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Improvisation and Utilization of Instructional Materials in Teaching of Basic Technology in Upper Basic Schools in Awgu Education Zone of Enugu State

Okonkwo Peter Okeke[1] & Nwafor Bernard Chukwuma[2]

Department of Technology & Vocational Education
Faculty of Education
Enugu State University of Science and Technology (ESUT)
[1]okonkwopeter27@gmail.com
[2]bernardcnwafor@gmail.com

Abstract

The study was conducted on the improvisation and utilization of instructional materials in teaching of Basic Technology in upper basic schools in Awgu education zone of Enugu State. A population of 57 basic technology teachers were used and there was no sampling since the population was manageable. A descriptive survey design was adopted. Two research questions guided the study. A 14 item structured questionnaires were used to gather information from the respondents. Three experts validated the instruments. The reliability index of 0.75 was obtained using Cronbach Alpha which indicated internal consistency of the instrument. Data collected from the questionnaire were analyzed using mean and standard deviation. Findings indicated that students do not assist basic technology teachers to improvise instructional materials, basic technology teachers do not buy already improvised instructional materials from the local aids. Conclusions were made based on the findings of this study that effective utilization of improvised instructional materials enhances the understanding of the students in the teaching and learning process. It was recommended that in the absence of conventionally produced instructional materials, basic technology teachers should desire to improvise instructional materials in order to arouse students' interest in their lessons.

Introduction

Technical education uses a method of inquiry and a systematic way of processing knowledge about the physical world to the learners. Technical education provides foundational knowledge-based information to improve health, nutrition, family planning, environmental, agriculture and industry.

Technical education has two broad purposes: improvement of technical literacy among citizens on matters directly affecting their own lives and the society so that they can make decisions based on information and understanding. This is essential for the sustainable development of a modern

technological society. The second purpose is to build up technological capability by equipping the future workforce, with essential technical-based knowledge, skills and work attitudes. The provision of quality technical education to those that needs it and want to profit by it will move the nation to a greater height for industrial and technological development through practical activities.

Practical activities in technical education are regarded as one of the necessary elements to promote understanding of technical principles. To accomplish this goal, the equipment and experiments have to be carefully selected to give students the relevant experiences that they may need. The understanding is enhanced if the examples are coming from the daily life of the students. The provision of relevant equipment is a necessary step while its utilization by students guarantees successful learning. Other factors such as pre-services and in-service teacher training, suitability of equipment, utilization, maintenance and supply of consumable instructional materials will enhance the quality of practical activities in the school environment.

School environment has been described as organizations where resources are utilized and managed to enables the students acquire desirable learning competencies. The process of proper managing of resources in teaching brings about fruitful learning because it stimulates students senses as well as motivating them. One of the problems confronting technical teachers in developing countries like Nigeria is lack of money to acquire desirable materials. There is a general problem in teaching technical courses in developed countries and the resourceful teachers need to look for alternative sources that can help them carry on with their work (Loko 1998). And such alternative is the ability to improvise resources where proper ones are lacking.

Research has shown that effect use of instructional materials arouse students interest (Uzoegwu 2001). It is therefore, expected that in the absence of the commercially made instructional materials for the teaching and learning of basic technology, teachers should improvise. Ezegbe (1999) recognized the importance of the use of real materials in the environment in achieving set objectives. The importance of the use of instructional materials in the teaching and learning process cannot be over emphasized because they make teaching and learning more lively, meaningful and understandable. Uzoegwu (2001) noted that teachers should employ instructional

materials in their teaching in order to ensure that teaching is more meaningful to the learners. Agwagah (1999) opines that instructional materials when used effectively can arouse interest, foster stimulation, self-activities, increase retention ability, make the subject matter more relevant to life and lessen the burden of teaching. In spite of the emphasizes on the use of instructional materials in the teaching and learning process, research has shown that basic technology teachers teach without the use of instructional materials like Vernier calipers, tape, rule, try-square, scriber, micro-meter screw gauge because they are not available in the school workshop.

Asadu and Ameh (2002) noted that lack of instructional materials in the school workshop is one of the major constraints in the teaching and learning of basic technology in the upper basic secondary schools. These problems can be attributed to a number of factors such as the Laisser-faire attitude of some technical teachers, insufficient knowledge of skills and strategies for improvisation as a result of disruption in the academic programmes and lack of financial support from the administrators to encourage teachers improvise needed materials.

Teacher attitude was explained by Darling-Hammond (2005) as expectation of a positive or negative outcome of using improvisation in the classroom based on their perception of how the academic and social community would respond to improvisation in the curriculum. Attitude was included because teacher attitude towards the subject matter influences what was taught, how it was taught and who was expected to able to learn it, (Darling-Hammond, 2005). Social perspectives of the aims of education with regards to subject matter often affect what and how teachers choose to teach (Kelly 2009). In addition to social consequences, teachers' perspectives about who is capable of learning using improvisation may influence their attitude.

A multiple case study by Bernard (2000) found that children's concept about improvisation. The way a teacher values and perceived improvisation will influence the ways he view improvisatory experiences. Consequently, students would develop their understanding by using improvised material during teaching and learning process. When a teacher provides students with readiness and skills to create and improve their own materials, technical literacy becomes the properly of the student themselves and this will represent the ultimate goal of technical teachers. A teacher's attitude will have an effect on what and how curriculum is used in

the classroom. (Darling – Hammond 2000). Though, moving away from traditional and personal experience may be challenging, teachers are in a position to accept and teach new values, such as creativity (Riverrie, 2000).

One of the factors that militate against teachers' altitude towards improvisation according to Arhis and Asimah (2006) is that the innovativeness on the part of the teacher can affect technical teacher's attitude positively or negatively in the production of improvised materials. Some teachers are rigid that cannot come out with any artifact on their own in place of the unavailable teaching and learning instructional materials. Many teachers are not resourceful and lack creative thinking which makes them feel lazy in producing improvised.

It appears that there is lack of improvisation of instructional materials in technical classes. Teachers do not seem to be making class time available for students to participate in creative and improvisatory activities (Barkely, 2006). Technical literacy and neglecting creativity since the onset of education in Nigeria.

The problem still persists in recent time when teachers attempt to use improvised materials in their lessons, particularly at the lower levels educational system, improvisation may be used superficially and unsystematically because teachers are unaware of the ways improvisation can be used effectively. When teachers emulate the methods used in their own education, lack of improvisation in their training may discourage them from using it (Riverire, 2006 . when a teacher is fearful, lacks confidence or does not value the use of improvised materials based on previous experiences, there is a higher likelihood it would not be included in his or her instruction.

When producing improvised instructional materials some teachers find it difficult in locating the necessary or reality available materials in the local environment. Other problems are lack of technical know-how and creativity which hinder the production of improvised technical instructional materials some technical teachers see improvisation to be an extra duty for them some teachers think that duty is to go to the classroom to teach only. For this reason, they tend to ignore improvisational activity with the notion that it is not part of their duty.

There are varieties of resources within the environment which basic technology teacher can use to enrich learning. Some of these resources are meter rule,

measuring tape, chalk, bench vice, hacksaw, chisel, scriber and caliper. These resources are expected to be provided in large quality and in good quality in the classroom for effective teaching – learning process (Umeodugu, 2000). But these resources are inadequate and this has been of serious concern to basic technology teachers. For this reason, the researcher undertook to investigate if there are effective uses of improvised instructional materials in the teaching –learning of basic technology in order to cover the gap of resources inadequacy.

The main purposes of the study were to:

1. Find out the attitude of basic technology teachers towards production of improvised materials in Awgu Educational zone.
2. Determine the extent of improvisation and utilization of instructional materials in teaching of Basic Technology in Awgu Educational zone.

Research Questions

The following research questions guided the study:

1. What are the attitudes of basic technology teachers towards production of improvised instructional material in Awgu Educational zone?
2. To what extent does teachers improvise and utilize instructional materials in teaching Basic Technology in Awgu Educational zone?

Method

This study adopted the descriptive survey design where the respondents were surveyed in their respective location on what their opinion were on the identified issue.

The area is made up of all the upper basic secondary school in Awgu Educational zone which is made up of local government area namely Awgu, Aninri and Oji-River respectively. The population of the study was 57 basic technology teachers in the zone. One to small nature of the population no sampling was done.

A structured questionnaire was used as instrument for data collection. The items in the questionnaire were generated based on the information gathered from the review of related literature. The question was structured on a four point scale of

Strongly Agree - 4
Agree - 3
Disagree - 2
Strongly disagree - 1

The instrument was subjected to face validation by three experts two from the Department of Technology and Vocational Education and one from Science education department of Enugu State University of Science and Technology, Enugu. The valuators were served with a copy of the instrument for validation. Their suggestions and corrections were the basis for producing the final copy of the instrument used for the study.

Fifteen copies of the questionnaire were administered to 15 respondents of basic technology teachers in Nkanu West L.G.A to establish the reliability of the instrument. The reliability index of 0.75 was calculated using Cronbach Alpha which indicated internal consistency of the instrument.

A total of 57 copies of the questionnaire were distributed to the respondent with the help of two research assistants trained for the purpose and were all retrieved after completion; thereby achieving 100%return rate. The data collected were analyzed using mean (X) with standard deviation (SD) in answering the research questions. A mean rating of 2.50 which is the cut – off point of 4 point- scale was adopted as the agreement level for item while any score less than 2.50 is regarded as disagreement level

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Results

The results of the analysis of the data collected were presented in table according to the research question answered.

Table 1: mean and standard deviation of the responses of attitude of basic technology teachers towards producing improvised instructional materials.

S/N	Item	SA	A	DA	SDA	$\bar{X}$ Mean	Standard deviation	Deviation Rule
1	Basic technology teachers prepare improvised instructional materials by themselves	10	35	10	02	2.93	0.62	A
2	Basic technology teachers prepare improvised instructional material in collaboration with the students	12	26	15	04	2.81	0.85	A
3	Produce instructional materials in collaborations with colleagues.	05	29	17	06	2.58	0.80	A
4	Produce improvised instructional materials to generate money for the schools	06	15	28	08	2.33	0.85	D
5	Basic technology teachers often use teaching aids in their lesson	04	13	29	11	2.18	0.85	D
6	Basic technology teachers believe that things around can be used for improvisation	15	30	07	05	2.96	0.87	A
7	Basic technology teachers come into the class with improvised materials	03	20	25	09	2.29	0.80	D
8	Basic technology teachers ask students to prepare improvised instructional materials themselves	07	18	19	13	2.33	0.90	D
	Grand mean and standard deviation					**2.57**	**0.87**	

Table 1 shows that items 1, 2, 3, and 6 agree that these are attitude of teachers towards producing instructional materials for effective use of improvised materials in Awgu Education zone of Enugu while items 4, 5, 7 and 8 disagree. The justification from the grand mean of 2.57 shows that these

are attitude of basic technology teachers towards production of improvised instructional materials for effective use.

Table 2: mean and standard deviation of the responses of the extent improvisation and utilization of instructional materials in Awgu Educational zone.

S/N	Item	4 SA	3 A	2 DA	1 SDA	$\bar{X}$ Mean	Standard deviation	Deviation Rule
9	Produce improvised instructional materials from a resource centre	03	20	25	09	2.99	0.80	D
10	Getting financial assistance from the school administration during production of improvisation	9	18	19	13	2.33	0.97	D
11	Basic technology teachers buy already made instructional materials from local craftsmen	04	17	27	09	2.28	0.82	D
12	Getting assistance from students in collecting improvised materials from the environment	04	17	27	09	2.28	0.82	D
13	Students don't assist basic technology teachers to prepare improvised instructional materials	26	19	05	07	3.12	1.02	A
14	Basic technology teachers organize field trip for students to collect improvised materials	07	10	22	18	2.21	1.07	D
	Grand mean/SD					**2.36**	**0.93**	

Table 2 shows that only items 13 agree which implies that students do not assist basic technology teachers to prepare improvised instructional materials. The items 9, 10, 11, 12 and 14 disagree. It was therefore justification by the grand mean of 2.36 that the basic technology teachers face a lot of problems when producing improvising instructional materials.

Discussion

The findings of this study are discussed according to the research questions. The mean and the standard deviation guided the study. Result of the data analyzed with reference to research question one indicated that preparation of improvised instructional materials, preparation of improvised in collaboration with the students, and in collaboration with the colleagues are some of the attitudes of basic technology teachers towards production of improvised material. These agree with Darling – Hammond (2005) which states that these entire teachers attitude will have an effect on how it is used in the classroom. While production of improvised instructional materials to generate money for the schools, often use it as a teaching and learning materials in their lesson, come into the classroom with their improvised materials and instructs students to provide improvised materials themselves were seen as not attitude of teachers towards production of improvised instructional materials. This could be seen from the mean ratings in Table 1.

Data pertaining to research question two as analyzed in Table 2 showed that out of six problems facing basic technology teachers in production of improvise instructional materials only item no 13 which is not getting assistance from the students in preparation of the improvised instructional materials was agreed. This was in line with Barkley (2006) which states that teachers do not seem to be making class time available for students to participate in creative and improvisatory activities. Other items like production of improvised instructional materials from a resource centre, getting financial assistance from the school administrators, buying already made instructional materials from the local craft, getting assistance from students in collecting material for the production of improvised instructional materials from the environment and organizing field trips with students to collected improvised materials are not problems faced by basic technology teachers in production and effective use of improvised instructional materials disagreed based on the findings in the study. These disagree with Asadu and Ameh (2002) which noted that lack of

production and effective use of instructional is one of the major problems faced by basic technology teachers in the upper secondary school. The grand mean of research question one is 2.57 while the grand standard deviation is 0.87. The grand mean for research question two is 2.36 and the grand standard deviation is 0.95.

Conclusion

Based on the findings of this study the following conclusion was drawn as follows that effective use of improvised instructional materials enhances the understanding of the students in teaching and learning process. It was discovered that improvised instructional materials improved students understanding when compared to the use of only the conventionally produced instructional materials.

Additionally, Awgu educational zone of Enugu State does not have a resource centre and for that, the basic technology teachers do not produce their improvised instructional material at a resource centre. Again, the challenges faced by basic technology teachers when producing improvised instructional materials was that they do not get assistance from the students in the preparation of improvised instructional materials. The study also reveals that basic technology teachers do not involve students during preparation of improvised instructional materials.

Recommendations:

Based on the findings and conclusion drawn from the study, the following recommendations were made:

1. That in the absence of originally conventionally produced instructional materials; basic technology teachers should develop the desire in the production of improvised instructional materials in order to arouse student's interest in the lesson.
2. Measures should be put in place to ensure that a resource centre can be established in the zone so that basic technology teacher can get assistance from the centre in the production of improvised instructional materials.
3. Basic technology teachers should be assisted financially from the school administrators to produce improvised instructional material.
4. Basic technology teachers should be encouraged by the stakeholders in the education sector to produce improvised instructional materials from the local materials within the environment.

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