

AN APPRAISAL OF UNDERGRADUATE CURRICULUM OF TECHNICAL EDUCATION IN NIGERIAN UNIVERSITIES: IMPLICATIONS FOR HIGHER EDUCATION MANAGEMENT

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Abstract

The purpose of this study was to appraise the curriculum of technical teacher education in terms of its compatibility to the goals of the programme. A sample of three Universities offering technical teacher programme was used for the study. Components of the technical teacher education curriculum in each institution were analysed and categorised in terms of the course units in technical specialty, general education, general studies, science and mathematics. The results indicate that the curricula were above the minimum standard and the students' work load for graduation is high. Analyses revealed substantial technical and education components. These results have implications for addressing quality control and management in technical teacher education.

Introduction

The curriculum has become one of the key concerns of today's school personnel and its meaning has expanded over the years. Doll (1978) defined the curriculum of a school as the formal and informal content and process by which learners gain knowledge and understanding, develop skills, and alter attitudes, appreciations, and values under the auspices of that school. Oliva (1988) defined curriculum as a "plan or programme for all the experiences which the learner encounters under the direction of the school (that is, organisation or institution)". In spite of the different interpretations of the word 'curriculum' depending on persons philosophical beliefs, curriculum is viewed by many as a discipline, a subject of study and even as a teaching field at the graduate level of education. In this article, the work of Oliva (1988) serves as the definitional base.

The orientation, justification and focus of vocational and technical curriculum are that of preparation for useful and gainful employment (Finch and Crunkilton, 1984). Hence, the curriculum is based upon identified occupational needs of the society. Generally, the vocational and technical curriculum thrives on practicality, dynamism and relevance if it is to assist students to enter and succeed in the world of work. While university education in Nigeria is to make optimum contribution to national development, the goal of technical teacher education is to:

1. Produce highly motivated, conscientious and efficient technical teachers for the education system.

2. Provide teachers with the intellectual and professional background adequate for their assignment and make them adaptable to changing situations (Federal Republic of Nigeria, 1998: 33).

There is a growing concern by the public over the curriculum's relevance to national development. The claim is often made that the products of the university system are not suitable for the socio-economic and cultural needs of the society. A survey carried out by the National Universities Commission (NUC) showed that Nigerian university graduates lack basic job competence, oral communication and managerial skills (Nwankwo, 2004).

The purpose of this article was to appraise the under-graduate curriculum of technical education programme in Nigerian universities. The technical teacher occupies a crucial position in the education process and his/her contribution will either aid or hinder effective learning. Looking at the content of the technical education programme will assist in ascertaining the extent to which it is capable of preparing a prospective technical teacher to cope with the requirements of the job.

Methodology

The population of the study was all Federal and State universities offering technical education programmes. Three universities were randomly selected and included in the data collection process. The B.Ed Technology programme of two Federal and one State university were analysed. The researcher grouped the composition of each programme into four major components namely (1) Education, (2) General studies, (3) Science and Mathematics and (4) Technical Specialty. Frequencies, mean and simple percentage were used to analyse the distribution of course credits for each B.Ed Technology programme.

Conceptual Framework

The CIPP (Context, Input, Process, and Product) model of curriculum evaluation, developed by Phi Delta Kappa National Study Committee on Evaluation (1971) was used in this study for making important decisions concerning the value and worth of the technical education curriculum. The first component is the 'context' which defines the environment relevance to the curriculum. It describes the actual and intended conditions of the programme, identify unmet needs and diagnose barriers that prevent needs from being met. The second component is the 'input' which identifies the extent to

which available resources were used to achieve the objectives of the curriculum. The third is the 'process' and it identifies deficiencies in the procedural design or in the implementation of the curriculum. Finally, the 'product' compares actual outcomes against a standard of what is acceptable to make judgments to continue, terminate, modify, or refocus an activity. Evaluation studies that make use of the CIPP model are abundant (Stufflebeam, Foley, Gephart, Guba, Hammond, Merriman & Provus, 1971; Wentling, 1980). Thus, an appraisal of undergraduate curriculum of technical education may be understood using the CIPP model construct for curriculum evaluation.

Contextual Evaluation

The bachelor degree programmes in Industrial Technical Education in Nigerian universities are mostly in the Faculties of Education. Equipment and materials for practical courses are based in the Department. However, there are few exceptions where students take some engineering related courses in the Faculty of Engineering and they are taught by the lecturers in that faculty.

There is dearth of good quality teachers for the programme. With increase in student enrollment for Technical Education, Technical Colleges, Polytechnics and Universities, the demand for teachers of technology will increase. Oranu (2000) observed that one of the major problems of technical and vocational education in Nigeria has been that of recruiting enough quality teachers who are able to meet the demand of the world of work/labour requirements of changing technological innovations and guide the learning activities of the students. In effect, the pre-service programmes are established in the nations' educational institutions to produce these hybrid quality teachers to meet the current demand. Efforts made on technical teacher production have not yielded much fruit. Uyanga (1989) identified relative deprivation as a factor that negates productivity of technical teacher; a factor that keeps driving qualified technical teachers from their profession to other jobs. The study conducted by Uyanga revealed that a great majority of NCE and B.Ed (Technical) students preferred to work in private organisations and industries because of higher wages, fringe benefits and adequate facilities and equipment in the working environment. Folorunsho (2001) maintained that good incentive of salary and wages for technical teachers is inevitable since this will stop the drift of technical teachers to more lucrative jobs with better pay in industries.

Input Evaluation

Existing human and material resources for attaining the desired quality output of technical teachers will include but is not limited to personnel, machinery, materials and methods. Nwoke (1990) identified the following, among others, as critical issues in planning and implementing effective technical teacher education programme in Nigeria. These are:

1. Providing adequate instructional materials and equipment for vocational teacher education.
2. Ensuring that curriculum, equipment and instructions reflect Nigeria's current needs and
3. Ensuring that only qualified and occupationally competent teachers are allowed to teach in Nigerian schools and colleges.

Other researchers (Isyaku 2002 and Yakubu, 2002) agreed with Nwoke's findings and noted that essential equipment are inadequate for science and technology courses. Besides, they advocated for the pursuit of excellence in the teaching – learning process and the need to create conducive academic atmosphere to meet the needs of the students and the nation.

The prospective technical teachers learn the professional teacher courses and the trade skills in a chosen occupation. Admission requirements for a 4-year degree programme in Technical Education include five Ordinary Level credit passes including English Language, Mathematics, Physics or Chemistry. A candidate with the National Technical Certificate (NTC) or City and Guilds (C&G) Intermediate or its equivalent and relevant credit passes may be considered. Candidates with NCE – Technical or its equivalent, Full Technological Certificate (FTC) or National Diploma (ND) in relevant field of study will be admitted into 3 years programme.

Without adequate and functional machines and hand tools, there is the danger of loosing the skill aspect of technical and vocational education programme. Student who pass through such educational institutions are likely to become irrelevant, stale and incompetent for the objectives we are hoping to achieve particularly in certain subject areas and in affective and psycho-motor considerations. It is reasonable, therefore, that teacher education programmes should be equipped with the necessary equipment, tools and machinery for learning.

Process Evaluation

There is the need to determine if the programme is being implemented as originally planned as well as monitor the potential sources of failure. The current Minimum Academic Standard (MAS) for technical teacher education was developed in 1989 for implementation. While the purpose of MAS is to provide general guidelines on standards for the award of degrees in Nigerian universities, each university is allowed a high degree of flexibility in the process of interpreting these guidelines. Many educators criticized the composition of the B.Ed Technology programme in terms of its ability to producing good quality technical teachers (Uwameiye, 1993; Yenkw, 1999; Bello, 2000; Nwankwo, 2004). Uwameiye and Bankole (1992) observed that the percentage of units allocated to major components of the programme are 26% of Science/Mathematics, 39% of Education and 35% of Technology. They found that there is too much emphasis on ability to teach without adequate emphasis on the technical component. They suggested that the curriculum ratio of Education to Technical content should be fixed at 1:3. Oranu (2000) opined that the depth and breath of the skills required is dependent on the purpose of the technical/vocational programme and the teacher’s role. He pointed out that with the rapid changes in technology, more time and credits units should be allocated to the trade courses. Therefore, he suggested 70% to trade and 30% to pedagogical courses.

Table 1
Distribution of Course Credits for Technical Teacher Programme in Sampled Federal and State Universities.

Institution	Component of Technical Teacher Curriculum				
	Education	General Studies	Science & Mathematics	Technical Specialty	Total
Delta State Univ.	43 (27.0)	10 (6.3)	18 (11.3)	88 (55.4)	159
Nnamdi Azikiwe University	40 (25.5)	14 (8.9)	20 (12.7)	83 (52.9)	157
University of Benin	42 (26.4)	10 (6.3)	20 (12.6)	87 (54.7)	159

Note: Figures in parenthesis are percentage values.

Data obtained from each institution were compared to determine whether or not the data from the three samples could be combined for subsequent analysis in this study.

No significant differences were discovered. As a result, the three sets of data were combined. The pie chart showing the percentages and proportion of the components is presented in figure 1.

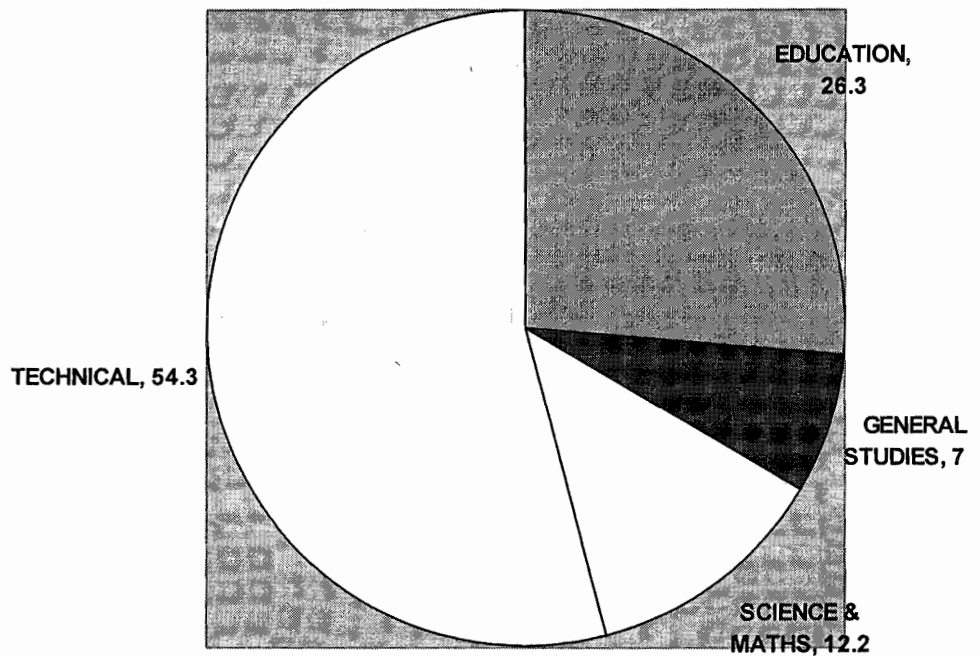


Figure 1. Component distribution of technical teacher curriculum

Table II indicates a broad based programme in the first two years. Most of the courses are in Science, Mathematics and General Studies which is an integration of the use of English, Social Sciences, and Humanities. Laboratory courses at this level stress application of principles, concepts and practice in skills. The general education courses are conducted at a higher cognitive level

Programme in the third and fourth year is 'narrow based'. Most courses are specialised and focus on specific occupational areas in Industrial Technical Education such as Automobile Technology, Electronics Technology, Mechanical Technology, and Building/Woodwork Technology. Laboratory courses stress practice in skills needed for specific occupation.

Table II: Profile of Training structure for Technical Teachers.

Y E A R S ↑	4	Automobile Technology	Building/ Woodwork	Electrical/ Electronics	Mechanical Technology
	3				
	2				
	1	Broad based courses in Science, Mathematics, General Studies and Technical specialty			
	0				

Product Evaluation

A realistic measure of programme effectiveness can be determined using follow-up as well as employer surveys. (Wentling, 1980). At present, there is no sufficient link between education and the world of work. Many universities have not developed job specifications for industrial experience as directed by the National Universities Commission. As a result, employers are not properly guided in training students on the job (Oranu, 2000).

The technical education at the University is to inculcate in the professionals high cognitive and psychomotor abilities to judge their standards of practice and assume full responsibility of teaching technical and vocational subjects at the junior and senior secondary school system (Federal Ministry of Education, 2000). With this function, the B.Ed Technology programme has attained its mission and the teachers are capable of teaching in a cluster designed curriculum. However, the proportion of the trade to pedagogical courses in technical and vocational education depends, to a large extent, on the mission of the TVE programme. Oranu (2000) pointed out that the relative mix of depth and breath of the teacher’s trade exposure is a function of whether he has the responsibility for developing specialised occupational skills or providing occupational orientation.

Generally, the state of African universities in terms of teaching and research infrastructure is unsatisfactory. Okebukola (2000) proposed a review of curriculum and curriculum delivery processes in African universities to show relevance to national poverty reduction strategies.

Besides, Okebukola declared that the NUC is currently reviewing the nation’s University

curriculum to meet contemporary realities such as unemployment, and equip graduates with basic job competence, oral communication and managerial skills (Nwankwo, 2004; Ebele & Onuora, 2004). The result of a survey carried out by the NUC revealed that University graduates lack skills and knowledge that will allow them to be economically productive. Hence the curriculum review will reposition the universities to produce more knowledgeable, skilled and entrepreneurial graduates that would meet the needs of the country.

Implications and Recommendations

The findings of this study have important implications for the administrators, policy makers, curriculum planners, the teachers of technical programmes and the students offering courses in technical education. Inadequate equipment and tools hindered achievement of curriculum objectives. The effect of limited workshop and laboratory activities can cause low productivity and make teachers become ineffective and inefficient in their teaching roles. (Uyanga, 1989; Uwameiye, 1993).

The drift of technology teachers to private organisations and industries can have a negative influence on the programme and overall teaching performances of current teaching staff. Teachers require motivation and good coping skills if they are not to succumb to the phenomenon of relocation using teaching as a stepping stone. The enhancement of the efficiency, resourcefulness and competence of teachers through capacity building and motivation is a major policy trust of the Federal and State Governments in Nigeria (Edukugho 2004). This policy has to be implemented to avoid teacher burnout or withdrawal from the teaching profession.

In-service training is a major aspect of Technical Education in Nigeria. Administrators should organise workshops, seminars and conferences to enable technical teachers acquire additional occupational experience based on the latest development in their area of specialisation.

Technical education curriculum is not static in nature and content but should change as the technology changes (Finch & Crunkilton, 1984; Oranu, 2000). Curriculum planners need to update the curriculum content and increase skill oriented courses. The findings of this study

could certainly serve as an input into the development and implementation of a functional curriculum for technical education.

The quality of technical education depends upon the quality of decisions taken about the programme. More research should be conducted on curriculum components and programme outcomes to determine how these variables relate to programme objectives.

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