



Effective Teaching of Basic Technology: Issues and Challenges

Dr. Elisha N. Elom

Department of Technology and Vocational Education,
Faculty of Education, Ebonyi State University, Abakaliki, Nigeria

E-mail: nwonu.elom@yahoo.com

Phone: 07035989296

Dr. Christopher E. Ogwa

Department of Technology and Vocational Education,
Faculty of Education, Ebonyi State University, Abakaliki, Nigeria christopherogwa@hotmail.com

Phone: 08067413706

Abstract: *This research work was carried out on the factors influencing the teaching of basic technology in the secondary schools in Ebonyi Local government Area of Ebonyi State. The study was guided by four research questions. Literature related to the study was reviewed. Structured questionnaire with (20) statement items was designed on four point rating scale for the fulfillment of this work which. The population of the study consisted of all the JSS III students in all the secondary schools in Ebonyi Local Government Area of Ebonyi state and the sample consisted of 6 teachers and 294 students from three drawn secondary school which made up 300 respondents. The data collected were analyzed using statistical mean. The result was generalized to the entire area. The findings of the study were analyzed and recommendations were made based on the findings.*

Introduction

Teaching can only be result-oriented when students are willing and the teachers are favorably disposed, using the appropriate methods and resources in teaching the students. With the current increase in technology, much demand is placed and emphasis is laid on the teachers, the learners, curriculum and the environment in the whole process of teaching and learning. The federal government has stated that the benefit of all citizens of the country's educational goal shall be clearly set out in terms of their reliance to the society. This was stipulated in the National policy on Education (NPE, 2004).

Basic technology is an integrated subject which comprises of woodwork, metal work, building technology, auto mechanics, electrical electronics and technical drawing at their basic level.

It is a subject that is offered at the junior secondary school level. The attainment of scientific and technological advancement would be facilitated if basic technology is effectively administered at the secondary school level. Basic technology was introduced into the Nigeria education system 6-3-3-4 in 1982 as a result of the national policy on education that was made after the national curriculum conference of September, 1969. The conference was held in Lagos to review old and identify new national goals for Nigeria education at all levels with respect to the need of individual youth and adult in the task of nation building.

Basic technology enhances skill acquisition which makes the implementation of the 6-3-3-4 system of education successful. This can be possible if teachers are able to make students acquire the desired technological skills. Because technological knowledge is very important in secondary education, voluntary organizations and even parents contribute to the establishment and maintenance of schools. Within the context of technology education, basic technology has been identified as a very important school subject and its importance in scientific and technological development of any nation has been widely reported. It was as a result of the recognition given to basic technology in the development of the individual and the nation that made it one of the core



subjects among other science related subject in Nigeria education system. Its inclusion as a core subject in the junior secondary schools calls for the need to teach it effectively. This is because effective teaching of basic technology can lead to the attainment of technological greatness. Basic technology exposes students to their desired vocation as the goals of vocational education as stated in the National Policy on Education is to provide trained manpower in the applied science, technology and business particularly at craft, advanced craft and technical levels. If basic technology can achieve this, the nation will then be sure of bringing up youths of admirable behaviours who, rather than being liabilities to the government, will contribute positively to the social, economical and technological development of the nation.

This study of basic technology helps to reduce ignorance about technology. The subject has three main objectives as stated in the National Policy on Education 2004, which are;

- a. To provide vocational orientation for further training in technology.
- b. To provide basic technological literacy for everyday living.
- c. To stimulate creatively.

Towards the attainment of these objectives of basic technology, adequate teaching methods must be put in place for its teaching so that optimum achievement can be guaranteed.

As a result of much emphasis on Nigeria developing technologically, many secondary schools in Ebonyi state have taken up basic technology in the junior secondary level and on this basis, one wants to determine the factors influencing the teaching of the subject in Ebonyi Local Government Area of Ebonyi State.

Statement of the problem

Looking at the performance of students in the junior secondary school certificate examination (JSSCE) on Basic Technology in Ebonyi Local Government area of Ebonyi State, it is clear that the poor performances of the students are growing at alarming rate. The cause of this poor performance is yet to be known and this poor performance indicates that there are factors influencing the teaching and learning of basic technology (See Appendix II).

Purpose of the Study

The general purpose of this is to identify the factors influencing the teaching of basic technology in Secondary School in Ebonyi Local Government Area of Ebonyi State. Specifically, the study tends to find out.

- a. The extent of qualified teachers available for the teaching of Basic technology in secondary schools in Ebonyi Local Government Area.
- b. The extent of availability of instructional facilities influencing the teaching of basic technology.
- c. The extent guidance councilors influence the teaching of Basic technology.
- d. Suitable teaching methods that are to be used in teaching of basic technology in secondary school in Ebonyi Local Government Area.

Significance of the Study

The establishment of the factors influencing the teaching of basic technology in secondary schools will be of immense importance to all contributors to the post education, teachers, students, and parents, it will give the federal ministry of education the precautionary measures to take to achieve its educational objectives, the findings of this study will also be beneficial to curriculum planners because they will make use of these findings during innovation and it will help them to know how far the set objectives have been achieved in basic technology for them to seek for improvement where they have failed. To the teachers, the study will serve as an information source to help them teach basic technology successfully. Student offering basic technology equally will benefit from the study because human and material resources may be adequately provided as suggested by the study. This will make them to have good education and also help them to learn a better skill in the subject. Similarly, this study will be beneficial to parents as they will now⁷ be sure that money they are spending on their children's learning will yield positive results.



Research Questions

The following research questions were formulated for the purpose of this study.

1. To what extent are qualified basic technology teachers available to teach the subject in secondary schools in Ebonyi Local Government Area?
2. To what extent are the instructional facilities available for teaching of the subject?
3. To what extent do guidance counselors influence the teaching of basic technology in secondary school?
4. To what extent are the suitable teaching methods used in the teaching of basic technology in secondary school?

Scope of the Study

Due to certain constraints such as time and finance, the study is delimited to only public secondary schools -offering basic technology in Ebonyi Local Government Area of Ebonyi state. The researcher found it difficult studying all the secondary schools in the area hence the use of random sampling technique and a generalization of the result.

Review of Related Literature

The review of related literature of this study is presented under the following sub-heading:

1. Influence of teachers' qualification in the teaching of Basic Technology.
2. Instructional facilities for effective teaching of basic technology.
3. Influence of guidance councilors in the teaching of basic technology.
4. Suitable teaching methods to be adopted by the teachers in teaching of basic technology.
5. Review of empirical studies.
6. Summary of the review related literature.

Influence of teachers qualification in the teaching of Basic Technology.

Qualified basic technology teachers are needed for effective teaching of practical and technical subject in our secondary school. Their effectiveness can be measured by how they are able to lead people of the area of this study to achieve the goals of technological advancement through their jobs. The importance of qualified teachers in the teaching and learning of basic technology cannot be over stressed because technical knowledge is an indispensable factor in the realization of technological development.

To be a qualified teacher of basic technology, one needs to be professional trained in the area of technologically based on subjects. Okoro (1993) stressed that for any teacher to be qualified to teach basic technology in junior secondary schools, the teacher must have obtained B.sc or at least N .C .E. in the relevant field. The National policy on Education (2004) made room for professional training of all teachers. It also stated that no educational system can be better than the quality of the teachers. Olaitan (1997), pointed out that technology based subjects received less attention s unqualified teachers are made to teach them and this made the implementation of policies, procurement of facilities and equipment to suffer.

In the view of Okafor (1991), the limited number of qualified teachers in all the educational levels poses great threats to effectiveness and efficiency in teaching. Professional training has been identified as the best way to produce good and great teachers.

Instructional Facilities for Effective Teaching of Basic Technology

The main reason of using instructional resources and equipment in the classroom teaching in general is to arouse all the senses in the learning process. This is to say that instructional facilities and materials are information carries designed specifically to fulfill objectives in teaching learning situation. Tools, equipment and facilities which are of various types are essential for effective instruction in secundare" school this is because basic technology is practical based in nature.

Instructional resources according to Okoro (1993) are the materials and devices which teachers use to make lessons more understandable and meaningful. Abdulahi (2008) also stated that instructional materials are material objects locally made or imported that could make tremendous enhancement of lessons as most learners have deficiency in understanding certain concepts as a result of their level of cognitive operation.



Basic Technology is a doing subject which has to do with skill acquisition. Okoro (1993), noted that all technology based subject irrespective of their levels and objectives should involve practical activities. As more provision of technical information orally cannot serve the demand of basic technology to be taught in the secondary schools, the use of the tools and equipment should be considered indispensable to make the lessons more meaningful and interesting. According to Ezeocha (1992), lack of equipment and textbooks frustrate both teachers and students in the teaching and learning process, it makes teaching and learning theory oriented rather than practical oriented. Basic technology involves a lot of skills and practical which the instructor is bound to demonstrate. Nwachukwu (1995), opined that the availability and effective organization of instructional tools, equipment, and facilities will not only increase the performance of the instructors but will also help the students to acquire the manipulative skills required to prepare them for immediate employment in the world of work. This is in line with what Olaitan (1996) said, apart from the usual need for buildings, staff remuneration and supply of stationeries, basic technology need funds for purchase of new equipment to replace obsolete ones, regular maintenance of equipment to keep them in good working condition.

One can say now what the teachers of basic technology can effectively contribute and administer to the students the essentials of technology when adequate and sufficient equipment and materials are in place. This will make the students to be occupied at all times trying one experiment or the other.

Influence of guidance councilors in the teaching of basic technology.

The aim of vocational guidance counselor are many and varied some are listed below.

1. Assisting the students to develop proper study habits.
2. Guiding students to make intelligent choice.
3. Guiding student on preparation for entering gainful occupation.

Assisting the student to develop proper study habits

Ogwa (1991) carried out a study on the relationship between work and student's achievement in basic technology. The conclusion of the study was that student's attitude to work positively affected their achievement in the subject. Consequently students need to appreciate that work is ordained by God and should not shy away from it. Formation of reliable study habit is needed for success in studies and the aim of educational guidance should be to help students develop work and study habits that enable them to achieve satisfactory hard, they can always achieve good results and tackle their academic work effectively.

Guiding students to make intelligent choice

Intelligent choice based on students' abilities is imperative. Certain abilities are necessary to enable one start and progress in any occupation as a student may want to be a lawyer but may not possess the requisite literary abilities associated with the progress required in the law vocation. Also, a student may desire to be an engineer, but finds it difficult cannot succeed in any engineering or technological occupation since these vocations need at least an average success in ordinary level mathematics. Students are helped to acquire such knowledge of the characteristics and functions of the occupations within which their choice will lie.

Guiding Student on Preparation for Entering Gainful Occupation

The guidance of students in choice of vocations is geared towards enabling them find what abilities and skills are required for group of occupations under consideration and what the qualifications are such as age, preparation and sex for entering them. Some occupation have sex discrimination in Nigeria, such occupation like engineering are dominated by the men folk. Some occupations may not be entered into unless they are personally convinced about them. In such a situation, they can really prepare, enter and progress in the occupation.

Students are guided on the requisite qualifications that will enable them enter and progress in any given vocation under their consideration. The required age limits for entering such occupations are then highlighted.



Suitable Teaching Methods for Teaching of Basic Technology

In the teaching and learning of basic technology subject, a good teacher does not rely on a single method or material, many methods and materials are needed. Therefore, basic technology teachers should be familiar with the methods and materials that come to pay in any attempt to teach a skill. Nwachukwu (1995), one of the most important aspects of basic technology teachers' responsibilities is the development of skills. A basic technology teacher therefore considers the nature of skill and the needed occupational skills, (Okorie and Ezeji, 1998).

According to Osuala (1995), skill subject are activity subjects that require controlled physical movements to be made under the guidance of mind which may receive its stimulus through sensory impulse. He further state that the skill subject like basic technology, needs a high degree of coordination of eye, ear, mind and body of the individual student, these activities appear to be automatic and are usually built in habit skill subject, which involve the acquisition of practical and theory, the emphasis is on psychomotor domain. It is difficult to teach all the vocational and technical subjects in one particular method. This is because the objectives as well as the contents to be taught at each point in the lesson help to determine the method to adopt. Osuala(1995), stated that the teacher of basic technology demonstrated and shows rather than tell. He demonstrates to the point of actual master. This mastery formula is usually followed in teaching method at junior secondary school level should focus on the development of interest. Students should be made to understand and appreciate the wide world of technology. Nwachukwu (1995) opined that the common instructional method in technology based subjects are project methods, demonstration methods, teaching and field trip methods. He also stated that these methods are appropriate as they make concepts and ideas more possible to grasp by students. The demonstration method of instruction helps the learners to see direct actions of what is being taught and it enhances retention of learned facts. In the same view, the use of project method as an instructional method in teaching basic technology is to develop skill by emphasizing the making of useful practical projects which allows' the students to plan, execute and complete one or more project in their different special area of interest. In the case of field trips, learning is concrete, basic and sensory. This is because students see and observe things, places, people and people and processes in life setting. Objects are seen in their true nature both size and colour.

Methodology

Research Design

Surly research design was adopted for this study. The oxford advanced learners dictionary defined survey as an investigation of the opinions of a particular group of people, which is usually done by asking them questions. Survey research design represents one of the most common types of quantitative, social science research in which the research selects a sample of respondents from a population and administers a standardized questionnaire. Survey research design was used due to the fact that it would elicit the opinion of the respondents on the factors influencing the teaching of basic technology in secondary school in Ebonyi Local Government area of Ebonyi state.

Area of the Study

This work was designed to cover secondary schools in Ebonyi Local Government Area of Ebonyi State. Ebonyi state is one of the five states that make up the south East geopolitical zone of Nigeria. It has inter state to the north boundaries with Abia State to the south, Benue State to the North, Enugu State to the West and Cross River State to the East. Its capital is Abakaliki.

Population of the Study

The population of this study consisted of all the JSS III student and teachers in the junior section of the secondary school in Ebonyi Local Government Area of Ebonyi State.

Sample and Sampling Techniques

A simple random sampling technique was adopted to select 98 students and 2 teachers from each of the three drawn secondary schools which are summed up to 6 teachers and 294 students given a total of 300 respondents. The three selected secondary school are: Izzi High School, Ishieke, Abakaliki High School, Presco and Model comprehensive Girls Secondary School, Ugwuachara.



Instrument for Data Collection

The instruments for data collection were the structured questionnaire which were distributed by hand collection for analysis. A four point scale was used as,

Very High Extent(VHE)		with a four (4)	points rating Scale.
High Extent	(HE)	with a three (3)	points rating Scale.
Little Extent	(EE)	with a two (2)	points rating Scale.
Very Little Extent	(VLE)	with one (1)	point rating Scale.

Validity of the instrument

The questionnaire items were reviewed and validated by two lecturers in the department and also the project supervisor to check ambiguity, and to ensure suitability of the instruments used.

Method of Data Collection

The research personally distributed the questionnaire to the respondents and collected them after they were filled. A total of 300 copies of the questionnaires were distributed and 280 of them were returned of the 300 copies that were administered. The return questionnaire amounted to 93% while those that were not returned were 7% of the distribution.

Method of Data Analysis

The data collected for the study was analyzed using mean (X) to answer the research question i.e. conclusion and findings were drawn and worked out in tabular form. Statistical mean was used to determine the extent of each item statement in the questionnaire. The following formula was used to calculate the mean.

$$\text{Mean } (\bar{x}) = \frac{\sum fx}{\sum f}$$

Where \sum = Summation sign

\bar{x} = Rating scale

f = Scores of respondents (frequency)

A cut-off point was determined by finding the sum of rating scale divide by the total number of the rating scale.

i.e. $\frac{\text{sum of rating scale}}{\text{number of rating scale.}}$

$$\frac{4 + 3 + 2 + 1}{4} = \frac{10}{4} = 2.50$$

Decision Rule

Any statement with a mean of 2.50 and above is considered to be in High extent by the respondents and any statement below 2.50 is considered to in little extent.

Data Presentation and Analysis

Research Question

To what extent are qualified basic technology teachers available to teach the subject in secondary school in Ebonyi Local Government Area?



Table 1: Responses of respondents on qualified Basic Technology teachers availability

S/N	Item statement	4 VHE	3 HE	2 LE	1 VLE	\bar{x}	Decision
1.	The basic technology teachers with the N.D certificate	348	495	36	10	3.18	High extent
2.	Those with N.C.E certificate	480	348	80	4	3.26	High Extent
3.	He teachers that have the B.Sc certificate	620	291	42	7	3.43	High Extent
4.	The basic technology teachers with M.Sc certificate	176	180	224	64	2.30	High Extent
5.	The teacher with non-vocational certificate	8	57	154	182	1.43	High Extent

In Table 2, it was shown that item statement 6. 7. 8, 9 and 10 with the mean scores of 1.86, 1.88. 2.25. 1.66 and 1.57 respectively were below 2.50 indicating that the use of workshop, basic technology textbooks, the use of laboratory. Hand tools and machines, and functionality of instructional materials are all in little extent.

Research Question 3

To what extent do guidance counselors influence the teaching of basic technology in secondary school?

To what extent does:

S/N	Item statement	4 VHE	3 HE	2 LE	1 VLE	\bar{x}	Decision
6.	The school makes use of workshop	84	150	154	132	1.86	Little Extent
7.	The school has basic technology textbook in the library	64	141	208	113	1.88	Little Extent
8.	The school makes use of laboratory	180	180	190	80	2.25	Little Extent
9.	Hand tools and machines available in the workshop	8	21	332	105	1.66	Little Extent
10.	Most of the available instructional materials functional	40	45	200	155	1.57	Little Extent

In Table 2, it was shown that item statement 6, 7, 8, 9 and 10 with the mean scores of 1.86, 1.88, 2.25, 1.66 and 1.57 respectively were below 2.50 indicating that the use of workshop, basic technology textbooks, the use of laboratory. Hand tools and machines, and functionality of instructional materials are all in little extent.

Research Questions 3

To what extent do guidance counselors influence the teaching of basic technology in secondary school?

S/N	Item statement	4 VHE	3 HE	2 LE	1 VLE	\bar{x}	Decision
11.	The guidance give attention to student's personal social problems.	56	69	178	154	1.63	Little Extent
12.	The guidance counselor provides to the students the information relevant to the study of basic technology	20	51	120	198	1.39	Little Extent
13.	The school has a professional guidance counselor	260	528	12	8	3.24	Little Extent
14.	The guidance counselor work with the student to develop proper study habit	200	147	180	91	2.21	Little Extent
15.	The guidance counselors assist the individuals to secure knowledge of education facilities	40	36	110	203	1.39	Little Extent

In Table 3, it was shown that item statement 11. 12, 14 and 15 with the mean scores of 1.63, 1.39, 2.21 and 1.39 were rated little by the respondents showing that the guidance counselors attention to students' personal social problems. The provision of information relevant to the study of basic technology, the guidance counselors to work with the student to develop proper study habit and the guidance counselors assisting the individuals to secure knowledge of educational facilities



are all in little extent. But item statement 13 with the mean score of 3.24 indicated that school has a professional guidance counselor.

Research Question

To what extent are the suitable teaching methods influencing the teaching of basic technology in secondary school?

Table 4:

To what extent does

S/N	Item statement	4 VHE	3 HE	2 LE	1 VLE	\bar{x}	Decision
16.	Teachers prefer demonstration method when teaching basic technology	440	315	90	20	3.09	High Extent
17.	Some teachers use discussion method	432	465	20	7	3.30	High Extent
18.	Students like practical illustration than audio comments	392	450	40	12	3.19	High Extent
19.	Students go out on field trip to relevant place	4	15	136	206	1.29	Little Extent
20.	Teachers adopt project method of instruction in teaching the students	140	165	174	103	2.08	Little Extent

In Table 4, it was shown that items statement 16, 17 and 18 with the mean scores of 3.09, 3.30 and 3.19 which are above 2.50 shows that teachers preference for demonstration method and students likeness for practical illustration are accepted by the respondents while the item statement 19 and 20 with the mean scores of 1.29 and 2.08 which are below 2.50 appear to be in little extent showing that field trip to relevant places and project method of instruction in teaching the students are rejected by the respondents.

Major Findings of the Study

Based on the data collected and analyzed, the following factors were identified to be influencing the teaching of Basic Technology in the junior secondary schools.

1. It was found that the basic technology teachers with M.Sc certificate with the mean score of 2.30 are in little extent.
2. The use of workshop, basic technology textbooks, the use of laboratory, Hand tools and machines, and functionality of instructional materials are all in little extent.
3. The school has professional guidance counselor but the guidance counselors attention to students' personal social problems, provision of information relevant to the study of basic technology, do not exist
4. The guidance counselors do not work with the students to develop proper study habit.
5. Some of the teachers do not vary their teaching methods.
6. Also field trip to relevant places and the use of project method of instruction in teaching the students were hardly put into practice.

Description of the procedures used

A questionnaire containing 20 state items was developed as an instrument for collection of data for this study; it was administered on 6 teachers and 294 JSS III students from 3 selected secondary schools in Ebonyi Local Government Area of Ebonyi State. The data collected were critically analyzed using mean answer the questions.

Implication of the Study

From the findings of this study, it is clear that the secondary school in Ebonyi Local Government Area have guidance counselors but the guidance counselors do not give attention to students' personal social problem, provision of information relevant to the study of basic technology are not work with the students to develop proper study habit. When these situation is considered and



put into practice by the guidance counselors, teaching of basic technology will be very fruitful and the goals of skill education as stipulated in the National Policy on Education (NPE 1998) will be achieved at all levels.

Conclusion

From the findings so far, it could be deduced that most of the secondary school in Ebonyi Local Government Area of Ebonyi State have qualified basic technology teachers that handle the subjects, it was discovered that most schools in the area are not having enough equipment and facilities to make the teaching of the subject more interesting for the students.

Another area of this study which could have been a breakthrough for the teaching for the teaching of Basic Technology is the way guidance counselors go about their duty by not giving attention to students' personal social problems, providing information relevant to the study of basic technology and they do not work with the students to develop proper study habits. According to the findings of the study, the demonstration method could not do it alone, other methods like field trip and project method should also be applied.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. Government should pay proper attention in equipping secondary school workshops.
2. Appropriate instructional materials should be made available by the government for the teaching of Basic Technology.
3. The guidance counselors should be sanctioned by the school management when they fail to carry out their duties in giving attention to students' personal social problems, provision of information relevant to the study of basic technology etc.
4. Students should be taken out on field trip to relevant places from time to time also teachers should adopt project method of instruction in teaching the students.

Suggestion for Further Studies

The research is of the view that further studies should be carried out on the following related topics.

1. The influence of skill/ career guidance counseling on learning Technology Based Subjects.
2. Need for proper provision and Utilization of Current Instructional Materials in Teaching Basic technology.
3. Strategies for improving Students' Orientation and Choice of Technology Based Subjects.

References

Addulhai A. (2008). *Science Teaching in Nigeria*. Ibrin: Atoto.

- [1]. Ezeocha E. (1992). An Evaluation of Technical Education Programmes in Secondary schools in Akwa Ibom State. Unpublished PHD Thesis, Department of Vocational Teacher Education, University of Nigeria, Nsukka.
- [2]. Federal Republic of Nigeria (2004), National policy on Education. Lagos NERC Press.
- [3]. Nwachukwu E. C. (1995). Unpublished Handout Department of V.T.E (Industry Tech.) U.N.N.
- [4]. Ogwa C. E. (1991). *Fundamentals of Educational and Vocational Guidance*. Ebonyi State.
- [5]. University. Chaston Agency Ltd. Okafor F. C. (1991). *Nigeria Teacher Education. A Search for New Direction*. Enugu: Fourth.



Dr. Elisha N. Elom *et al*, International Journal of Advances in Agricultural Science and Technology,
Vol.4 Issue.9, September- 2017, pg. 49-58

ISSN: 2348-1358

Impact Factor: 6.057

- [6]. Dimension publishing Co. Ltd. Okorie J. U and Ezeji S. C (1998). *Elements of Guidance Vocational and Career Education*.
- [7]. Onitsha: Summer Publishers (Nig) Ltd. Okoro, O. M. (1993). *Principles and Methods in Vocational and Technical Education*.
- [8]. Nsukka: University Trust Publishers. Olaitan S. O. (1997). *Future of Vocational and Technical Education in Nigeria*: Indiana University Press.
- [9]. Olaitan S. O. (1996). *Vocational and Technical Education in Nigeria (Issues and Analysis)*. Onitsha: Noble Graphics Press.
- [10]. Osuala E.C. (1995). *Foundation of Vocational Education*. Agbani Enugu Nigeria: Cheston Books.