

# CHAPTER 16

## TECHNICAL EDUCATION TEACHER AND SUSTAINABLE QUALITY EDUCATION

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### Introduction

From a historical perspective, there are no common words or vocabulary used when talking about a particular programme or subject that can provide solution to the high incidence of unemployment and underemployment among the youths, the elderly and disadvantaged workers. Roberts (1971) used the term Vocational and Practical Arts Education as occupational groups that develop basic skills and offer opportunity to youths and adults who have developed marketable skills and prepared to earn a living. Over the years, researchers keep on modifying the definitions of major occupational groups and programmes on the basis of changes in manpower requirements, qualifications, nature of work as well as the needs of youths, adults and the society (Wilber and Norman, 1967; Byram and Wenrich, 1956).

Technical Education was formally called Industrial Arts Education, Trade and Industrial Education, Industrial Education, Technical Studies, and Vocational Technical Education. In Russian schools, it was called poly-technical education. At present, Technical education in Nigerian educational system is offered with distinct curricula and students as:

1. Pre-vocational subject (i.e. Basic Technology at the Junior Secondary level.
2. Technology subjects at the Senior Secondary level (or Post Basic Education) are: (a) Technical Drawing, (b) Basic Electricity, (c) Electronics, (d) Auto mechanics, (e) Building Construction, (f) Woodwork.
3. Technical colleges and vocational centres for production of skilled labour such as artisans, craftsmen and master craftsmen.
4. Technical Education at the Polytechnics, Mono-technics and Colleges of Education (Technical) for the production of Technicians/Technologists. The curriculum is designed with the ratio of 'knowing' to 'doing' fixed at 40:60.
5. Technical Education in Universities for the production of technical and vocational professionals. The options are Automobile, Building, Electrical/Electronics, Metalwork and Woodwork Technology. This level requires mastery of high

cognitive and psychomotor abilities. The ratio of 'knowing' to 'doing' is 60:40. (Federal Ministry of Education, 2000).

Despite the modification of programme titles, the purpose of Technical Education is substantially the same; the acquisition of knowledge and skills that help people to fit into the needs of the labour market (Akinseinde, 2009).

A person employed for the purpose of instructing students or trainees in trade, technology or technical education subjects or courses is called the Technical Education Teacher. The technical teacher is the expert with special knowledge, skill or training in technology. The teacher must be firmly grounded in the subject matter and practical skills of the occupation as well as skills in organizing, presenting and evaluating instruction. In other words, the effectiveness of Technical Vocational Education and Training (TVET) programme primarily depends upon the technical teacher.

Similarly, how well a graduate of the programme performed duties is a good predictor of the quality of education that the student received. The teacher is expected to teach the skills and the information of the occupations. The teacher ought to guide, through demonstration and information of what should be known, and stimulate or motivate the students. As a result, the teacher should have professional abilities and characteristics (Loomis, 1953).

This paper presents the indicators of quality technical education and how the quality can be sustained to benefit the teachers and their students (or the neophytes) of the programme. The significance of technical education in our time will continue to be so generally recognized because this field of education is needed by everybody on a continuous basis in order to live and work in the knowledge based society (Akinseinde, 2014a).

### **Teacher Education and the Challenge of Quality**

The Federal Government reported poor teacher training as well as poor quality of students' intake in teacher education. Also, the professional development programmes were not well managed. There was no updating of knowledge and skills of teacher in their respective areas of specialization (FGN 2013:61). The focus is more on acquiring higher qualifications which are not marketable. Besides, teachers work in learning environment with limited space and equipment that do not meet the minimum specification in quality, quantity and functionality. In some cases, the sizes of classrooms and lecture halls did not meet space standard with chairs and tables to seat all the students in the classroom. Some investigators (Ajiboye, 2016, Ezekwesili, 2016) found that poor teacher quality, incomplete curriculum, ethical gap and policy inconsistency contributed to the poor quality of educational outcome. Teachers may not be sufficiently equipped to teach the content of the curriculum if their skills are too basic and limited in scope and content.

As a result of the challenges highlighted above, steps should be taken to review entry qualification into teacher education programmes and admit high quality students who are interested in teaching. Besides, it will be rewarding to introduce competency based examination, engage or hire quality teachers, provide professional development avenues and attach appropriate/commensurate incentives to ensure quality services (FRN, 2013, Unachukwu and Chinaza, 2014).

### Improving the Quality of Technical Teacher Education

Emphasis on “education for work” has increased in recent time. If we are to equip young people with appropriate skills, we must give them opportunities to find employment, earn a living and contribute to the society in order to fulfill their potentials as human beings. The gap between where we are and where we want to be must be known or identified in order to improve the quality of technical teacher education.

Findings by UNESCO (2012), and Akinseinde (2014b) suggested that well-grounded and professionally competent person with cognitive and psychomotor abilities are needed as educators of technical education programme. The efficiency of teaching students can be judged by how well the graduates of the programme meet the requirements of the job in which they are engaged. This agrees with the old adage which says “The proof of the pudding is in the eating”. Adner (1953:129) raised a number of criteria that may be used for evaluation of a graduate after employment. They include the following:

1. Is the person acquainted with modern tools and equipment?
2. Does the person have knowledge of the current technique of his/her trade?
3. Are the standards of workmanship high?
4. Does the person display proper work habits and attitude?
5. Does the person work safely and take proper safety precautions?
6. Does the person gets along and cooperate with fellow workers and employer?
7. Is the person enthusiastic about work?
8. Does the person display the characteristics of good citizenship?
9. How has the person adjusted to industrial working conditions?

These criteria are suitable for measuring efficiency of teaching. Where these questions attract positive answers, then, their TVET programme has sustainable production and graduates will be able to play appropriate roles in the workplace and their community. As a result, the graduates will be able to contribute to environmental, economic and social sustainability (Ki-moon, 2012).

The quality and productivity of educational system depends on specific indicators which must contain essential input required to drive the system towards achieving desired values and objectives (see figure 1).

When the society demands for technical education teachers, a good curriculum is prepared to be used in the classroom. The goals and objectives are determined. The skills and knowledge needed by students to become effective workers and citizens are packaged in the curriculum content.

A team work from individuals concerned in teaching in the school system (i.e. technical teacher educators, instructors, technologists and craftsmen) supported by essential learning resources (i.e. equipment, tools and other resource materials) will produce competent graduates who are equipped to serve the society as workers, job creators, and entrepreneurs. To provide quality education, all components of the system ought to function under optimal condition.

If essential resource inputs such as qualified teaching staff in number and mix, teaching facilities and materials are available to teach the students, the programme will produce the type of manpower required by the nation. Also, the quality and quantity of technology educational system depend on the managers of the system. Standard rules must be put in place to get qualified managers who will direct the recruitment of staff for the training and supervision of the programme in order to achieve efficiency and quality output.

INPUTS from Society

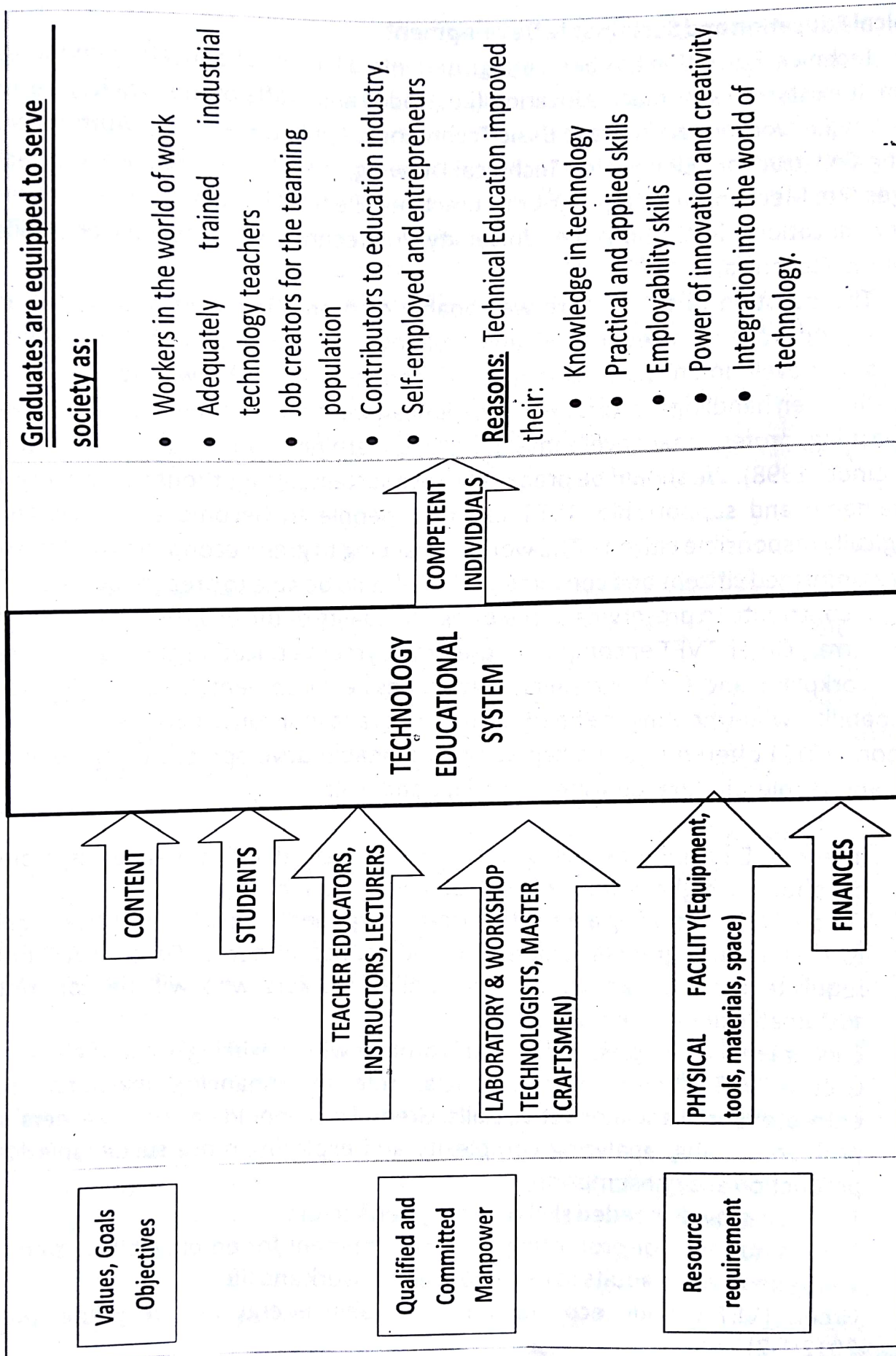


Figure 1: Interaction between Technical Education System and its environment

## Technical Education and Sustainable Development

Technical Education has been integrated into all levels of education and training in Nigeria. It exists at the primary education (i.e. trades and crafts of the locality); secondary education (i.e. vocational skills e.g. Basic Technology, Applied Electricity, Auto-mechanics, Building Construction, Electronics, Technical Drawing, Woodwork); Science and Technical Colleges (i.e. Mechanical, Computer Craft practices, Electrical, Building, Wood trades) and tertiary educational institutions (i.e. University, Polytechnic, Mono-technic and College of Education – Technical).

The question to ask is: “are we capable of promoting skills and sustain quality technical and vocational education and training? We need to put our nation on a sustainable development path. Our people need to change the way we think and act especially when handling matters related to education, teacher training, quality of learning and teaching, professional development, lifelong learning and technological adaptability. (Akinseinde, 1998). We should be prepared to use sustainable methods that are justifiable, maintainable and supportable. TVET can help people to become active workers and ecologically responsible citizens. The world is changing to green economies and the society requires informed citizens and consumers. TVET should be able to prepare people for green jobs that contribute to preserving or restoring the quality of the environment. In Ki-Moon's (2012) terms, Green TVET encompasses pre-employment education and training, learning in the workplace and further training that address environmental, economic and social sustainability, while meeting the needs of industries and individual learners.

Ki-Moon (2012) offered how we can attain sustainable development using education to empower people with the requisite knowledge and skills:

1. Integrate Education for Sustainable Development (ESD) into all levels, from early childhood to higher education and workplace learning.
2. Green TVET for making a transition from energy and emissions intensive economies to cleaner and greener production and service patterns. Green TVET develops requisite technical knowledge and skilled workers who will be committed to sustainable development.
3. Encourage skills for green jobs in skills profiles within existing occupations.
4. Green TVET should play a crucial role in enhancing learners' creative, entrepreneurial and innovative skills. Green TVET should enhance learners' skills in problem solving, analyzing complexity and exploring more sustainable forms of production and consumption.
5. TVET can provide needed skills in new green sectors.
6. TVET is not only for promoting skills development for employability. It empowers young people and adults to develop skills for work and life.
7. Green TVET include eco-tourism, renewable energy and recycling. (Ki-Moon, 2012:1-2)

Green TVET prepares learners to be responsible producers and consumers. It helps them to produce food, conserve energy and respond to the challenges of climate change. In this way, vocational education and training will assist the vulnerable groups to acquire knowledge and skills to be productive workers in rural communities. UNESCO (2012) noted that the skills acquired will equip learners to increase productivity in crops and animals in agricultural systems. Acquisition of training in new technologies will help them to adopt high yield seed varieties, and build farmers coping mechanism.

In technology related occupations, the green skills require the training of more technicians, services engineers, sales representative and distributors among young rural people. The development of renewable energy resources will benefit rural people because hydro-electricity and alternative energy sources such as wind, geothermal and solar energy are often located in rural areas (UNESCO, 2012; UNEVOC, 2012). Green jobs can be found in agriculture, industry and in all other sectors of the economy. The jobs protect eco-systems and biodiversity; reduce energy, materials and water consumption, minimize waste and pollution, and de-carbonize the economy.

## **Conclusion**

Technical education teachers are in a central position to provide quality education to youths and adults who need to develop themselves by acquiring technical and practical skills for work and employment. This will expand the choices for those who need vocational skills to live good life and contribute to economic and environmental sustainability. Efforts have been made by the local, state and federal governments in Nigeria to equip youths and adults with vocational skills in order to improve economic opportunities for those who need saleable skills for economic empowerment.

Unfortunately, there is decline in students' enrolment in technical education programmes at all levels. High unemployment is more among tertiary Institution graduates. Besides, institutions are not producing enough technical teachers. Production of qualified and committed teachers require adequate physical facilities and seasoned technical teacher educators. The teachers will reproduce themselves if placed in good teaching environment with students who need the training and want to benefit from it. It has been stated (Pavloro and Huang, 2012; Ki-Moon, 2012; Laid, 1985) that TVET teachers need training in fast-growing green sectors. They advocated for upgrading of TVET system by the revision of TVET curricula and to incorporate courses in energy saving and sustainable agriculture.

In the People's Republic of China, some of the TVET colleges have in-built generic green skills for value (i.e. ethics and character) developed to create a better society and greener economy. They believe that moral values can be addressed through vocational education. The components of values included are: honesty, trustworthiness, integrity, respect, tolerance, responsibility and understanding. It is important to note that these

generic green skills for value are expected to be part of employability skills. The salient point here is that the TVET curriculum should not be oriented to skill (i.e. psychomotor) development alone; it should incorporate components of values, cognitive and affective domains.

This paper recommends strengthening the capacity of institutions that provide technical vocational education and training for sustainable development. It is equally important to promote Small and Medium Enterprises (SME) to overcome the acute unemployment which is currently contributing to existing poverty.

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