# AVAILABILITY OF WORKSHOP EQUIPMENT AND TOOLS FOR IMPLEMENTATION OF BASIC TECHNOLOGY IN SECONDARY SCHOOLS IN AWKA SOUTH LOCAL GOVERNMENT AREA, ANAMBRA STATE

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#### Abstract

The study investigated availability of workshop equipment and tools for the implementation of Basic Technology in secondary schools in Awka South Local Government Area, Anambra State. A descriptive survey design was adopted. The population of the study was 74 Basic Technology teachers in 18 government-owned junior secondary schools in the area. All the members of the population participated in the study. A structured questionnaire was developed by researchers and used to elicit information from respondents. The instrument was validated by experts and found fit for the study. Data collected were analysed using the mean. The mean of a four-point scale was put at 2.50. The study found among others, that equipment and tools available for the implementation of Basic Technology in secondary schools are building technology tools, mechanic tools, technical drawing tools, wood lathe and metal lathe; while those adequate for the implementation of Basic Technology in secondary schools are technical drawing tools, wood lathe and metal lathe. Others are not adequate. The study therefore recommended among others that, Government and proprietors of schools should always provide fund for the procurement of Basic Technology equipment; and field trip method of teaching should be employed and encouraged to be used by Basic Technology teachers where necessary so as to enable students to see physical equipment not available in workshop.

#### Introduction

Basic Technology, formerly known as Introductory Technology was structured to assist learners to develop interest in technology. The aim is that by the end of the junior secondary school, presently known as basic 9, technological appreciation would have been activated and sustained, and foundation laid for students' entrance into a vocation of their choice. This is in consonance with the statement in the National Curriculum for Junior Secondary Schools (2014). Furthermore, the national curriculum maintains that, the subject of Basic Technology is to be offered in junior

secondary schools so as to reduce widespread ignorance about technology, lay a firm foundation for national development and inspire an increase in skill acquisition.

Basic Technology is a subject that introduces students at the junior secondary level of education in Nigeria, to the fundamental tips in technology. The title Introductory technology as a subject, came with the introduction of the now defunct 6.3.3.4 system of education, (this means six years of primary education, three years of junior secondary education, another three years of senior secondary education and of course, four years of tertiary education). However, with the current 9.3.4 system of education, (this means nine years of basic education, three years of senior secondary and four years of the tertiary education), the title changed to Basic Technology. Noteworthy in the curriculum for the new system, is the subsuming or a technical of primary science and integrated science to form a formidable unity known as Basic science and Technology (Ogbuagu, Eyibe & Okoli, 2017). This synthesis helps to prepare a child adequately to undergo studies in the mainline science. The National Policy on Education (FRN, 2013) defines Basic Technology as the aspect of education which leads to acquisition of practical and applied skills as well as basic scientific knowledge. It is also a subject that deals with the fundamentals of engineering and technology.

In order to help lay a solid foundation for true national development, Basic Technology has been accorded a place in the school curriculum as a core subject like English and Mathematics. In the same vein, the environment for the teaching and learning of Basic Technology in secondary schools is expected to be rich in terms of equipment and facilities to stimulate the desirable skill acquisition. Available of workshop equipment is one of the means to ensure that the teaching and learning of Basic Technology is worthwhile. A workshop is a place where manual work is done (Fakomogbon, Morakinyo, Omiola & Ibrahim, 2012). According to Haruna (2018), workshop equipment and tools are the facilities used in the workshop to enhance practical activities.

Unfortunately, one of the factors affecting implementation of Basic Technology is non-availability of standard workshop, tools and equipment for teaching various concepts as well as conducting requisite practical activities in Basic Technology (Uwaifo & Edigin, 2011). Implementation means to bring theory into action. It is the process of bringing the theoretical ideas as encapsulated in the curriculum into practice through the efforts of the teachers and other stakeholders in education (Onyeme, 2019). Implementation of skills-based curriculum requires facilities. It is a fact that students need equipment and tools for a particular activity or purpose. Absence of these tools and equipment may hinder Basic Technology teachers to teach effectively and students not to be sound in practical activities which is one of the major objectives of including this subject in the junior secondary school curriculum in Nigeria.

Earlier studies have confirmed gaps in the implementation of Basic Technology. Okenjom, Ogar, Akoloh and Abidde (2016) revealed that there was inadequacy in instructional materials for teaching basic technology in junior secondary school in Cross River State and even when materials are made available for teaching the students, some teachers seem to lack experience in handling the equipment for teaching of practical class. In another study, Fakomogbon, et al (2012) assessed the facilities available for teaching Basic Technology in the Junior Secondary schools in Ilorin metropolis and revealed that only 9 Basic Technology workshops representing 21.4% had standard

workshops which are up to the space of a classroom, 22 Basic Technology workshops which is 52.4% had a place for workshop but the space is not up to a classroom. Only 4 Basic Technology workshops which is 9.4% had wood lathe and metal lathe machines. Majority of the Basic Technology school workshops sampled have Basic Technology tools such as Woodwork tools, Metalwork tools etc. It was also noticed that the tools available in all the workshops are not enough if it were to be in ratio 1:2 students. Similarly, Elom and Ogwa (2017) carried out a study on the factors influencing the teaching of Basic Technology in the secondary schools in Ebonyi Local government Area of Ebonyi State and found that the use of workshop, basic technology textbooks, and the use of laboratory, Hand tools and machines, and functionality of instructional materials are all in little extent.

It is against this backdrop that it is important to monitor the implementation of Basic Technology curriculum in the secondary schools to ascertain the progress being made. Of particular concern is whether workshop equipment and tools are available for this implementation. In Awka South Local Government Area, junior secondary schools are expected to be endowed with well-equipped workshops for the teaching and learning of Basic Technology. Whether this expectation is the reality on ground needs to be ascertained. The study therefore is poised to examine the availability of workshop equipment and tools for implementation of Basic Technology in secondary schools in Awka South Local Government Area, Anambra State.

#### **Statement of the Problem**

The major aim of Basic technology is to explore the fundamentals and develop vocational competencies among youths so that they can appreciate the technological world and contribute maximally to the nation's economic growth. Basic Technology curriculum provides that the teaching and learning of the subject should be both theoretical and practical in nature. As a skill oriented subject, whose major aim is to expose the learners to the rudiments of technology, it is very necessary that it should be taught with equipment and tools. This will enable the recipients to gain awareness, appreciation and orientation into technology that will enable them develop further or choose a trade.

For students to acquire skills, practice is essential in a well-equipped and managed workshop. A well-equipped workshop is an asset to the teacher, the students, the school and the community. As a place for practical work and study, the quality of instruction and learning is positively influenced by availability of well-equipped workshop. Unfortunately, observation has shown that many secondary schools lack workshop for the teaching and learning of Basic Technology. Where this workshop is available, there is no equipment and tools to make it what it should be. Based on this, there is a glaring need to investigate the availability of workshop equipment and tools for the teaching and learning of Basic Technology in secondary schools in Awka South Local Government Area, Anambra State.

## **Research Questions**

The following research questions will be answered in the study:

1. What are the workshop equipment and tools required for implementation of Basic Technology in secondary schools?

- 2. What required equipment and tools are available for implementation of Basic Technology in secondary schools?
- 3. How adequate are equipment and tools required for implementation of Basic Technology in secondary schools?

### Methodology

This study adopted a descriptive survey research design. The population of the study comprised all the 74 Basic Technology teachers in 18 government-owned junior secondary schools in Awka South LGA. A questionnaire titled 'Workshop Equipment and Tools for Basic Technology Survey' (WETBATS) was the instrument for data collection. The instrument was validated by three experts (two in Technical Education and one in Measurement and Evaluation). The instrument was administered by hand delivery by researchers. Data obtained from field study were analysed using the mean.

#### Results

 Table 1: Mean Ratings on Workshop Equipment and Tools Required for Implementation of Basic Technology (N=74)

S/N	ITEMS	HR	R	NR	X	Remark
1	Workshop building	65	9	-	2.88	Required
2	Woodwork tools	63	7	4	2.80	Required
3	Metal tools	59	11	4	2.74	Required
4	Elect/Elect tools	60	7	7	2.72	Required
5	Building tech tools	71	3	-	2.96	Required
6	Mechanic tools	54	7	13	2.55	Required
7	Welding tools	59	12	3	2.76	Required
8	Tech. Drawing tools	70	4	-	2.95	Required
9	Wood lathe	49	20	5	2.59	Required
10	Metal lathe	51	20	3	2.65	Required

Table 1 shows the mean ratings on workshop equipment and tools required for the implementation of Basic Technology in secondary schools. All the items were rated above the cut-off point of 2.00. This indicates that all the equipment and tools listed are required for the implementation of Basic Technology in secondary schools.

20

Metal lathe

S/N	ITEMS	AV	NA	X	Remark
11	Workshop building	33	41	1.45	Not Available
12	Woodwork tools	23	51	1.31	Not Available
13	Metal tools	11	63	1.15	Not Available
14	Elect/Elect tools	19	55	1.26	Not Available
15	Building tech tools	45	29	1.61	Available
16	Mechanic tools	39	35	1.53	Available
17	Welding tools	12	62	1.16	Not Available
18	Tech. Drawing tools	67	7	1.91	Available
19	Wood lathe	70	4	1.95	Available

Table 2: Mean Ratings on Availability of Workshop Equipment and Tools forImplementation of Basic Technology (N=74)

Table 2 shows the mean ratings on workshop equipment and tools available for the implementation of Basic Technology in secondary schools. Out of the ten required items, five were rated above the cut-off point of 1.50. These are items 15(1.61), 16(1.53), 18(1.91), 19(1.95) and 20(1.88). This indicates that these equipment and tools are available for the implementation of Basic Technology in secondary schools. Other items namely, 11(1.45), 12(1.31), 13(1.15), 14(1.26) and 17(1.16) were rated below the cut-off point. This indicates that the items were not available.

65

9

1.88

Available

 Table 3: Mean Ratings on Adequacy of Workshop Equipment and Tools Required for

 Implementation of Basic Technology (N=74)

S/N	ITEMS	AD	NAD	X	Remark
21	Workshop building	33	41	1.45	Not Adequate
22	Woodwork tools	20	54	1.27	Not Adequate
23	Metal tools	10	64	1.14	Not Adequate
24	Elect/Elect tools	10	64	1.14	Not Adequate
25	Building tech tools	29	45	1.39	Not Adequate
26	Mechanic tools	34	40	1.46	Not Adequate
27	Welding tools	8	66	1.11	Not Adequate
28	Tech. Drawing tools	69	5	1.93	Adequate
29	Wood lathe	71	3	1.96	Adequate

30Metal lathe6681.89Adequate

Table 3 shows the mean ratings on workshop equipment and tools adequate for the implementation of Basic Technology in secondary schools. Out of the ten required items, three were rated above the cut-off point of 1.50. These are items 28(1.93), 29(1.96) and 30(1.89). This indicates that these equipment and tools are adequate for the implementation of Basic Technology in secondary schools. Other items namely, 21(1.45), 22(1.27), 23(1.14), 24(1.14), 25(1.39), 26(1.46) and 27(1.11) were rated below the cut-off point. This indicates that the items were not adequate.

# **Discussion of Findings**

The study investigated the availability of workshop equipment and tools for implementation of Basic Technology in secondary schools in Awka South Local Government Area of Anambra State. Guided by four specific objectives, the study tried to find out workshop equipment and tools required for implementation of Basic Technology; determine the extent of availability and adequacy of these workshop equipment and tools; and measures for improving availability of these facilities.

In the first objective, the study found the following as equipment and tools required for Basic Technology in secondary schools: workshop building, woodwork tools, metal tools, elect/elect tools, building tech tools, mechanic tools, welding tools, technical drawing tools, wood lathe and metal lathe. Basic Technology practical exercises are carried out in the workshop building which houses all the other equipment and tools for students use. The required equipment and tools agreed with Elom and Ogwa (2017) who carried out a study on the factors influencing the teaching of Basic Technology in the secondary schools and found that the use of workshop, basic technology hand tools and machines, and functionality of instructional materials are all important for effective learning of Basic Technology.

In the second objective, the study examined the availability of these equipment and tools. The study found that the only equipment and tools available for the implementation of Basic Technology in secondary schools in the area are building tech tools, mechanic tools, technical drawing tools, wood lathe and metal lathe. Workshop building which could have provided an environment for practice is conspicuously absent. This suggest that students are denied the practical aspect of Basic Technology.

The findings agreed with Fakomogbon, Morakinyo, Omiola and Ibrahim (2012) who assessed the facilities available for teaching Basic Technology subject in the Junior Secondary schools in Ilorin metropolis and found most of them unavailable. The perennial problem of dearth facilities across secondary schools in Nigeria is a serious negation of the goal of Basic Technology which is to equip young ones with the skills needed for self-reliance.

In the third objective, the study found that equipment and tools adequate for the implementation of Basic Technology in secondary schools are technical drawing tools, wood lathe and metal lathe. Others are not adequate. Compared to the required equipment and tools, it shows that most equipment and tools required are not adequate for the implementation of Basic Technology.

The inadequacy of equipment and tools for the implementation of technical education programme generally and Basic Technology in particular has become a perennial problem in Nigeria. The findings of the study agreed with Fakomogbon, Morakinyo, Omiola and Ibrahim (2012). In their assessment of the facilities available for teaching Basic Technology subject in the Junior Secondary schools in Ilorin metropolis, they found that only 9 Basic Technology workshops representing 21.4% had standard workshops which are up to the space of a classroom, 22 Basic Technology workshops which is 52.4% had a place for workshop but the space is not up to a classroom. Only 4 Basic Technology workshops which is 9.4% had wood lathe and metal lathe machines. It was also noticed that the tools available in all the workshops are not enough.

#### Conclusion

Equipment and tools are the basic requirement for the effective implementation of technical-based programme like Basic Technology. Equipment and tools required for the implementation of Basic Technology include workshop building, woodwork tools, metal tools, elect/elect tools, building tech tools, mechanic tools, welding tools, technical drawing tools, wood lathe and metal lathe. Most of these equipment and tools are not available. Available ones however are not adequate for the implementation of Basic Technology in secondary schools. There is the need therefore for the procurement of equipment and tools in the right size in order to achieve the goal of Basic Technology in secondary schools.

#### Recommendations

In view of the findings and implications of the findings, the following are recommended:

- 1. Government and proprietors of schools should always provide fund for the procurement of Basic Technology equipment;
- 2. Field trip technique of teaching should be employed by Basic Technology teachers where necessary so as to enable students to have opportunity to sight relevant physical equipment not available in the school workshop;
- 3. Standard and functional workshops should be built in schools. To this end, government through relevant agencies should carry out inspectorate roles to ensure that standards are met in terms of adequacy of equipment and tools for the implementation of Basic Technology.
- 4. Alternative steady power supplies should be made available for the school workshops.

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