TOWARDS THE IMPROVEMENT OF TECHNOLOGY EDUCATION BY TECHNOLOGY TEACHERS IN SECONDARY SCHOOLS.

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SAMUEL I. AKINSEINDE

ABSTRACT

The success of technology programme depends to a large extent on teachers who accept the challenge to improve their conceptual and professional thoughts. The study identified the strategies for enhancing the performance of technology teachers. Questionnaire was developed and each technology teacher rated the level of importance of each item. The responses were analysed using mean scores. The findings of the study indicated that the teachers need workshops to update their knowledge on technological advancement as well as innovative techniques for teaching technology education. Implications of these findings were highlighted. Recommendations were made based on the findings.

INTRODUCTION

Technology is an important field of study that has influenced our life style, the way we live and work. In early times, manual skills were used by the primitive society to survive and contribute to the refinement of civilization. Boys learnt making of sample tools, basket, boat, carving and leather work while girls learnt weaving of clothes, mats and hair. The skills were passed from generation to generation from father to son or one individual to another by imitation. These skills were the **technology of the time**.

It grew from family vocations to the traditional apprenticeship system. Although the apprenticeship system played a vital role in the provision of practical skills of the trade, it did not give practical instruction in trade processes and in related science, mathematics and the arts of the trade. (Onabamiro, 1983). Organised form of education later started with the teaching of manual skills in school system. The 10 year Technical Education Development Plan (TEDP) which started in 1944 led to the establishment of handicraft and trade centres for the training of craftsmen while technical institutes were established for technicians in Nigeria (Headlines, 1988). National development plans in Nigeria encouraged the growth of Colleges of Technology/Polytechnics, Technical Colleges and Federal Colleges of Education (Technical).

There has been progression from manual training/Arts to Industrial Arts and to Industrial Education. The industrial arts education has undergone transition into a curriculum thrust now identified as technology education. The challenges, responsibilities and opportunities of the technological age make the teaching of technology prevalent in our schools today.

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Todd (1985) remarked that the meaning of technology education in a given country will depend on the setting, use and level of technology of that country. Similarly, the definition will depend on (1) the purposes of technology education, (2) the forms of teaching, (3) the degree to which the study was interdisciplinary and (4) how technology is viewed in a given country.

In Nigeria, Introductory Technology subject is offered at the Junior Secondary School (JSS) with the following objectives:-

(1)   To provide pre-vocational orientation for further training in technology
(2)   To provide basic technological literacy for everyday living and
(3)   To stimulate creativity.

The learning experiences involve activities such as experimenting, designing, constructing, evaluating, and using tools, machines, materials and processes which provide opportunities for creativity and problem solving and assist individuals in making meaningful career choices.

Teachers are perceived as important implementers of the technology education programme and are innovators in that respect. Daramola (1989) proposed the development of technology education on a philosophical framework related to the contemporary needs and aspirations of the Nigerian society. He concluded that technology should be studied as an integrated discipline using conceptual and activity oriented approaches in teaching the subject.

This study was designed to determine strategies for enhancing the performance of technology teachers. This is significant because the success of the programme depends to a large extent on teachers who accept the challenge to improve their conceptual and professional thought in order to become better teachers of technology. The study therefore sought answers to the following research question:-

1.   What are the possible ways through which the teaching of technology can be enhanced?

METHODOLOGY

This study is a descriptive research which applied the survey design to determine the strategies for improving the teaching of technology in secondary schools.

POPULATION AND SAMPLE

The population was made up of Introductory Technology teachers in five states of Nigeria, namely, Anambra, Delta, Edo, Lagos and Ondo. The sample was made up of 152 teachers who have a minimum of N C E – Technical certificate and two years of recent occupational experience. It is a purposive sample. Technology Teachers in 82 urban and 70 rural schools in the states were involved in the study.

INSTRUMENT

Questionnaire was the instrument for data collection. It was made up of structured items and developed through literature review. Each structured item had a 4-point scale for indicating the importance level. The rating system used is made of most important, Important, less important and least important, representing 4,3,2 and 1 respectively. The respondents were asked to rate each item relative to its importance to the needs of the technology teacher. The instrument was validated by three Vocational and Technical educators.

DATA COLLECTION AND ANALYSIS

A total of one hundred and fifty two copies of the questionnaire were distributed. Only 138 copies were properly completed and returned for analysis. This represents 91 percent return rate.

The data collected were analysed using means. A mean of 2.55 was used (based on the 4 point scale) as cut off point for determining important items needed for enhancing the teaching of technology subjects. Any item with a mean of 2.45 and below was not considered important; hence not required.

FINDINGS

The following findings were made:

(a) Twelve possible ways of enhancing the teaching of technology education were identified. (Table 1)

(b) The item concerning "Organising workshop tc update the knowledge of teachers" was considered the respondents as the most important with others ranked as follows:

(2) Teach use of new tools and equipment to solve technical related problems

(3) Have a forum for sharing experiences, knowledge and insight regarding technology education.

(4) Emphasize importance of workshop activities in learning.

(5) Use hands-on and project activities to motivate students

(6) Arrange field trips to local industries as a follow up activity to related content area

(7) Teach students to acquire skills on use of technology tools and materials.

(8) Look for new ideas on technology as a result of societal happenings.

(9) Schools to provide enabling environment to use technological devices

(10) Let students brainstorm ideas, develop sketches and build models.

Table I:
Mean Responses on Strategies for enhancing the teaching of technology subjects.

S/No.	Strategies	X	Remarks
1.	Emphasize the importance of workshop activities in learning	3.63	Important
2.	Look for new ideas on technology as a result of societal happenings	3.10	Important
3.	Make specific efforts to develop self confidence and pride of accomplishment in each student	2.48	Unimportant
4.	Use hands-on and project activities to motivate students in studying technology	3.45	Important
5.	Teach students to acquire skills on how to use a variety of technology tools and materials	3.12	Important
6.	Let students learn to use new pieces of tools and equipment to solve technical related problems.	3.69	Important
7.	Schools should not be cut off from the world of work.	1.89	Unimportant
8.	Use space in the workshop to display pictures and articles on technological advancements	2.83	Important
9.	Let students brainstorm ideas. develop sketches, build models and complete working drawings.	2.98	Important
10.	Arrange field trips to local industries as a follow-up activity to related content area	3.41	Important
11.	Teachers should have a forum for sharing experiences, knowledge and insight regarding technology education	3.66	Important
12.	Technology education should be made compulsory for all students in order to have technological literate population	2.84	Important

13.	Schools should provide students with enabling environment to use technological devices	2.99	Important
14.	Technology teachers' association should organise workshops to update the knowledge of teacher on selected areas of cutting edge technology.	3.75	Important

X   =   Mean Importance responses by subjects

N   =   138 (Number of subjects)

Table 1 –   shows that only two out of fourteen items obtained mean scores below 2.55. These are items 3 and 7.

DISCUSSION

The findings of this study reveal that technology teachers recognised the need to update their knowledge and skill in their field of study. Also, the respondents are aware of the need to have a forum for sharing experiences, knowledge and insight regarding technology. The findings support the study conducted by Ukoha (1994) where long serving and beginning teachers identified difficult topics to teach in the Curriculum of Introductory Technology. The modern technological age with its accompanying explosion of knowledge calls for teachers who are ready to keep abreast of the constant changing needs of the individuals being taught as well as that of society. This demands that teachers acquire periodic training on the job for effective performance of their duties.

The findings also revealed that teachers should be committed to help their students acquire that skill of using tools and equipment to solve technical related problems. It is necessary to explore this enhancement strategy to promote skill acquisition and application. This requires the method of demonstration which is very suitable for psychomotor objectives (Akinseinde, 1998).

Two items obtained unimportant means of 2.48 and 1.89. They are (1) Instilling confidence in students and pride of accomplishment and (2) use space in the workshop to display pictures and articles on technological advancements. The low mean rating could be attributed to the fact that teachers do not use motivation techniques to direct their energies of student to the subject matter and make them develop positive attitude toward the subject. The second low rating deals with information collection method to enable students become familiar with a technologically based world while learning. It could mean that the teachers low rating of this item is a reflection of unavailability of such pictures and articles in the environment where they work.

In order to promote the teaching of technology subjects, the following recommendations are made:

1. The findings of this study should be made available to introductory technology teachers. This could be accomplished by providing the information during workshops and conferences organized for the teachers.

2. Technology teachers should be given the support and opportunity to use facilities and tools needed to teach technology.

3. Workshops should be organized for technology teachers. The learning experiences for such workshops should include topics on (a) Teaching methods, (b) workshop and classroom management for effective practical work, and (c) Techniques of motivating students.

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