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## IMPROVING QUALITY TECHNOLOGY EDUCATION FOR SUSTAINABLE DEVELOPMENT IN NIGERIA SCHOOLS: A CURRICULUM ANALYSIS

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### ABSTRACT

This paper attempts to explore the quality assurance in utilizing Technology Education for sustainable development in Nigeria Schools and the extent to which it is currently address in curriculum documents at senior secondary schools in Nigeria. This paper considers the changes in Technology Education. The analysis of Technology Education has reviewed that among the broad Technology related subjects offered at senior secondary school the study of Technology and society is only addressed in one comprehensive manner. The paper discusses the role of curriculum developers, ministry of Education Science and Technology as well as Examination bodies in ensuring quality Technology Education. The paper also discusses the challenges facing adoption of Technology Education in teaching and learning such as lack of school equipments, insufficient man-power to implement these technologies, cost of purchasing the equipments, inadequate power supply, factors inhabiting greater utilization of Technology Education (TE) were mention. The paper recommendations that the school managers should hold the responsibilities of planning and deciding the resources and development of entire technology education curriculum. Government and the community should take technology education very serious by assisting the schools with the needed facilities. Government should employed more technology education teachers. Steady power supply in schools.

**Key words:** Quality Technology Education, Sustainable development, Curriculum analysis, Quality assurance, Utilization, Secondary School, Technology and Society, Technology Education in Nigeria.

### INTRODUCTION

Technology Education is the study of Technology. It is designed to teach students to be prepared for a number of Technology within specific field of study, Teachers cover topic related to Technology process, concepts and knowledge. To ensure an improve quality Technology Education,

quality assurance has to put in place. Quality assurance is a deliberate focus on rightness of process which leads to successful outcomes. Quality assurance according to (Okebulola) is an umbrella concept designed to improve the quality of input, process and output of the education system. (Ajayi and Adegbesan 2007) opined that quality assurance is concerned with maximizing the effectiveness and efficiency of educational system and services in relation to their contexts of other mission and stated objectives' The role of curriculum developers in ensuring quality Technology Education cannot be left out as curriculum developers hold the primary responsibility of developing and organizing the use of new curriculum within the classroom to facilitate student mastery of key concept. It's their duty to assess how well curriculum and teaching techniques actually work in sparking learning.

Ministry of education science and technology and examination bodies also has a great role in ensuring quality education for sustainable development. Despite the role of curriculum developers, ministry of education and examination bodies, there is still some challenges facing quality technology in senior secondary schools in Nigeria which includes lack of school equipments, insufficient man power, cost of purchasing equipments, power failure other factors inhabiting great utilization of Technology Education are, lack of students opting to study science and Technology, poor quality of junior secondary school graduates entering senior secondary schools, lack of monitoring and lack of trained Teachers. (Education Week, 1999) Negative factors reported as important are insufficient teacher understanding regarding methods for integrating technology into the curriculum. Insufficient number of computers, lack of software and lesson plans on how it can be integrated into the curriculum and insufficient technical support.

### **Quality Assurance and Development in Nigeria Education System**

Quality assurance is umbrella concept for a host of activities that are designed to improve the quality of education system. It embraces all the function of school such as teaching, caring, staffing, students, facilities, building and child development. (Adegbesan2011)Accurately quality



assurance refers as improving internal working systems and process, such that effectiveness of teaching and learning can be assured to students. The need of quality assurance in our school cannot be overemphasized. Arikewuyo (2004) judged quality in education by its ability to enable the students performed well in standard examinations and relevance to needs of students, society and community as a whole. According to Federal Government of Nigeria (FRN2004) National Educational Quality assurance policy in Nigeria is concerned with the following standard:

1. Learning achievement and standard.
2. Learners' welfare and participation.
3. Care guidance and support
4. Learning environment
5. Teaching and learning
6. Curriculum and other activities

### **Technology Education Curriculum Document**

Cambridge English Dictionary define a Document as a paper or papers with written or printed information especially on an officially type. Tanner (1980) defined curriculum as the planned and guided learning experiences and intended outcomes, formulated through the systematic reconstruction of knowledge and experiences under the auspices of the school, for the learners' continuous and willful growth in personal social competence. The term curriculum has many meaning in educational literature. The curriculum in technology education includes classroom, laboratory, shop, study trips, students organization, and other activities engaged in by the learner for the purpose of meeting an occupational objectives .the content of the curriculum includes both technical and general education actives, and those activities are arranged or grouped into subjects or other categories for the instructional purposes. Technology Education Curriculum is based upon the rationale that people face Technology every day and therefore must learn about it. Theory and practice of technology are integrated, study is to be interdisciplinary. In upper secondary School years, many technology programmed focus on further education and life and workout school.

Technology Education is the study of purposeful application of knowledge, skills and experience in using resources to create or add value to product and system to meet human needs. Technology Education subjects are introduced at different points of time which varying emphases to cope with the Social economy and technological development both locally and globally. These subjects includes; Information and Communication Technology, Materials and Structures, Operation and Manufacturing, strategic and management, systems and control and technology and living.

Technology Education aims at preparing students to be value capital, and meet the rapidly emerging technologies. It enables students to;

- Develop technological capability understanding and awareness.
- Critically appraise the impact of technology on the individual, family and society and environment.
- Become competent and confident members of the world of technology and society at large.

Technology Education key learning area curriculum (primary1-secondary6) (2017) the curriculum covers six knowledge contexts namely;

- ✓ Information and Communication Technology.
- ✓ Materials and structures
- ✓ Operations and manufacturing.
- ✓ Strategies and management.
- ✓ System and control.
- ✓ Technology and living

Modular approach is proposed in the implementation of the curriculum. Many Schools are adopting subject based-learning approach through;

- Computer Literacy: learning elements are covered under the knowledge context Information and Communication Technology in the curriculum.



- Design and Technology: Learning elements are covered under the knowledge contexts "Materials and structures, operations and Manufacturing and systems and control in the curriculum.
- Home Economics/Technology and Living: Learning elements are covered under the knowledge context "Strategies and management in the curriculum has covered business learning elements.
- Business, Accounting and Financial studies
- Health management and social care
- Design and applied technology
- Information and communication technology: (The government of Hongkong Education Bureau 2017) Technology Education curriculum is designed to match students interests and intellectual development at different key stages.
- Key stages 1 and 2. Awareness and exploration
- Key stage 3. Exploration, experiencing and financing and familiarization
- Key stage 4 and beyond. Exploring orientation for lifelong 2 and 2 learning and specialization. The learning and teaching of technology education is
  - Purposeful
  - Progressive and interactive in nature
  - Involving the coordination of the mind (problem solving) and hands (hands on experience).

### **Current Changes in Technology Education Curriculum**

Knowledge is becoming dynamic and changing quickly due to era of internet. Things taught in the education institutions might become absolute or outdated in quick time. The last few years have witnessed dramatic change in the learning model. The way student is being taught today is very different from the teaching method that were adopted a few decades ago. Technology has brought about various changes in the way education is delivered and received. Technology makes a considerable impact on the teaching and learning methodologies, with a great number of benefits. Digital learning has become an important aspect of education system. Schools are trying to implement the latest in technology

education in order to improve quality teaching and learning process. The current changes are;

1. Learning outside the class room environment: mobile –base device have taking learning outside the class room. With mobile base device students can learn at their own pace and time. Internet connection is no longer an issue with offline reading capacity.
2. Interactivity in class room. Bringing technology into the class room has made classrooms lively and interactive. the flipped classroom model has allowed students to do all the learning at home and all the practical work at school.
3. Collaborative learning: Technology has made everyone to stay connect discuss and interact upon situations collaboratively. Working together improves their understanding.
4. Data management and Analysis: managing data has become ever so convenient and important with the advent of technology in education system. Homework and assignment can assign to entire class at once and teachers can evaluate result online.
5. Social media in learning: educational institution has started using social medial as a communication tool, where students can interact with their peers and teachers.

### **Technology and Society**

Technology is the process of using scientific materials and human resources in order to meet human needs or purpose. Besnard, C (1996) defined technology as purposeful human product like cloth, foods, artifacts, machines and electronic devices. Momah(1999,p.31) technology is the primary index of power. It is the dividing line between developed and developing countries; it is the very key factors that define the master and servant of the world. In a most general sense, technology is the conversion of scientific ideals into practical solutions to satisfied human wants. Society in order hand is peoples general thought of a large organized group. This reflects attitudes and values prevailing in society. Society is an organization for people who have the same interest or aim. According to Maclver and page (1950) society is a system of usage and procedures, of authorities and mutual aid, of many grouping and



divisions, of control of human behaviors and liberties. Technology and Society cannot be separated; society has a critical co-dependence on technology. We use technology depend on technology in our daily life and our need and demands for technology keep on rising, human technology to travel, to communicate, to learn, to do business and to live in comfort. Technology improves in the following areas:

1. Technology has improved transportation: Transportation is one of the basic areas of technology activity both society and business has benefited from new transportation. Transportation has been made more comfortable, faster by aircraft, ships, motor car, and train among others.
2. Technology has improved communication: Both society and organization depend on technology to transfer information. With internet, radio, satellite, television and mobile phone we can hear, see and know what is happening around us.
3. Technology improved education and learning process: Technologies like white board, pads, projectors and internet are being use in class room to boost student's moral to learn.
4. Improve agricultural methods. Preservation of agricultural produce has been improved, as well as improves fertilizer and pesticides.

### **The Role of Education Manager in Ensuring Quality Technology Education**

An Education manager is a person who is task with panning, organizing, and management of the educational approach and strategies used in pre-schools, primary schools, secondary school, or colleges, the generally responsibility for planning and deciding the resource and development of the entire curriculum. Educational managers include curriculum developers, ministry of Education, Ministry of Science and Technology as well as Examinations bodies. According to Adegbesan (2010) the roles of education managers range from administrative to professional. Achor (2013) a professional staff in the education industry should be concerned about how to manage the educational resources allocated to them for use as well as control their schools and students. Education manager embark on the responsibility of;

1. Monitoring all technology Education resources for all website and update all programs and monitor to ensure response to technology education associate queries.
2. Design and evaluate all written technology education materials and assist in international distribution and manage all curriculums for various technology education programs.
3. Assist to prepare teachers for all local classes and assist technical writing and prepare newsletter for all chapters and participate in various administrative meetings of Technology related issues.
4. Provide an effective interface with all modules and provide revisions to all Technology programs.
5. Supervise all budgets for Technology education program and prepare schedule for all projects
6. .Develop and provide revision to various training materials and administer all education and I pads, projectors and internet used in classroom to boost students moral to learn.

### Challenges Facing Adoption of Technology Education in Teaching and Learning

The challenges facing the adoption of Technology Education in Nigeria includes:

1. **Insufficient Facilities:** Lack of sufficient facilities like classrooms, ICT Laboratories, workshops make teaching and learning of technology education very difficult. Apart from basic facilities, there is also lack of teaching materials especially textbooks to aid the learning of students. By providing these facilities to students, their creative skills will be more likely developed.
2. **Inadequate Manpower:** Most educational institutions and ministries are under-staff; these create a lot of problem in teaching and learning as well as monitoring of school activities.
3. **Lack of adequate power supply:** Due to instability of power supply in Nigeria, it discovered that most intuitions rely on a diesel generator for power supply, which is more expensive.





4. **Cost of purchasing equipments:** the cost of purchasing equipment used in teaching and learning of technology education are too expensive due to high cost of ICT and equipments.

## CONCLUSION

This study takes a critical look at Quality assurance as an umbrella concept for a host of activities that are designed to improve the quality of technology education. It embraces all the function of school such as teaching, caring, staffing, students, facilities, building and child development.

## RECOMMENDATION

Base on the finding of this study, the following recommendations were made:

1. The school managers should hold the responsibilities of planning and deciding the resources and development of entire technology education curriculum.
2. Government and the community should take technology education very serious by assisting the schools with the needed facilities like workshops, ICT Laboratories and classrooms.
3. Government should employed more technology education teachers to improve the teaching of technology education courses.
4. Steady power supply in school should be a major concern by JED Company and other stock holders in Nigeria. By improving quality electrical power supply in education sector, teaching of technology education can also be improve.

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