



In-Service Training Needs of Introductory Technology Teachers in Kebbi State

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Abstract

This study was designed to identify the in service training needs of introductory technology teachers of secondary schools in Kebbi State. A total of 64 technical teachers teaching introductory technology were involved. Three research questions and two hypotheses were formulated and tested. The likert-type scale was used for the analysis of the result with 0.5-2.49 as very low/no importance/performance/ in – service need used to answer the research questions. The hypotheses were tested at p, 0.05 level of significance at 60 degrees of freedom. The results indicated that the teachers (1) needed all the listed competencies at a high level;(2) posses varying degrees of competence, and (3) need in-service training in all the identified competencies. The t-test shows no significant difference in 10 categories and indicated a significance difference in category C (Technical Drawing). The study concluded that an adequately planned and implemented in service programme that is based on the findings of the study will equip introductory technology teachers with necessary skills and knowledge needed to teach the course effectively.

Introduction

The future of educational and technological development of any country depends on the teachers, because they teach students who are going to be the productive work force and leaders of tomorrow. These teachers need to be effective and efficient in order to teach students well. Fafunwa (1980) remarked that the quality of all other professions influenced by the calibre of the teachers, because no adequate training can take place without competent teachers to handle the programme. Adebo (1973) stated that, unlike the old system of education which the 6-3-3-4 was intended to replace, this new system involves technicians and technologists, and that it gives glamour which liberal arts graduate who can take up only white collar jobs do not have. The Onamabiro report (1979) characterized the 6-3-3-4 system of education as a system with in-built flexibility and that the system places emphasis on marketable skills at the secondary educational level. The report emphasised that the essence of the 6-3-3-4 system was that it provides equal opportunities for education for every citizen. This special nature of the 6-3-3-4 system was described by the report as “practical expression of American egalitarian education at all levels” available to everybody who wants it. The 6-3-3-4 system emphasised a six-year primary education to all children. It provides a three-year junior secondary with emphasis on marketable skills for employment and a three year senior secondary exclusively for those with proven ability to continue their education in a four year tertiary institution. The programme requires that boys and girls as junior secondary school leavers do not know the skills they like to acquire but are to be given opportunity to practice such skills in the world of work within the society.

The national Policy on Education (1981) listed Introductory Technology (IT) as one of the provocation subject taught in the first three years of secondary school education. In including IT as one of the courses to be taught at junior secondary schools as a marketable skill, the policy seems to have done so with the understanding and appreciation of IT as adequate basis for achieving the broad aims of secondary school education in Nigeria.

The national curriculum for junior secondary schools (1985) defined IT as an integrated pre-vocational subject taught at junior secondary school level in Nigeria. The major objectives of teaching introductory technology are to;

- provide pre-vocational orientation for further training in technology;
- provide basic technological literacy for every day living and stimulate creativity.

The 6-3-3-4 system of education requires pupils to develop skills at the junior secondary school (Obi, 1985). These skills could be developed to meet the objectives of teaching IT by the use of competency-based education (CBE) approach. Okechukwu (1984) defines competency-based education as systematic identification of competencies, generations of objectives in terms of the competencies and developing effective instructional methods to evaluate objective attainment.

In Kebbi state for instance, records available at the ministry of education, show that there are only 67 introductory teachers in the existing 65 secondary schools. This number includes both qualified and unqualified teachers. The Sokoto State 4th National development plan (1981-1985; 227) stated;

Some of the aims of the state educational policy during the plan period are to encourage technical education through the establishment of new technical schools and the expansion of colleges of technology to train technicians for the state "To establish vocational schools to teach useful occupation to those primary school teachers that do not get places in the senior secondary. With this development therefore introductory technology will be expected to achieve great height

In-service education would give the teachers the opportunity to improve their knowledge and skill and bring them abreast of new findings in their field. Muhammed (1995), stated that introductory technology teachers need in-service training in some aspect of the junior secondary school curriculum where the teachers' are not familiar with. Since the 6-3-3-4 system was an innovation in Nigeria education irrespective of the efficiencies of the pre-service training of introductory technology teachers in junior secondary schools, the assumption of this study is that the system has created changes in methodology and curriculum.

Statement of Problem The problem of poor performance and achievement by introductory technology students may be caused by a number of factors including lack of knowledge and poor teaching methods of the subject on the side of the teachers. Itotoh (1991) indicated that technical teachers have not been provided additional in-service training to bring them abreast with the new curriculum content, where as they are supposed to teach in the new system. Therefore, in order for the goals of technical teacher education to be achieved, there is need to look at the educational background of teachers, their current ability and possible means of improving their performance.

Ezewu (1987) pointed out that only the national certificate on education holders and graduate of Universities with teaching qualifications are qualified to teach in secondary schools, although other categories are found in the schools, such as graduates of National Diploma, Higher National Diploma and University graduate without teaching qualification. Therefore, this study was designed to find the in-service training requirements of introductory technology teachers in Kebbi State.

Purpose of the Study

The purpose of this study was to identify the in-service training needs of introductory technology teachers of secondary schools in Kebbi State. This study specifically identified the competencies needed, and the area of training needs through in-service.

Research Questions

The study answered the following research questions;

- What were the competencies needed by introductory technology teachers of secondary schools in Kebbi State.
- What were the expressed performance levels of these teachers on the competencies.
- What areas of introductory technology do teachers in Kebbi State needed improvement through in-service?

Hypotheses

The following null hypotheses were tested as part of the study;

Ho1: There is no significant difference in the mean responses of qualified and unqualified introductory technology teachers on the competencies needed by them

Ho2: There is no significant difference in the mean responses of qualified and unqualified introductory technology teachers on the competencies possessed by them.

Methodology

Design of the study

This study employed the survey research design. Nworgu (1988) state that a survey research is one in which a group of people or items is studied by collecting and analysing data from a only a few people or items considered to be representative of their entire group. Based on these, survey research design was considered most appropriate for this study.

Population of The Study

The population of the study was made up of the 73 technical teachers teaching introductory technology in secondary schools. The entire population was used for this study.

Method of Data Collection

The questionnaire was administered personally by the researcher. The respondents were given enough time to complete the instrument. Two trips were made one for distribution and the second trip for collection. Table 1 describes how the distribution and collection were carried out.

Table 1 Distribution and Collection of the Instrument

Education	Number of Questionnaire	Number of Questionnaire collected
Argungu	12	10
Birnin Kebbi	18	17

Bunza	12	9
Yauri	13	10
Zuru	18	18
Total	73	64

Out of the 73 copies of the questionnaire distributed by the researcher, a total of 64 completed copies were collected back. Only two copies were discarded because they were wrongly completed, by checking more than one item. The correctly completed 62 copies of the questionnaire were analysed, using mean statistics to give answers to research questions, 1, 2, 3.

Method of data analysis

The researcher made use of mean to analyse the data collected.. The mean was used to determine the degree of need and possession of the identified competencies and the extent to which the introductory technology teachers need in-service training.

Considering the Likert-type scale, nominal values were assigned to different options for the items, and the mean of each item was interpreted in relation to the real limits of the values assigned to the response. Categories of the instruments as follows:

Table 2 Likert – Types Scale Limits

Responses	Values	Lower Limit	Upper Limit
VHN/VHP/VHN	5	4.50	5.49
NAA/AAP/NAA	4	2.50	4.49
NA/AP/NA	3	2.50	3.49
NBA/BAP/NBA	2	1.50	2.49
NN/NP/NN	1	0.50	1.49

Key

VHN/VHP/VHN	-	Very Highly Needed/Possessed/Needs
NAA/AAP/NAA	-	Needed Above Average/Possessed/Needs
NA/AP/NA	-	Needed Average/Possessed/Needs
NBA/BAP/NBA	-	Needed Below Average/Possessed/Needs
NN/NP/NN	-	Not Needed/Possessed/Needs

In order to determine the acceptance or rejection level of each competency group of the questionnaire, a decision rule based on real limits of numbers were used. Based on the values, the decision taken was as follows:

Decision Rule for Test of Hypotheses

Competencies were considered necessary at high level if mean calculated is equal or greater than 3.5, necessary at average level if mean calculated is equal to or greater than 2.5, and also equal or less than 3.49, and not necessary if mean calculated is less than or equal to 2.49.

For hypotheses 1 and 2: if 't' calculated is less than 't' tabulated, accept the null hypotheses, but if 't' calculated is greater than 't' tabulated, reject the null hypotheses.

Presentation and Data Analysis

Below is the analysis of the data collected in respect to this. The data were analysed and processed in accordance with the research questions and hypotheses formulated for the study.

Research Question 1

What were the competencies needed by introductory technology teachers of secondary schools?
The data analysed for this research question are presented in table 3.

TABLE 3 Competencies Needed by Introductory Technology Teachers in Secondary Schools.

Competencies	Mean X	Remarks
Category A: Workshop Management and Organisation	4.27	H.N
Category B: Building Construction	4.31	H.N
Category C: Technical Drawing	4.37	H.N
Category D: Electricity	3.86	H.N
Category E: Electronic	3.83	H.N
Category F: Metal Work	4.37	H.N
Category G: Wood Work	4.24	H.N
Category H: Food Storage and Preservation	4.29	H.N
Category I : Water flow and Air flow	3.88	H.N
Category J: Ceramics, Plastic and Rubber	3.85	H.N
Category K: Maintenance	4.29	H.N
Note: H.N = Highly Needed		H.N

Data presented in Table 3 shows the responses of introductory technology teachers to the degree of needs of the competencies grouped into 11 categories. The mean scores for these competencies ranged from 3.83 – 4.3. The mean values of respondents' perception show that all the competencies were rated high as each of the competencies was rated above 3.50. This indicated that the introductory technology teachers need all the competencies for effective performance of their jobs.

Research Question 2

What were the expressed performance levels of introductory technology teachers on the competencies?

The data analysed for this research question are presented in table 4.

Table 4 Level of Competencies Possessed By Introductory Technology Teachers Of Secondary Schools

Competencies	Mean X	Remarks
Category A: Workshop Management and Organisation	2.80	AP
Category B: Building Construction	2.90	AP
Category C: Technical Drawing	3.46	AP
Category D: Electricity	2.54	AP
Category E: Electronic	2.44	NP
Category F: Metal Work	3.01	AP
Category G: Wood Work	2.92	AP
Category H: Food Storage and Preservation	2.76	AP
Category I : Water flow and Air flow	2.53	AP
Category J: Ceramics, Plastic and Rubber	2.49	NP
Category K: Maintenance	3.03	AP
Note: A.P = Averagely Possessed, NP = Not Possessed		

Data presented in Table 4 revealed the responses of introductory technology teachers to the possessed level of the competencies. The respondents' mean rating ranged from 2.44-3.46. The respondents rated their competencies as average in nine competencies categories and non-possessed in two competency categories.

Question 3

What areas of introductory technology do teachers in Kebbi State need improvement through in-service?

The data analysed for this research question are presented in table 5

Table 4: Competencies Needed by Introductory Technology Teachers of Secondary Schools Through In-service

Competencies	Mean X	Remarks
Category A: Workshop Management and Organisation	3.88	H.N
Category B: Building Construction	4.00	H.N
Category C: Technical Drawing	3.79	H.N
Category D: Electricity	3.78	H.N
Category E: Electronic	3.95	H.N
Category F: Metal Work	4.02	H.N
Category G: Wood Work	4.03	H.N
Category H: Food Storage and Preservation	3.69	H.N
Category I: Water flow and Air flow	3.84	H.N
Category J: Ceramics, Plastic and Rubber	3.87	H.N
Category K: Maintenance	3.79	H.N
Note: H.N = Highly Needed		

Data presented in Table 5 the responses of introductory technology teachers to the extent of in-service needed. The mean score for these competencies ranged from 3.69-4.03. The mean value of respondents' perception shows that all the competencies are rated high with a mean value above 3.50.

Hypotheses 1

There is no significant difference in the mean responses of qualified and unqualified introductory technology teachers on the competencies needed by them at $p < 0.05$. Data pertinent to this hypothesis are presented in table 6

Table 6 T-test analysis of the Competence Needed by Introductory Technology Teachers

Competencies	GX QT= 43	GX UT= 19	T-value P<0.05	REMARKS
Category A: Workshop Management and Organisation	4.27	4.34	-0.46	Accept
Category B: Building Construction	4.36	4.41	-0.31	Accept
Category C: Technical Drawing	4.08	4.13	-0.33	Accept
Category D: Electricity	3.84	3.79	0.36	Accept
Category E: Electronic	3.86	3.79	0.50	Accept
Category F: Metal Work	4.58	4.45	0.81	Accept
Category G: Wood Work	4.34	4.52	-1.13	Accept
Category H: Food Storage and Preservation	4.02	4.19	-1.13	Accept

Category I : Water flow and Air flow	3.86	3.92	-0.43	Accept
Category J: Ceramics, Plastic and Rubber	3.82	3.76	0.43	Accept
Category K: Maintenance	3.83	3.74	0.62	Accept

GX QT = Grand Mean of Qualified Teachers

GX UT = Grand Mean of Unqualified Teachers

Table 6 shows the t-test analysis of the significant difference between the mean scores of qualified and unqualified introductory technology teachers on the competencies needed by them. The t-test revealed that there is no significant difference in the mean, responses in all the 11 categories. All the calculated 't' values are less than the critical value of 't'.

Hypothesis 2

There is no significant difference in the mean responses of qualified and unqualified introductory technology teachers on the competences possessed by them.

The data associated with this hypothesis are presented in table 7 below.

Table 7T-test analysis of the Competencies possessed by Introductory Technology Teachers

Competencies	GX QT= 43	GX UT= 19	T-value P<0.05	REMARKS
Category A: Workshop Management and Organisation	2.76	2.62	1.40	Accept
Category B: Building Construction	2.91	2.86	0.50	Accept
Category C: Technical Drawing	2.50	2.69	-2.11	Reject
Category D: Electricity	2.54	2.69	-1.67	Accept
Category E: Electronic	2.46	2.40	0.67	Accept
Category F: Metal Work	2.90	2.76	1.40	Accept
Category G: Wood Work	2.65	2.62	0.33	Accept
Category H: Food Storage and Preservation	2.77	2.73	0.40	Accept
Category I : Water flow and Air flow	2.48	2.44	0.44	Accept
Category J: Ceramics, Plastic and Rubber	3.02	2.97	0.45	Accept
Category K: Maintenance	3.05	3.11	-0.55	Accept

Table 7 shows that t-analysis of the significant difference between the mean scores of qualified and unqualified introductory technology teachers on the competencies possessed by them. The t-test result revealed that there is no significant difference in the mean response in 10 of the 11 categories and shows a significant difference in one category (Technical Drawing).

Discussion

The findings of this study are discussed under the main subheadings, which correspond with the research questions.

Competencies Needed by Introductory Technology Teachers

All the competencies identified by the study were rated (Table 3). The findings of this study are consistent with those of Gorman (1978) and Katahi (1983) in which most of the competencies were perceived as important. Anyakoha (1982) Hawang (1985) conducted similar studies and all the competencies were perceived as important for successful teaching and learning.

Competencies Possessed by Introductory Technology Teachers

Table 4 shows the responses of Introductory Technology teachers on the competencies possessed by them. The result indicated that the introductory technology teachers perceive their ability to perform the competencies at varying degrees.

Similar observation were made in the studies conducted by Okatahi (1983) and Agwubuike (1985) in which self-expressed performance was found in categories E and J. (Electronics and Ceramics, Plastics and Rubber)

Areas of In-service Training Needs of Introductory Technology Teachers

Table 5 shows the responses of introductory technology teachers to their in-service needs. It was found that the teachers need improvement in almost all the competency items that were identified through in-service. This study also supports the contention by Itotoh (1991) that serving and practicing teachers lack professional expertise that would assist in achieving the demands of the National Policy on Education. Teachers need in-service training to take care of the deficiencies in the curriculum content. In agreement with this, Aina (1981) and Oranu (1985) stated that teachers need training to improve the teaching – learning processes.

Conclusion

This study has identified the competencies needed by introductory technology teachers of secondary schools in Kebbi State. The teachers considered these competencies as essential for the successful teaching at the junior secondary school level. The in-service needs identified in this study represent a consensual list of what the teachers considered as needs for effective performance of their duties in schools. It is expected that adequately planned and implemented in-service programme that is based on the findings of this study will equip introductory technology teachers with necessary skills and knowledge needed to teach the course effectively. When findings of this study are effectively utilized a batch of highly motivated and adequately equipped introductory teachers will be produced. This will in turn improve the teaching of introductory technology in secondary schools in Kebbi State.

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