

Enhancing the Science, Technical and Vocational Skills of Universal Basic Education Graduates in Nigeria

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Abstract

The main focus of this paper is on how acquisition of science, technical and vocational skills by the universal Basic Education graduates in Nigeria can be enhanced. The paper outlines how science and technical skills can be taught and imparted practically to the learners in the workshops and laboratories. The need to incorporate indigenous Artisans and skilled personnels into the UBE programme was highlighted. Anticipated obstacles associated with the idea of using indigenous skilled personnel was also explained. Finally the paper concludes that the present universal Basic Education programme can be strengthened and the vocational goals of the learners achieved, if the skills and expertise of the indigenous people are incorporated into the system. Recommendations made include, adopting a compulsory one-year vocational skill training for all junior secondary school graduates in Nigeria.

Keywords: Science Education, Technical, Vocational, Graduates, Nigeria

Introduction

It is generally recognized that the highest goal of education is man's search for himself in a constantly changing world where he is continuously called upon to make choices that will definitely influence his environment. Education should thus be concerned with the unfolding of the individual as a whole in the particular and peculiar environment and circumstances in which he finds himself.

However, the situation in our contemporary classrooms, lecture halls, even laboratories and workshops in all essentials is like the atmosphere in a clerical office or bank, (Kosemani, 2000). The above comment is a clear testimony of the system most Nigerian students go through in their institutions of learning. A system where students are reduced to mindless consumers because knowledge is packaged to them and delivered with ready – made answers. A system where learners are denied the right to explore, deviate, innovate and make mistakes in their quest for self fulfillment.

But according to UBE (2002:6), the Universal basic Education programme is in fact, part of Nigeria efforts to uphold and renew its commitment to the provision and promotion of basic education for all as required by a number of covenants and protocols to which Nigeria is a signatory. Deriving from the jornitien declaration and framework of action on education, the UBE (2002:6-7) scope of program includes the following:

- (i) Programme and initiatives for the acquisition of functional literacy, numeracy and life skills especially for adults (persons aged 15 and above).
- (ii) Special programmes for nomadic populations.
- (iii) Out – of – school children, non – formal programme for up dating the knowledge and skills of person who left before acquiring the basics needed for life long learning.
- (iv) Non-formal skills and apprenticeship training for adolescents and youth who have not had the benefit of formal education.

However, detailed articulation of the purpose, goal and method of achieving science, technical and vocational skills in the universal basic education programme is enunciated in the National Policy on education, (NPE, 2004) section 7, dealing with science, technical and vocational education. According to the above policy document; “science education shall emphasize the teaching and learning of science processes and principles. This will lead to fundamental and applied research in the sciences at all levels of education”. The goals of science education shall be to: (1) cultivate inquiring, knowing and rational mind for the conduct of a good life and democracy;.....

On technical and vocational education, the policy document states that; technical and vocational education is used as a comprehensive term referring to those aspects 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 relating to occupations in various sectors of our economic and social life.

Specifically, the document states that; the preparatory aspect of pre-technical and pre – vocational training offered to students at the juniors secondary level is for the purpose of:-

- (a) Introduction into the world of technology and appreciation of technology towards interest arousal and choice of a vocation at the end of junior secondary school and professionalism later in life;
- (b) Acquiring technical skills;
- (c) Exposing students to career awareness by exploring usable options in the world of work, and
- (d) Enabling youths to have an intelligent understanding of the increasing complexity of technology.

To achieve the above objectives of technical and vocational skills acquisition in the basic education programme, the policy document recommends that; each state and local government, in co-operation with appropriate agencies, shall organized relevant apprenticeship scheme and also entrepreneurial training. Also relevant Artisan training should be obtained in vocational centres.

Statement of Problem

There is no doubt that the current Nigerian secondary school system of 6 – 3 – 3 – 4 has not shifted appreciably from the former 6 – 5 – 4 system of education in terms being “bookish” and utilizing ‘talk and chalk” method of teaching. According to Obumeneke (1998), Agbogiasede (2008), Okorosaye-orubite (2008) the major difference between 6 – 3 – 3 – 4 and 6 – 5 – 4 system of education have been in the increase in the number of years from 5 to 6 years as well as the delineation of the 6 years into 3 years of Junior and 3 years of senior schools.

Apart from the Federal government Secondary Schools which enjoy some federal support, most states secondary schools find it extremely difficult to establish adequately equipped workshops for the teaching and learning of pre-vocational subjects. Even those junior secondary schools with some equipment, there is less seriousness in handling these pre-vocational subjects, in

such a way that the students will acquire sufficient basic skills to foster the acquisition of technical and vocational skills for self – reliance and industrial growth of Nigeria. Today, many scholars are of the opinion that with the high level of corruption, political ineptitude and lack of morale among the teaching staff in the secondary schools that the Universal Basic Education (Ube) programme will go the way of the UPE then therefore, the main focus of this paper, is how to enhance the acquisition of science, technical and vocational skills of the Universal basic Education graduates in Nigeria.

Teaching Science, technical and vocational skills in the UBE

One of the national demands on teachers of the universal basic Education programme especially teachers in the junior secondary schools is to teach in a way that will enable pupils to acquire further knowledge and develop general and specialized skills.

Therefore, skill acquisition is very crucial in the basic education programme.

Nature of skills: Skills are acts which are performed at a high level of proficiency. For an act to be really a skill, it has to be performed well, smoothly and in an expert – like way. So, a teacher has to encourage students or learners to learn and perform the acts so expertly that they do not bother to spend much time thinking of the component parts. Although the focus of this paper is on the psychomotor skills, other skills will be mentioned. Psychomotor skills are overt and observable, they still carry elements of cognitive and affective skills.

Psychomotor skills, are subdivided into three:- Locomotor skills, Manipulative skills and Non – Locomotor skills. Some writers often distinguish between gross and fine motor skills.

Gross motor skills involve movement of large muscles and fine motor skills involve movement of small muscles. The above classifications are valid but in this paper we will use the former classification.

Locomotor skills are those skilled actions which are related to movement from one place to another these include skills needed in physical education, creative and cultural arts etc.

Manipulative skills involve skills required in receiving, giving and handling objects in the performance of various technical and vocational tasks. These are very important in all school subject e.g measuring, setting up laboratory apparatus etc.

Non – Locomotor skills are classified as acts which involve neither movement from one place nor manipulation of objects. Eg perceptual motor skill. For an effective teaching and learning of science and technical skills in the junior secondary schools, Onwioduokit (2000) suggested that the UBE teachers should master the performance codes of skills required of them to impart to the learners. Example;

Manipulation Skills Performance Codes:

- (i) Ability to handle objects / apparatus correctly,
- (ii) Ability to set up apparatus correctly and with correct bearings,
- (iii) Ability to manipulate objects / apparatus correctly,
- (iv) having good experimental posture
- (v) Ability to contact model and
- (vi) Ability to draw accurately.

Observational Skills Performance Codes:

- (i) Correctness of observation, that is, ability to observe correctly,
- (ii) Ability to discover characteristic features of objects or events;

- (iii) Ability to notice changes in characteristics in terms of say, color, tastes, smell, shape etc.
 - (iv) Ability to notice the effect of one substances or object on the other eg, a vegetable oil makes a white paper translucent, when robbed on it and water turns a dry white copper II tetraoxo-sulphate (vi) blue;
 - (v) Taking correct reading with measuring instruments and
 - (vi) Ability to notice errors involved during experimentation.
- Computational Skills Performance Codes:
- (i) Ability to relate the variables involved quantitatively
 - (ii) Ability to get necessary data
 - (iii) Ability to summarize the data in a graphical form, if required
 - (iv) Ability to undertake all calculations required, accurately and
 - (v) Ability to assign correct units of measurements.

It should be note that the skills though district are related. Cognitive skill, for instance is required in the proper exhibition of all other skills. In order to further show how to practically teach and assess the science, technical and vocational skills in the junior secondary schools in Nigeria, the teacher of basic science, technical and vocational subjects is expected to be:

- 1) Familiar with the performance objectives suggested in his subject curriculum;
- 2) List or identify the science, technical or vocational skills involved in each teaching unit of his subject curriculum; and
- 3) Master the performance codes associated with each skill to be learn't or taught.

As an example, let us take a teacher teaching unit one JSS 1 –integrated science. He needs to draw up a chart as shown below:

| S/N | Topic | Performance Objective | Students Performance Level: 5 – Excellent, 4- Very well, 3 – Well, 2 – Partially Well, 1 – Not Well | Skills Assessed |
|-----|-------------------------------------|---|---|---|
| 1 | Characteristics of living things | The child should be able to; 1. Identify those characteristics that separate from living non living things. 2. Use such criteria to sort objects into living and non-living things. | The child is able to ; 1. Identify things in the school compound. 2. classify objects into living and non living things | Observational Cognitive |
| 2 | Human beings as intelligent animals | | 3. Draw parts of the body 4. Take care of the teeth. 5. Describe what he/she sees in the environment. | Manipulative Manipulative Communicative |

In the table above, the students performance level indicates the grade to award a learner based on his/ her level of performance in the skill assessed.

The above brief example demonstrates how the science skills can be taught and inculcated into the learners in the laboratory or classroom. Now, this method can be adopted by technical and

vocational teachers to teach their subjects or to inculcate the technical and vocational skills needed by their learners.

Rationale for using artisans and skilled personnel in UBE

Universal Basic Education programme in Nigeria should encompass formal and non – formal aspects of education for children, adolescents and adults. It should aim at only making the learners to acquire the skills of permanent literacy, Numeracy and the ability to communicate effectively, but also to acquire practical skills with which to earn a living for life. The National policy on education, NPE (2004) section 5 states that the junior secondary school shall be both pre-vocational and academic. The pre – vocational subjects which form the base for technical and industrial growth include: wood work, metal work, electronics repair, mechanics, local craft, home economics and business studies. Further-more, the National policy on education states that, in order to realize the objectives of basic education, local craft-man and Artisans should be used to foster skill acquisition in the junior secondary schools.

Now, apart from federal Government secondary schools and few state, comprehensive schools, there is hardly any junior secondary school in Nigeria where technical and vocational skills are adequately imparted to the learners. It is this ugly situation and circumstances that made Okorosaye – Orubite (2008) to ask the question, can the goals of Universal basic Education (UBE) be realized? Will the UBE not go the way of the former Universal primary Education?

To enhance the skills acquired by the universal Basic Education graduates, Nwachukwu (2000) suggested looking inwards, into our traditional Nigeria societies, which was sustained by the principles and practices of indigenous vocational education before coming in contact with the western system of thought. Our traditional societies have people who are proficient and specialist in different occupations or professions like the blacksmith, cloth and fabric weavers, wood and leather worker etc.

These traditional societies has metamorphosed into our present day 774 local government Areas of Nigeria with many more new vocational skilled people than in the days of independence why should we not incorporate them into our school system? Why can't we send our junior secondary school graduates to undergo the traditional apprenticeship scheme to make the child self reliant, productive and explore his latent talents?

According to Kosemani (2000) the general aim and process of education are the same in all societies – to pass on the wisdom of former generations to the new and to introduce the young to the social organization and impart skills that will benefit them and the society they live in. According to Nwachukwu (2000), the apprenticeship system of training if adopted in our educational sector will ensure that the necessary skills and attitudes are actually acquired by the learner, since it is practical oriented and the trainee sees the immediate results of his efforts.

Infact, it can argued that our inability to link the western system of thought with our indigenous system of vocational education and culture is the cause of the educational and developmental crises in Nigeria and Africa in general.

Anticipated problems in using local Artisans and skilled personnel.

To use indigenous artisans and skilled persons to enhance skill acquisition of UBE graduates certain problems or difficulties are obvious.

- (i) Willingness of the indigenous personnel to be involved in the business of education. They may not be willing to be involved in a professional teachers job.

- (ii) Remuneration of the skilled personnel. Where the indigenous people are willing to participate in the universal Basic education programme, they may require remuneration which the schools may not provide except the state or the federal government takes the responsibility.
- (iii) Incorporating into the school time table the lessons of the indigenous skilled personnel.
- (iv) The problem of controlling the learners and avoiding work accident.
- (v) Examination policy in Nigeria. It seems reasonable to assume that unless skill acquisition is taken proper care of in the school examination syllabus; many Nigerian youths may not want to participate effectively in skill training.

However, despite the afore-mentioned problems, a well planned learning experiences involving teachers, Artisans and skilled personnel is possible if the goals of UBE is to be achieved. For example, the problem of examination policy in Nigeria, can be solved if in all final year examinations a compulsory project section which will involve some community work experience in addition to a finished skilled work in vocational or technical areas.

Summary, Conclusion And Recommendation

This paper has endeavored to demonstrate literarily that the Universal Basic Education (UBE) scheme in Nigeria has failed to provide many of the learners who has gone through the 9-years of basic education the appropriate levels of literacy numeracy, manipulative, communicative and life skills..... needed for laying a solid foundation for life –long learning, as a basis for scientific and reflective thinking. Otherwise there would have been no need for the various skill acquisition programmes of the multinational oil companies, government and Non-governmental organizations in Nigeria. The writers of this paper are of the view that the present Universal Basic Education scheme could be strengthened and the vocational goals of the students achieved if the skills and expertise of the indigenous people are incorporated into the system. This can be done by:

1. Using the 774 Local Government Education Authority (LGEA) in the country to identify competent skilled personnel or Artisans in all the vocational areas specified in the National policy of Education for Basic Education e.g. automechanics, electrical work, painting and graphics, information technology skills (computer studies) etc.
2. Adopting a compulsory one – year vocational skill training for all junior secondary school Graduates in Nigeria. Something similar to industrial training (IT) scheme of university and polytechnic students.
3. A vocational training allowance to be paid to the students and their instructors.
4. The junior secondary school Graduates to be assigned to vocational skill training based on aptitude or interest.
5. The monitoring and inspectorate division of the UBE to monitor and report on the scheme. Where a skilled personnel is not students, he should be dropped and the students re-assigned.

For effective administration of this vocational training each junior secondary school should have a vocational / industrial training unit with a coordinator and a team of inspectors to also carry out an independent assessment inspection and record keeping will also forestall any fraudulent intentions of some individuals.

Finally, the writers of this paper are of the conviction that if the path outlined in this paper is followed, it will enhance the science, technical and vocational skills of UBE graduates and

consequently the attainment of the technical and vocational goals of the universal Basic Education programme in Nigeria.

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