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Identification of In-Service Training Needs of Industrial Technical Education Teachers in Tertiary Institutions for Professional Competence

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Abstract

Teachers' improvement through in-service education and training in the form of refresher courses, capacity building workshops, seminars, in-service conferences among others are designed to sustain and improve professional quality of teachers. In-service training of teachers improves their professional knowledge, skills and attitudes. In-service training programmes enhance the quality, competence, efficiency and effectiveness of school teachers. Industrial Technical Education Teachers requires regular in-service training for effective performance and competence. To enhance the professional performance of Industrial Technical Education Teachers, the need for continued in-service education and training cannot be undermined. The main purpose of the study is to investigate the in-service training needs of Industrial Technical Education Teachers in Tertiary Institutions for professional competence. Survey research will be adopted in the conduct of this study. The target population comprises all Industrial Technical Education Teachers in Tertiary Institution in Nigeria. The population was 2280 teachers. The researcher adopted simple random sampling technique in selecting the sample of the study. The instrument for the study was structured questionnaire. A-45 item questionnaire titled "In-service training needs of Industrial Technical Education Teachers (INSTTET) was used for data collection. Mean statistics and standard deviation was used to answer the research questions while t-test statistics was used to test the Null hypotheses at 0.05 level of significance. The key findings which emerged from this study were that Industrial Technical Education Teachers in Tertiary Institutions were deficient in communication skills, knowledge of subject content, ICT skills, Practical skills and proficiencies, conflict management skills etc. it was recommended that these areas of deficiencies should be included in prospective and in-service education programme for Industrial Education Teachers.

INTRODUCTION

Background to the Study

One of the aims of teacher education as contained in the National Policy on Education is to provide teachers with the intellectual and professional background adequate for their assignment and to make them adoptable to many changing situation. This implies that teachers are to be equipped for effective performance in their prospective field of teaching subject matters at all levels of educational system. Okoye (2015) upheld that such teachers in the field of tertiary level can competently provide among other things trade information in their subject so as to enable them make relevant contribution to the development of the society.

The expectation of the teachers to be proficient in their teaching subjects cannot be over-emphasized. For instance, Haribison (2017), stressed that teachers must above all know their subject. He further stated that this can be achieved through professional training and re-training of teachers in their various subject areas. This implies that teachers should have firm grasp of their teaching subjects to effectively impact appropriate knowledge, skills and values.

One of the ways of making the teacher adaptable to any changing situation is to embark on in-service education and training programme for the incumbent teachers. The National Policy of Education (NPE, 2008) postulated that in-service education of teachers will continue to fill inevitable discrepancies between service teachers' performance levels and their expected competence levels. Hence, it is an imperative that serving teachers are subjected to continuous improvement, updating and upgrading of their competencies through in-service education and training programme.

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In-service education and training programme has been described as programme providing sustained further study enabling professional persons to improve their qualification and in particular to enable them to be retrained or to obtain a higher level certificate or even be initially trained when already in the job.

This, teachers' improvement through in-service education and training in form of refresher courses, capacity building workshops, seminars, and in-service conferences among others are designed to sustain and improve the professional quality of teachers. In-service training of teachers improves their professional knowledge, skills and attitudes.

In-service training programme enhances the quality, competence, efficiency and effectiveness of school teachers. Specifically, in-service education and training programme according to Okolo (2012), enables teachers to:

a. Acquire enough knowledge and skills of the subjects they teach. This implies that a good teacher should be a master of the knowledge and the skills he teaches.
b. Acquire the qualities and impart knowledge and skills to those who will teach, that is to acquire the skills of pedagogy-the science of teaching, Okolo further emphasized these qualities to include;

i. To acquire the knowledge of the pre-requisites for learning as well as factors which affects learning.
ii. Drawing up the scheme of work, lesson planning, lesson implementation or delivery and evaluation.
iii. Formulating of instructional objectives, selection of content and learning experiences, selection and appropriate use of instructional materials.
iv. Acquire the knowledge and skills of classroom management, control, guidance and counseling, teaching ethics among others.

In recent times, government has been giving increasing attention to in-service education and training for the following reasons;

a. Teachers like other adult need continuing education to keep abreast of changes in modern society.
b. To enable teachers to develop their professional competencies, evaluate their own work and attitude in conjunction with their professional colleague and develop standards which could help them to assess their own teaching roles.
c. Educational practice need to be more closely linked to needs of the local community.
d. Demographic trends focus attention to those teachers who are already serving (Uzoagulu, 2013).

According to Iwuanyanwe (2014), avenues for in-services training or retraining teachers include;

a. Attending and participating actively in seminars, conferences and capacity building workshops.
b. Departmental or in-house seminars, conference and workshops where Senior colleagues helps the others to improve their skills and competence.

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c. Belonging to some professional association where the teacher can meet with experienced colleagues to exchange ideas and talk about new innovations and developments in their teaching subject and professional teacher education etc.

Regarding industrial technical education, it had been defined by different individuals in various ways. Review of literature on technical education indicates that variation have existed in the meaning of terms commonly used and in concepts and their implications. For instance, some writers described technical education as a comprehensive packed programme concerned with technical means, their evolution, utilization and significance with industry, production techniques resources, products etc. others opined that technical education centers on increasing the productivity, the most acceptable definition of technical education is stated by the National Policy on Education (NPE, 2008). Technical education was defined as the aspect of education that gives the recipients an opportunity to acquire skills as well as some basic scientific knowledge. The aims of technical education according to the NPE includes:

1. To provide trained manpower in applied science, technical and commerce, particularly at sub-professional grades;
2. To provide technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development;
3. To provide people who can apply scientific knowledge to the improvement and solution of environment problems for the use and convenience;
4. To give an introduction to professional studies in engineering and other technologies;
5. To give training and impart the necessary skills leading to the production of craftsman, technicians and other skilled personnel who will be enterprising and self-reliant and;
6. To enable our young men and women have an intelligent understanding of the increasing complexity of technology.

This policy statement confirms the pride of place given to technical education in Nigeria because of the realization of its importance in the economic growth and well being of any nation.

Among the five national objectives of the national policy on education (NPE, 2008), is the building of a united, strong and self reliant nation and a land full of bright opportunities for all citizens. To be on private employment according to the NPE implies:

I. The acquisition of the right type of value and attitudes for the survival of the individual and Nigeria society.

II. The acquisition of appropriate skills, ability, competences both mental and physical as equipment for the individual to and contribute to the development of his society.

Nwaokolo (1993) contributing stated that technical education graduates on private employment plays significant role in technological growth and development of developing nations in the following ways.

I. Discovering, exploiting harassing useable materials from local raw materials for the benefit of man kind
II. Enhancing the quality and efficient of product development, production and maintenance
III. Production of quality goods and services
IV. Effective utilization of the abundant human and natural resources in Nigeria.

Our society is dynamic, our needs, values, aspirations and expectations change from time to time. Knowledge, skills and methodologies also change as a result of research and new discoveries, since education is the fastest tool for development and teachers are instrument used to implement the teaching learning process, all teachers should be retrained on a regular basis. Upon this background, it became pertinent to investigate the in-service training needs of industrial technical education teachers in tertiary institutions for professional competence.

Statement of the Problem

For industrial technical teachers to effectively improve their professional competence, their perceived level of importance and performance of those competencies should be identified. The basic procedure for the improvement of a professional teacher is to analyze the strength and shortcomings of the teachers' knowledge, skills and attitudes and then explore strategies for remedying the shortcomings. The importance of in-service training in this regard cannot be undermined. In-Service training equips teachers with the intellectual and professional background adequate for their assignment.

Available literature indicates that a number of researchers have been conducted on improvement needs of teachers in specific vocational subjects like Home Economics Education, Agricultural Education among others. Such studies for Industrial Technical Education teachers have however not been carried out. Therefore, this research was intended to investigate the in-service training needs to of industrial technical education teachers for professional competence. It is important that these teachers should have a firm grasp of the subject in order to effectively impart knowledge, skills and value. The laudable aims, objective and benefits of technical education

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cannot be realized when the teachers are incompetent. Therefore the problem of this study is to investigate the in-service training needs of Industrial Technical Teachers technical education for professional competence.

Purpose of the Study

The main purpose of the study is to identify the in-Service training needs of Industrial Technical Education Teachers for professional competence.

Specifically, the study sought to:

1. Identify the practical skills and knowledge needed by the Industrial Technical Education Teachers for professional competence.
2. Identify the areas Industrial Technical Education Teachers are deficient in practical skills and knowledge.
3. Determine strategies that should be adopted to enhance in-service training of Industrial Technical Education Teachers in tertiary institutions.

Significance of the Study

The finding of this study will unfold the practical skills and knowledge needed by Industrial Technical Teachers in tertiary institutions to enhance their professional competence. More so, the perceived level of performance of these competencies would be indentified. It is imperative that serving teachers improve, update and upgrade their competencies through in-service education training programme. Industrial Technical Teachers will become aware of the necessary areas to direct attention for effective programme.

The finding of this study will also help the curriculum planners and educational administrators to know those skills and knowledge in technical education that are in tone with contemporary technological changes. The findings of this study will also help policy makers in making necessary reviews and further contributions in the educational policy formulation process.

Research Questions

The following research questions guided the study;

1. What are the practical skills and knowledge needed by the Industrial Technical Education Teachers in tertiary institutions for professional competence?
2. What areas are Industrial Technical Education Teachers deficient in practical skills and knowledge?

3. What strategies should be adopted to enhance in-service training of Industrial Technical Education Teachers in tertiary institutions?

Hypothesis

The following hypothesis was tested at 0.05 level of significance.

Ho1: there is no significance difference in the Mean response of Industrial Technical Teachers and their Heads of departments on practical skills and knowledge in which Industrial Technical Teachers in tertiary institutions are deficient.

Delimitation of the Study

The study is delimited to in-service training needs of Industrial Technical Education Teachers in tertiary institutions for professional competence. Specifically, the practical skills and knowledge needed by these teachers.

Operational Definition of Terms

1. In-service training means subjecting or exposing teachers to further teaching and practice after initial training through attending capacity building, workshops, seminars, conferences and professional association's activities.
2. Industrial Technical Teachers transmit knowledge and skills, guide the learner to grasp ideas and facts and develop skills in Home Economics.
3. Professional competence refers to the capacity of Industrial Technical Teachers to effectively impart appropriate knowledge, skills and value at expected competent level.

DATA ANALYSIS AND DISCUSSION OF FINDINGS

In this chapter, data for this study were analyzed and results presented based on the research questions and hypothesis that guided the study.

Research Question One

What are the practical skills and knowledge needed by the Industrial Technical Education Teachers in tertiary institutions for professional competence?

Table 1: respondents' opinion on basic practical skills and knowledge needed by Industrial Technical Education Teachers in tertiary institutions for professional competence.

S/N	Basic Practical Skills and Knowledge	$\overline{X}$	Remarks
1	Communication skills	3.56	Accept
2	Pedagogical skills and competencies	3.82	Accept
3	Knowledge of subject content	3.51	Accept
4	ICT Skills	3.62	Accept
5	Practical skills and proficiencies	3.81	Accept
6	Project management skills	3.92	Accept
7	Workshop management skills	3.55	Accept
8	Administrative skills and competencies	3.50	Accept
9	Conflict management skills	4.10	Accept
10	Research skills	3.99	Accept
11	Measurement and evaluation skills	3.54	Accept
12	Work ethics	3.83	Accept
13	Classroom management and control	3.67	Accept
14	Supervision skills	3.50	Accept
15	Time management skills	3.81	Accept
16	Interpersonal relationship skills	3.78	Accept
	Grand mean	3.74	Accept

Result in table 1above represents respondents' opinion on basic practical skills and knowledge needed by Industrial Technical Education Teachers in tertiary institutions for professional competence. The result indicates that the respondents rated above 3.50 of the acceptance mean score on all items statement. The mean response scores (x) ranged between 3.50 – 4.10. This is indicative respondents' strong agreement that the listed item statements were the basic practical's skills and knowledge needed by Industrial Technical Education Teachers in tertiary institutions for professional competence.

Analysis of the data on the entire items that addressed research question one shows that majority of the respondents reacted positively to the entire items with a grand mean response score of 3.74 which is above 3.50 acceptance mean score. This implies that there are the basic practical's skills and knowledge needed by Industrial Technical Education Teachers in tertiary institutions for professional competence.

Research Question Two

What areas are Industrial Technical Education Teachers deficient in practical skills and knowledge?

Table 2: Respondents' opinion on the areas Industrial Technical Education Teachers are deficient in practical skills and knowledge

S/N	Deficiencies in Basic Practical Skills and Knowledge	$\overline{X}$	Remarks
1	Communication skills	3.71	Accept
2	Pedagogical skills and competencies	2.48	Reject
3	Knowledge of subject content	3.52	Accept
4	ICT Skills	3.81	Accept
5	Practical skills and proficiencies	3.62	Accept
6	Project management skills	3.71	Accept
7	Workshop management skills	3.82	Accept
8	Administrative skills and competencies	3.96	Accept
9	Conflict management skills	3.52	Accept
10	Research skills	3.58	Accept
11	Measurement and evaluation skills	3.59	Accept
12	Work ethics	3.77	Accept
13	Classroom management and control	3.82	Accept
14	Supervision skills	3.72	Accept
15	Time management skills	3.81	Accept
16	Interpersonal relationship skills	3.79	Accept
	Grand mean	3.61	Accept

Result in table 2 above present respondents' opinion on the areas Industrial Technical Education Teachers are deficient in practical skills and knowledge. The result indicates that majority of the respondents rated above 3.50 of the acceptance mean on item statements 1, 3 -16, with mean response score (x) ranging between 3.57 –3.96. This is indicative of respondents' strong agreement that the listed item statements are the areas Industrial Technical Education Teachers are deficient in practical skills and knowledge. However, on item 2 rated below $\overline{3.50}$ of the

acceptable mean score indicates negative reaction that Industrial Technical Education Teachers were not deficient in pedagogical skills and competencies.

Analysis of data on the entire items that addressed the research question two shows that majority of the respondents reacted positively on the entire items with a grand mean response of 3.61, showing that Industrial Technical Education Teachers are deficient in practical skills and knowledge.

Research Question Three

What strategies should be adopted to enhance in-service training of Industrial Technical Education Teachers in tertiary institutions?

Table 3: Respondents' opinion on how to enhance in-service training of Industrial Technical Education Teachers in tertiary institution

S/N	Strategies	$\overline{X}$	Remarks
1	Adequate funding of Industrial Technical Education	3.81	Accept
2	Adequate motivation of Industrial Technical Education Teachers	3.51	Accept
3	Government regular sponsoring of Industrial Technical Education Teachers	4.02	Accept
4	Provision of adequate in-service training infrastructure	3.50	Accept
5	Adequate motivation of resource persons	3.72	Accept
6	Free in service training of Industrial Technical Education Teachers	3.81	Accept
7	Use of appropriate in-service training methods	3.62	Accept
8	Sufficient time for in-service training	3.54	Accept
9	Provision of adequate resource material for in-service training.	3.82	Accept
10	Adequate planning of in-service programme.	3.92	Accept
11	Enabling/conducive in service training environment.	3.74	Accept
12	Stream lining in-service training programme on the basis on identified needs of Industrial Technical Education Teachers.	3.81	Accept
	Grand mean	3.69	Accept

Result in table three above presents respondent's opinion on the strategies that should be adopted to enhance in –service training of Industrial Technical Education Teachers in tertiary institutions.

The result indicates that majority of the respondents rated above 3.50 of the acceptance mean on item statements. This is indicative of respondents' positive agreement with the listed strategies

Analysis of data on the entire items that addressed the research question three shows that majority of the respondents reacted positively to the entire items with a grand mean scores of 3.69 above 3.50 acceptable mean score. This implies that the identified strategies should be adopted to enhance in-service training of Industrial Technical Education Teachers in tertiary institutions.

Test of Hypothesis

Ho_1: There is no significance difference in the Mean response of Industrial Technical Teachers and their Heads of departments on practical skills and knowledge in which Industrial Technical Teachers in tertiary institutions are deficient.

Table 4: t-test comparison of the mean response of Industrial Technical Teachers and their Heads of departments on practical skills and knowledge in which Industrial Technical Teachers in tertiary institutions are deficient

Respondents	$\overline{x}$	SD	N	df	SE	T-cal	T-crit	Decision
Industrial Technical Teachers	3.78	0.111	105	150	0.23	0.510	1.96	Accept
Heads of departments	3.51	0.121	47					

The result of hypothesis one revealed that the respondents did not differ significantly in their response as regard basic practical skills and knowledge in technical education needed by Industrial Technical Teachers in tertiary institutions for professional competence. Result shows the t-cal to be 0.516 while t-critical is 1.96 at 0.05 level of significance. The t-cal is less than the t-critical. The null hypothesis is therefore accepted.

Summary of Major Findings

The following key findings emerged from this study:

1. Basic practical skills and knowledge needed by Industrial Technical Education Teachers in tertiary institutions for professional competence includes; Communication skills, Pedagogical skills and competencies, Knowledge of subject content, ICT skills, Practical skills and proficiencies, Project management skills, Workshop management skills, Administrative skills and competencies, Conflict management skills, research skills, Measurement and evaluation skills, work ethics, Classroom management and control, supervision skills, Time management skills and Interpersonal relationship skills.

2. Industrial Technical Education Teachers are deficient in basic practical skills and knowledge of Industrial Technical Education in the following areas; Communication skills, Knowledge of subject content, ICT skills, Practical skills and proficiencies, Project management skills, Workshop management skills, Administrative skills and competencies, Conflict management skills, research skills, Measurement and evaluation skills, work ethics, Classroom management and control, supervision skills, Time management skills and Interpersonal relationship skills.
3. Strategies on how to enhance in-service training of Industrial Technical Education Teachers in tertiary institution includes; Adequate funding of Industrial Technical Education, Adequate motivation of Industrial Technical Education Teachers, Government regular sponsoring of Industrial Technical Education Teachers, Provision of adequate in-service training infrastructure, Adequate motivation of resource persons, Free in service training of Industrial Technical Education Teachers, Use of appropriate in-service training methods, Sufficient time for in-service training, Provision of adequate resource material for in-service training, Adequate planning of in-service programme, Enabling/conducive in service training environment and Stream lining in-service training programme on the basis on identified needs of Industrial Technical Education Teachers.
4. The respondents did not differ significantly in their responses as regards basic practical skills and knowledge in Industrial Technical Education needed by Industrial Technical Education Teachers.

Discussion of Findings

The findings of this study have been arranged and discussed according to the three research questions and one hypothesis formulated. Results regarding research question one showed that the respondents agreed with all the items on basic practical skills and knowledge needed by Industrial Technical Education Teachers in tertiary institution for professional competencies. These findings were similar to those of Okoye (2015), Harbison (2017), who found in their separate studies that Communication skills, Pedagogical skills and competencies, Knowledge of subject content, ICT skills, Practical skills and proficiencies were the basic skills and knowledge needed by Industrial Technical Education Teachers in tertiary institution for professional competencies. The findings also agreed with those of Wokocha (2012), who found that classroom management skills, supervision skills, interpersonal skills among others are the

skills needed by Industrial Technical Education Teachers in tertiary institution for professional competencies.

Regarding research question two, result showed that the respondents were in agreement that Industrial Technical Education Teachers were deficient in the area listed. These findings agreed with the findings of Manilla (2012), Uzoka (2015), who found in their separate studies that Industrial Technical Education Teachers in tertiary institutions were deficient in Communication skills, Time management skills and Interpersonal relationship skills.

The finding relating to research question three showed that majority of the respondents were in agreement with all the items statements. These findings agreed with those of Ukeje (2006), Anyakoha (2016), who found that adequate funding of Industrial Technical Education, adequate motivation of Industrial Technical Education Teachers is one of the strategies that should be adopted to enhance in-service training of Industrial Technical Education Teachers.

The findings of Akanbi (2010) also agreed with the result of this study because sufficient time for in-service training, provision of adequate resource material for in-service training were some of his findings on how to enhance in-service training of Industrial Technical Education Teachers.

The result of the hypothesis one revealed that the respondents did not differ significantly in their responses as regards basic practical skills and knowledge in Industrial Technical Education needed by Industrial Technical Education Teachers for professional competence. This result is consisted with the findings of Akanbi (2010), Anyakoha (2016).

Conclusion

The study has presented data on in-service training needs of Industrial Technical Education Teachers in tertiary institutions for professional competence. The study concludes that in-service training should be concocted for Industrial Technical Education Teachers in tertiary institutions for professional competence.

It is therefore the view of the research that government should partner with relevant bodies to provide in-service training for Industrial Technical Education Teachers in tertiary institution.

Implication of the Findings

The results of this study has obvious implication for potentials and in-service Industrial Technical Education Teachers, Ministry of Education that plans INSET for

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August 2022

Industrial Technical Education Teachers for effective improvement and enhanced job performances of teachers in Technical Education in tertiary level.

Recommendation

1. All the necessary materials, equipment, infrastructure and other instructional facilities for teaching and learning Industrial Technical Education should be provided to help Industrial Technical Education Teachers acquire the needed skills and knowledge for professional competence.
2. All the basic practical skills, knowledge and areas of deficiencies should be included in prospective and in-service education programme for Industrial Technical Education Teachers.
3. In-service training for Industrial Technical Education Teachers should be organized by incorporating their perceptions.

Suggestions for Further Studies

1. Similar study should be carried out for Industrial Technical Education Teachers in secondary schools.
2. Similar study should be carried out in other aspects of Technical Education courses.

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