

COMPETENCY IMPROVEMENT NEEDS OF TECHNOLOGY TEACHERS FOR EFFECTIVE TEACHING OF BASIC TECHNOLOGY IN SECONDARY SCHOOLS

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Abstract

This study investigated the competency improvement needs of technology teachers for effective teaching of basic technology in Junior secondary schools. The study used survey design to study a population of 77 technology teachers in Junior Secondary schools in Awka South local government area. Two research questions guided the study, while I hypothesis was tested at 0.05 level of significance. Purposive sampling technique was used to draw the sample while simple random sampling was employed to select a sample of 20 technology teachers in ten (10) Junior Secondary schools in Awka South local government area. Questionnaire was used for data collection. Mean statistics were used to analyze the data. The study found that there was significant relationship between competency improvement needs of technology teachers and use of ICT for effective teaching of basic technology. The study concluded that technology teachers were lacking the pre-requisite competences needed to implement basic technology education curriculum in various Junior secondary schools in Nigeria and as result need competency improvement in the areas of Information and Communication Technology (ICT), such as basic computer operation, desktop publishing, networking, trouble shooting and word processing and among others, classroom students assessment skills and item instruction development and analysis competence. Hence, the study recommended that the Ministry of Education in various states in Nigeria should embark on training and retraining of technology teachers by organizing development programmes inform of seminar, workshop and conference and support teachers to attend it in order update them on current trends in the field Basic technology.

Keywords: Competency, improvement, needs, technology, teachers, implementation, basic, technology.

Introduction

In every nation, teachers have been recognized as the basic human resource and indeed the single most indispensable element in the educational system. One cannot talk of human development without giving recognizing to effort of teachers. The efforts of teachers as good instruments in education system have produced what the society is today. Etuk (2006) opined that building new schools, revised syllabuses, introducing new teaching methods, teaching aids among others, all workload are on teachers. This is why the Federal Government of Nigeria (FRN) stated clearly in the National Policy on Education that since no education system may rise above the quality of its teachers, teacher education shall continue to be given major reorganization in all educational planning as well as development (FRN, 2013). This will enable teachers get the requisite competence needed in their teaching profession.

Basic technology is one of the pre-vocational subjects offered in junior secondary schools in Nigeria. According to Aremu (2015) Basic technology education is a preparatory subject preceding entry into full vocational and technical courses. Teacher competency is the ability, knowledge and skills possessed by a teacher which enable the teacher to implement the curriculum effectively. Teachers competence has its aims at making the learner to cope with and contribute to scientific enterprises from day to day in the world dominated by Science and Technology (Aduloju, 2010). It is the capacity of a technology teacher who is teaching basic technology to effectively teach the content of Basic technology curriculum in junior secondary

schools. However, the question is how prepared are the technology teachers in teaching the new curriculum given the additional contents. Did technology teachers who teach this basic technology courses study basic technology in their pre-service programmes? To what extent are the technology teachers well informed in the current innovations to appreciate the need for improvement in their skills and competencies? Thus, the major issue is that the initial training technology teachers received during their teacher education programmes is not enough to enable them continue for life to overcoming and measuring up with new development in basic technology. Therefore, the need for technology education teachers to improve their competence areas such as Information and Communication Technology (ICT) and classroom students assessment.

Statement of the Problem

It is widely acknowledged that technology teacher quality is a strong predictor of students performance in Basic technology. Regrettably, students performance in Basic Technology in their Basic Education Certificate Examinations (BECE) in Nigeria has not been encouraging in recent years. The implication of students failure in Basic Technology examination is that their passion to study technology courses in higher institutions could be relegated to the background. This may be as a result of scarcity of qualified basic technology teachers who could be effective in the delivery and implementation of new contents in the curriculum of basic technology education. Most technology teachers teaching basic technology in Junior secondary schools lack competencies needed to boost effective teaching. These competencies they are lacking may include technological know how, assessment skills, item construction and analysis, emotional, curriculum, professionalism, field, students mentoring, pedagogical, affective work, intrapersonal, interpersonal, information and communication technology, laboratory management, instructional materials utilization and development competencies among others. Thus, this calls for the need for technology teachers to improve their skills, knowledge and competencies in Basic technology education programme.

Research Questions

The following research questions guided the study;

1. What are the ICT competency improvement needs of technology teachers for effective teaching of Basic technology.
2. What are the assessment needs improvement of technology teachers for assessing students in Basic technology?

Test of Hypothesis

H0: There is no significant relationship between competency improvement needs of technology teachers and use of ICT for effective teaching of Basic technology.

Need for Technology Teachers Improvement

Basically, competent teachers of basic technology are expected to possess the skills and knowledge required in the teaching of the subject matter to students and where this is not adequate, retraining to boost their competencies becomes indispensable. Schleicher (2012) opined that most of the teachers especially technology teachers around the world do not possess the ICT skills to prepare students for higher education and the demands of work places in the 21st century. The author further pointed out that today, where students can access unlimited contents on search engines and where routine cognitive skills are being digitalized or outsourced, these have serious implications for technology teachers preparation and continuing professional development. Moreover, Akpan and Silas (2013) stated that retraining of teachers is imperative as it will among others enhance the improvement of their competency needs. In order to function effectively in the classroom in this information age, technology teachers are required

to improve vital competencies to operate Information and Communication Technology (ICT) software and hardware. In view of this, Marija and Palmira (2007) classified ICT competencies into two broad areas, namely, basic and educational ICT competencies. Yusuf and Balogun (2011) highlighted the following major ICT competencies that technology teachers need to improve: competency in making personal use of ICT, mastery of a range of educational paradigms that make use of ICT, competency in making use of ICT as minds tool, competency in making use of ICT as tool for teaching in the classroom, competency in mastering a range of assessment paradigms which involve use of ICT and competency in understanding the policy dimensions of the use of ICT for teaching and learning. In this information age, it is required of technology teachers to employ ICT facilities in their teaching basic technology. In other words, technology teachers are required to improve skills and competencies in basic computer operations such as running a word, connection of a computer and its peripherals and moving files between drives. They also need to improve competencies in database management, networking, spreadsheet/graphics and word processing/desktop publishing. entering a new file in Microsoft word, filtering files, updating data in database and competency in using all these ICT tool for teaching and assessment of students on basic technology (Kirschner & Woperies, 2003).

However, despite the amount of time technology teachers spend assessing students learning in Basic Technology class, it is a task that most of them dislike that and that only few of them do well in it. One reason is that many technology teachers have little or no in-depth knowledge of assessment principles (Imam, Popoola & Egberouge, 2015). It is also believed that technology teachers with more training in assessment use more appropriate assessment practices than do technology teachers with less training (Bielher & Snowman, 1997). Nenty and Lusweti (2014) emphasized the need of technology teachers having deep knowledge of while assessing and hence what decisions are to be made, who will make the decision, and what kind of information will be helpful. Technology teachers need improve and find ways through which they can enhance the learning aspects as well as how to assess the quality of learning and teaching exhibited.

Methods

This study employed survey research design that described the existing problem of technology teachers in Nigeria. The study area were public secondary schools in Awka South local government area. Awka South local government area has 21 public secondary schools and 40 private secondary schools. The number of technology teachers in those public secondary schools were 28 while that of private secondary schools were 49 which constituted the population of the study. The total population of the study was 77 technology teachers in both public and private secondary schools in Awka South local government area. Purposive sampling technique was used to draw the sample for the study while simple random sampling technique was used to select 25 respondents from 10 secondary schools giving the total sample to be 25 technology teachers. The instrument used for data collection in this study was a structured questionnaire. The questionnaire had 15 items with four response options of: strongly agreed (SA), agreed (A), disagreed (D) and strongly disagreed (SD). The code for responding to the items in the questionnaires was as follow; strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD). The instrument was validated by two experts in the Department of Technology/Vocational Education faculty of Education of Nnamdi Azikiwe University, Awka. The data was collected through trial-test was subjected to Cronbach alpha test and a reliability coefficient of 0.89 which proved that proved that the instrument was highly reliable to conduct the study. Mean statistics was used to analyze the data. Chi-square was employed to test the hypothesis at 0.05 level of significance. The scale for accepting the mean was set at 2.5 otherwise reject the mean.

Results

Table 1: What are ICT competency improvement needs of technology teachers for effective teaching of basic technology.

S/N	Item on ICT competence improvement needs of technology teachers for effective teaching of basic technology	SA	A	D	SD	X	Remarks
1	computer operation competence						Agreed
2	database management	15	5	0	0	3.8	Agreed
3	networking competence	11	8	1	0	3.5	Agreed
4	spreadsheet/graphics competence	13	7	0	0	3.7	Agreed
5	word processing/desktop publishing	10	8	1	1	3.4	Agreed
Total						3.6	agreed

From table 1 shows that the computed mean of our data analysis is $3.6 > 2.5$. By implication, the technology teachers need competency improvement in the area of using ICT for instructional delivery of Basic technology. This is agreed in the opinion of the respondents that technology teachers need improvement in computer operation competency at 4.0 mean point, database management at 3.8 point, improvement in networking competence 3.5 point, improvement in spreadsheet/graphics competence 3.7 and improvement competence on word processing /desktop publishing at 3.4 mean value.

Table 2: What are Competency improvement needs of technology teachers in classroom students assessment in basic technology.

S/N	Items on competence improvement needs of technology teachers in classroom students assessment in basic technology	SA	A	D	SD	X	Remarks
6	Improvement to adequately sample items from course contents	9	9	2	0	3.4	Agreed
7	Improvement in constructing a specific behavior	11	9	0	0	3.6	Agreed
8	Improvement to construct a test that spans evenly both the course content and cognitive of the course	10	7	2	1	3.3	Agreed
9	Improvement in arranging items in order of difficulty	13	7	0	0	3.7	Agreed
10	Improvement in developing an item bank that meet the specific requirements of a particular test.	11	9	0	0	3.6	Agreed
Total						3.5	agreed

In table 2, show computed mean $3.5 > 2.5$. This means that the respondents agreed that for effective implementation of Basic technology, the technology need to improve in classroom students assessment area such improvement to adequately sample items from the universe of all, improving in constructing with specific behaviour, improve in constructing a test that spans evenly both the course content and cognitive of the course, improvement in arraying items in order of difficulty and improvement in developing an item bank that meet the specific requirement of a particular test.

Test of Hypothesis

H0: There is no significant relationship between competency improvement needs of technology teachers and use of ICT for effective teaching of Basic technology.

Table 4.4: Contingency table 4.1.

<i>Variable</i>	<i>Df</i>	<i>Sig.</i>	<i>Cri</i>	<i>Cal.</i>	<i>pv</i>
<i>Improve_in_comput_operation_competen</i>	4	5	0.549	16.2	0.01

In table 4.4 above, the result of the hypothesis test revealed that the critical value of the chi-square is 0.549 while computed value of the chi-square is 16.2. The rule of chi-square stated that accept null hypothesis at H0 if the critical value is greater than the calculated value, otherwise reject H0 and accept the alternative hypothesis if the calculated value is greater than critical value. Since $16.2 > 0.549$ at 0.01 pv, we rejected null hypothesis and accept that there is significant relationship between competency improvement needs of technology teachers and use of ICT for effective teaching of Basic technology.

Discussion of Findings

From the result of the chi-square test conducted so far, it was discovered that positive significant relationship exist between competency improvement needs of technology teachers and use of ICT for effective teaching of Basic technology. This shown that it is imperative for technology teachers to improve on ICT knowledge such as computer operation competence, database management, networking, spreadsheet/graphics and word processing /desktop publishing.

Conclusion

Based on this findings discussed above, this study concluded that teachers competence are the yardstick for quality education and effective implementation of curriculum, thus this study concluded that technology teachers are lacking the pre-requisite competence needed to implement basic technology education curriculum in various Junior secondary schools in Nigeria and as result need competency improvement in the area of ICT and classroom students assessment.

Recommendations

Based on the findings of this study, the following recommendations are made;

1. The Ministry of Education in various States in Nigeria should embark on training and retraining of technology teachers by organizing development programmes inform of seminar, workshop and conference and support teachers to attend it in order update them on current trends in the field Basic technology.
2. Teachers training in colleges of education and universities in charge of training teachers should improve their scheme to include ICT technologies, current assessment techniques so that technology teachers will acquire the competencies to implement the new curriculum on Basic technology.

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