formal, on-the-job or off-the-job which is capable of enhancing recipients opportunity for securing jobs in various sector of the economy or even enabling the person to be self-dependent by being a job creator. Federal Republic of Nigeria, (2004) preached that vocational technical education is an aspect of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relative to occupations in various sectors of economic and social life. Manfred and Jennifer, (2004) advocated that vocational technical education comprises all more or less organized or structured activities that aim at providing people with the knowledge, skills and competencies necessary to perform a job or a set of jobs whether or not they lead to a formal qualification. These definitions show that the relationship between VTE and employments is undeniable.

### **Concept of Multimedia**

Multimedia may be defined in multiple ways, depending upon one's perspective. Typical definitions include the following:

- i. Multimedia is the —use of multiple forms of media in a presentation.
- ii. Multimedia is —information in the form of graphics, audio, video, or movies. A multimedia document contains a media element other than plain text
- iii. Multimedia comprises a computer program that includes —text along with at least one of the following: audio or sophisticated sound, music, video, photographs, 3-D graphics, animation, or high-resolution graphics.

Multimedia can be described as “the combination of various digital media types, such as text, images, sound, and video, into an integrated multisensory interactive application or presentation to convey a message or information to an audience.” It certainly has the potential to extend the amount and type of information available to learners. Well-designed multimedia helps learners build more accurate and effective mental models than they do from text alone. Recent surveys indicate that students enjoy attending classes that utilize multimedia presentations because they find these classes to be more interesting and exciting with multimedia.

Multimedia offers remarkable opportunities for teaching English. Multimedia is made up of a number of elements; each having their own advantages. Edukugho(2004) [30] report that in order for any multimedia system to be successful, these elements must be in balance; using each for what it does best and not letting one element dominate over the others.

### **Benefits of Multimedia in Vocational and Technical Education**

Giving students an opportunity to produce documents of their own provides several educational advantages.

- i. Students that experience the technical steps needed to produce effective multimedia documents become better consumers of multimedia documents produced by others.
- ii. Students indicate they learn the material included in their presentation at a much greater depth than in traditional writing projects.
- iii. Students work with the same information from four perspectives: 1) as researcher, they must locate and select the information needed to understand the chosen topic; 2) as authors, they must consider their intended audience and decide what amount of information is needed to give their readers an understanding of the topic; 3) as designers, they must select the appropriate media to share the concepts selected; and 4) as writers, they must find a way to fit the information to the container including the manner of linking the information for others to retrieve (Smith, 1993). All of these contribute to student learning and help to explain the improved student learning that is often associated with IT-assisted PBL.

### **Types of Multimedia used in Teaching and Learning of Vocation and Technical Education**

#### **Multimedia on Television**

Perhaps the most common place to see multimedia is on your television screen. Television segments often combine animation, words, and video to present their message. Often, television stations have staffs that create their multimedia graphics and animation. People who create this type of multimedia are called broadcast designers.

#### **Multimedia Websites**

Websites are the second major place where multimedia is used. For example, a news site offers written articles that describe the events of the day. It also might include slide shows, audio clips of speeches or news broadcasts, video coverage of major events, and animation that illustrates news topics. Multimedia web designers are responsible for organizing and presenting the multimedia content on their sites.

#### **Multimedia Information Kiosks**

Another form of multimedia often seen at places like airports and stores is the information kiosk. Before interactive technology becomes widespread, these kiosks consisted of a variety of maps and perhaps an attendant who could offer more specific information. Today, many kiosks are fully automated and interactive. Users select from a series of onscreen choices to find the information they need.

Multimedia has the same goals and uses as other types of media. It disperses information in the most clear, helpful way possible. As people become comfortable with multimedia, they will find that it is an essential tool that can make their lives easier.

There is another aspect to developing multimedia documents that empowers students. Students quickly recognize that their electronic documents can be easily shared. Because of this, students place a greater value on producing a product that is of high standard. An audience of one—the teacher—is less demanding than an audience of many—particularly one's peers. Students quickly recognize that publishing a multimedia document that communicates effectively requires attention to both the content and the design of the document.

### **Challenges of Multimedia Presentation in Technical Education**

Though the use of multimedia is gradually becoming popular among students and teachers in all levels of education, many challenges still abound with the use of the facility. Otuka (2014) in Van ark (1992) have identified some of these common challenges which include:

- i. Lack of ICT literacy among many teachers and students
- ii. Poor internet connectivity in the country

- iii. None affordability of ICT gadgets
- iv. High cost of internet connectivity
- v. Lack of local companies which develop multimedia content
- vi. Lack of local companies which produces and deploy multimedia technology to the global network
- vii. Lack of or irregular supply of electricity to power ICT infrastructure.

### **Vocational and Technical Education Instructions for Sustainable Development in Nigeria**

The needed changes in vocational and technical education instructional delivery for empowerment and employment could be achieved by organizing vocational and technical education seminars or conference primarily to help vocational and technical education teachers become acquainted with the essential skills and experiences of composite engineering products household and other engineering technology items construction. It should be open to any person in other field of study like sociology wishing to develop his/her skills and techniques or background in vocational and technical education.

Furthermore, it is pertinent to note that, institutions of learning in Nigeria should begin to prepare their under graduate and graduate students in the use of the computer as an instructional tool. This may be difficult, however, because, lack of funding in vocational and technical education sub-sector is one of the reason or barriers to computer use in institutions of learning in Nigeria. Supporting the above, Craft (2002) argues that;

*Research evidence concerning the effectiveness of computer assisted instruction is very far from conclusive, however, the available research and vast amount of practical evidence indicated that computer assisted instruction has a tremendous potential. Educators should be encouraged to implement it. Computer assisted instruction and other classroom activities using the computer literacy is a worthy goal of all schools preparing students for a computer intensive society.*

Change in vocational and technical education cannot be complete without adequately providing unique experiences such as research design and actual construction of project, practicing problem solving with materials and gaining information on the world of work place in line with global standard or challenges. Vocational and technical education in Nigeria and globally is a unique area in educational sector that should teach not only occupational clusters and general conceptual knowledge but can also foster adaptability, build technical literacy and provide leisure skills through experience.

The changes in vocational and technical education instructional delivery should be geared towards empowerment, job creation, and self-reliant of Nigeria citizens in future and would also enhance scientific and technological development for actualization of vision 20:2020 of the Government. Vocational and technical education should be able to teach us a variety of sellable useful skills as well as imbibe good maintenance culture for the few machine sortools that are available.

If vocational and technical education instructions are restricted to computer in various institutions of learning, vocational and technical education graduates in Nigerian institutions would have a broad conceptual understanding of the structuring and functions of both the institutions of learning and industries as well as the fundamental skills of communication, mathematics and problem solving or practical skills will be the versatile, trainable, adaptable and satisfied workers of our institutions of learning and industries, companies and factories today which would enhance better performance, empowerment, create jobs and improve higher productivity of the Nigeria economy.

Similarly, Manfred & Jenifer (2004) agreed with the needed changes in vocational and technical education instructional delivery for self-employment, when he stated that, although future workers may have to perform fewer unpleasant tasks such as repetitive welding, painting and furnace loading, they will have to be more skilled than their predecessors.

Vocational and technical education administrators can lead the way in bringing about needed changes in instructional delivery for empowerment and job creation for sustainable national development. Most vocational and technical education administrators are limited only by their vision and imagination in ways that they can promote meaningful changes or instructional delivery through technical and vocational education programme (s) improvement for sustainable national development and if this is actualize, it

would automatically enhance our actualization of transformation agenda of the government and Vision 20:2020 for sustainable development of Nigeria.

### **Vocational and Technical Education Research and Development (R&D) as a Means of Global Economic Recovery for Sustainable Development**

Every year, billions of naira are been spent for the importation of vehicle or cars, food, agricultural implements, electronics even razor blades from Shanghai-China, in fact, virtually everything. Meanwhile, the field of vocational and technical education is not growing rapidly through technical and vocational education reliable and accurate researches. The National Master plan for vocational and technical education (TVE) development in Nigeria in the 21<sup>st</sup> century. (FGN2000) stated that, good policies are on ground, particularly in the various national development plans but, these are never faithfully implemented. The main reason for this is the non-inclusion of plan implementation studies as a major component of project/programme proposal.

Similarly, Yang (2008) rightly pointed out that, most of the lecturers have refused to update their knowledge through quality research and going on sabbatical to meet current demand in the educational system. How can a lecturer from Ambrose Ali University Ekpoma go for sabbatical in University of Benin? What will he learn from almost the same environment, anything new? Again, it is surprising when lecturers carry out PhD research for almost 10 years. Some are even doing the same thing that was done more than 20 years ago.

Eventhough, conducting research in vocational and technical education in Nigeria is not taken serious, the potential of research and its capability on Nigeria economic advancement is not well-appreciated or organized as a mean of eradicating poverty and actualizing vision 20:20:20.

*Vocational and Technical Education research had suffered neglect and under investment in the last five decades. The dreams of Nigeria's at independence in 1960 for a country that will free her citizens from all sort of scientific, technological, political and socio-economic bondage was yet to come true, Nigeria at 49 years after independence has nothing to show case in terms of vocational and technical education development. West still imports vehicle spare parts, all our four refineries are not operating or producing at normal capacity, inadequate electricity supply to mention but a few.*

The complexities that burden the successful and quality research conduction so as to re-engineer vocational and technical education cannot be overemphasized. This has been the phenomenon that has affected the development of Nigeria. It is at this critical time that research in vocational and technical education is important in Nigeria, various questions are being asked why government funds and international partner agencies continue to channel resources rounds after rounds on the entire vocational and technical education programme and no reasonable result is coming out.

The answer to this question bothering the minds of many Nigerians is that, there is need to ensure that the investment made by Nigerian Government and partner agencies on vocational and technical education research last forever and Nigeria becomes a developed state or nation and actualize vision 20:2020. It is pertinent to continue to advocate for the revamping of vocational and technical education and conduct research for Nigerian citizens to be self-reliance.

Nuru (2007) pointed out that, Universities, Polytechnics and Colleges of Education have used funds or finances allocated for them to established vocational and technical education programmes instead they used it to established other courses. Money or funds for research related activities are either controlled by some of the chief executive officers of the institutions and must of these permitted usually must have immediate application in the classroom.

The role of Nigerian Universities, Polytechnics, Colleges of Education and research institutions throughout 52 years have not made much significant contributions to vocational and technical education which is aimed at preparing Nigeria citizens for acquisition of skills and techniques that could lead to self-empowerment and employment in the global labour market.

It is unfortunate that, in Nigeria, not all Universities and other tertiary institutions of learning of

comparable standing have established vocational and technical education courses or programmes. Research in vocational and technical education if conducted would have generated new ideas, identify, interpret and organize these ideas of scholars from other fields that would lead to the improvement of practice in the vocational and technical education for economic empowerment, job creation and to actualize vision 20:2020.

### **Objectives of Technical and Vocational Education in Nigeria**

The objectives of technical and vocational as costive in the National Policy on Education (2004) shall be.

- i. To provide trained manpower in the applied science and technology and business particularly at craft, advanced craft and technical level.
- ii. To provide the technical knowledge and vocational skills necessary for agriculture, commercial and economic development.
- iii. To give training and impact the necessary skills to individual who shall be self-reliant economically.

### **The Place of Vocational and Technical Education for Economic growth and Sustainable Development.**

Nuru, (2007) stated that changes in a country's economy is required to prepare young people for the jobs of the future and technical and vocational education have important roles to play in this process. Vocational and Technical education has been an integral part of national economy development. According to van Ark, (1992) the Dutch school system is said to pay attention to "high standards in mathematics and the provision of technical education at ages 14-16 for a third of all pupils, and widespread vocational education at 16 +. Unfortunately, Nigeria does not seem to give vocational and technical education the attention they deserve and this appears to be one of the reasons for rising unemployment and poverty in the society. Ajayi, Arogundade, and Ekundayo, (2007) also suggests that the neglect of vocational and technical education in the area of adequate personnel, financial support and facilities to encourage vocational and technical education are robbing the nation of the contribution their graduates would make in the economy. Furthermore, Asogwa and Diogu, (2007) maintained that there is an urgent need for the people's attention to be redirected towards self-reliant and sustainable means of livelihood which vocational and technical education provides.

Youth unemployment appears to be rising-up to the sky because many of them lack "employability" skills that are often acquired from vocational and technical schools. As Edukugho, (2004) noted, youth unemployment rose to 4.3% in 1985 to 5.3% in 1986, to 7.0% in 1987 and jumped to 60% in 1997. The report shows that in 2003 primary school accounted for 14.7% unemployment, secondary school 53.6%, and tertiary schools constituted 12.4%. The nation's poverty level was put at 70% and more than 91 million Nigerians are said to live on less than one dollar per day. Most analysts agree that today's employers demand more skills than they did in the past (Eze and Okorafor 2012). Winner, (2000) reported the several factors that have contributed to the rising demand for skills in the labor market to include: technological and organizational change, trade, deregulation of key industries, and the decline of unions. Nuru, (2007) observes that all countries, especially developing countries, need balanced development through all of the educational sectors in order to make significant progress in terms of national development.

Presently Nigeria is offering education in general subjects, but to achieve development, it must offer a variety of courses for disciplines such as technical, vocational, professional, agricultural, and so on, because the country needs a balanced distribution of manpower for all professions (Ajayi and Ekundayo 2007), so that the vast population of Nigeria can contribute to economic growth by participating in different professions.

Vocational and Technical Education (VTE) systems play a crucial role in the social and economic development of a nation. Owing to their dynamic nature, they are continuously subject to the forces driving change in the schools, industry and society. Mechanized farming requires technical skills that could be obtained in technical and vocational schools.

The real tests of success of VTE are the employability of the graduates, personal development, opportunities for further education and career development, public acceptance and image. Ultimately, the effectiveness and responsiveness of a VTE system would be measured by its impact on the social and economic development of the nation.

Promotion of the Nigerian Economy: It promotes the national economy through foreign exchange by exporting our products. The knowledge of technical and vocational education helps in the conversion of local raw materials, this reduces the importation of foreign goods which lessen our import dependency and encourage exportation of our local products.

For instance, Haq and Haq, (1998) observed, unemployment rates in the East Asian economies remained low essentially because the population possessed employable vocational and technical skills. However, the relationship between demand for vocational education and economic development may not be linear. When the economies move away from reliance on its agricultural and manufacturing sectors and in favour of service sector, the demand for VTE may indeed decline.

### Conclusion

The aims of vocational and technical education in Nigeria will remain unachievable if the challenges posed by the contemporary needs are not met. The nation must therefore look ahead and project evolving strategies for a better implementation of the curriculum that can actualize sustainable development for National Economy.

### Recommendations

The following were suggestions for improvement on the implementation of vocational and technical education curriculum for sustainable development for National Economy.

- i. Government should organized the team of inspectors from Ministry of education or committee that will advise government on better ways of monitoring, controlling and implementing the affairs of vocational and technical education as it relates to our immediate situation in Nigeria.
- ii. The government should train qualified vocational and technical education teachers and experts to operate the complex machines and equipment during the implementation of technical college programme and use such skills acquired by teachers to educate and empower the youths of Nigeria.
- iii. The industries, non-governmental agencies and private enterprises should provide laboratories, equipment, workshops, facilities and machines in the existing technical colleges as stated in the curriculum for effective implementation of the technical college programme.
- iv. Government should post minimum of five vocational and technical teachers to the technical colleges to handle the different areas, and the principals should be in the field of technical education field.
- v. Scholarship and research grants/loans should be given to individuals in the field of vocational and technical education to assist the technical education programme to grow academically and also to meet the target of sustainable youth empowerment and self-reliant individuals.
- vi. Government should provide fund to enable the principals and teachers install the machines and equipment not installed in the different technical colleges and also to provide other facilities for effective implementation of the vocational and technical education curriculum.
- vii. Accreditation should be carried out on regular basis in technical colleges to check the dwindling situation in our technical colleges.

### References

- Ajayi, I.A, Arogundadade, B.B & Ekundayo, H.T (2007) Assessing the Realities and Challenges of Technical Education in Imo state Secondary School Education System. *Nigerian Journal of Educational Administration and Planning*, (7).
- Asogwa, O. & Diogwu, G.O (2007) Vocational and Textile Education in Nigeria in the 21st century, *Journal of The Nigerian Academic Forum*, Vol. 12 (2), Awka, National Association of the Academics.
- Asogwa, O. & Diogwu, G.O (2007) Vocational and Textile Education in Nigeria in the 21st century, *Journal of The Nigerian Academic Forum*, Vol. 12 (2), Awka, National Association of the Academics..
- Edukugho, E. (2004) "UNESCO tackles decline in technical, vocational education;" *The Vanguard*, Nov 25.

- Eze, T. I. & Okorafor, O. A. (2012). Trends in technical, vocational education and training for improving the Nigerian workforce. *Ebonyi Vocational and Technology Education Journal*, 1(1),107-115.
- Ezekiel, O.A. & Usoroh, E. B. (2009). Recreating Vocational Education for Self-reliance and Productivity. *J. Qualitative Education*, 5(3):89-94.
- Ezekiel, O.A. & Usoroh, (2009). Recreating Vocational Education for Self-reliance and Productivity. *J. Qualitative Education*, 5(3):89-94.
- Federal Republic of Nigeria (2004). National policy in Education (4th ed.) Lagos. NERDC Press
- Hag, M. & Haq, Khadija (1998) *Human Development in South Asia 1998*. Karachi: Oxford University Press. [10].
- Manfred, T and Jennifer, W. (2004). *Vocational Education and Training key to the Future*. Greece: Colibri Ltd.
- Mayer, R. (2001). *Multimedia Learning*. Boston: Cambridge University Press.
- Nuru, A. (2007) The relevance of National Vocational Education Qualifications (NVQs) in TVE in Nigeria. unpublished conference paper.
- Okoro, O.M., (1999). *Principles and Methods of Vocational and teachers education*. Nsukka: University Trust Publishers.
- Sweller, J. (1999). *Instructional Design*. Melbourne: ACER Press.
- Thompson, J.F., (2002). *Foundation of Vocational Education*. New York: Prentice-Hall Inc.
- Van, A. B. (1992). Vocational education and productivity in the Netherlands and Britain." *National Institute Economic Review*
- Winer, R.K., (2000). Rung by up the health career ladder. *American Vocational J.*, 48(7):18-27.
- Yang, J. (2008) General or Vocational? The Tough Choice in the Chinese Education Policy, *International Journal of Educational Development*, 18 (4). 289-304.