Assessment of Instructional Resources for Teaching Basic Technology in Junior Secondary Schools in Ogbomoso, Nigeria

L. A. Olarinde[1, *], M. A. Fakomogbon[1], A. Olabisi[2] and I. Adetunde[2]

[1,*] University of Ilorin, Ilorin, Nigeria;

[2]Tubman University, Harper Maryland County, Liberia

ABSTRACT

This study assessed instructional resources for teaching Basic Technology in Junior Secondary Schools in Ogbomoso, Nigeria. Specifically, the study assessed the available non- human resources (workshops, hand tools, machines, audio-visuals and visuals) that are used for teaching Basic Technology. The researchers also made attempt to find out the functionality of the available resources, it's frequency of use and their adequacy to the recommendation of NERDC (2007). The research sample consisted all the 75 junior secondary schools of both private and public schools in Ogbomoso (Ogbomoso South and North, Local Government Areas). The instrument used was a researcher-designed questionnaire named 'Availability and utilization of instructional resources in Teaching Basic Technology consisting three (3) sections (A, B, & C). The questionnaire was administered, while frequency count and percentages were used as statistical method to answer research questions. The result of the analysis was as follows: 39 (52.0%) workshops, 60 (5.3%) machines, 310 (9.8%) audio-visuals, 1,756 (15.6%) hand tools and 1,422 (63.2%) visuals were available in all the sampled schools in Ogbomoso. The data on functionality revealed that 5.2% - 26.7% of the available resources were functioning which means that the practical aspects of the subject were thoroughly taken care of. The findings also showed that only three (3) out of the twenty-six (26) items used, met the recommendation of the NERDC 2007. Finally, the analyzed results showed that from all the available resources; 26.7%

of workshops, 32.3% hand tools, 5% machines, 16.8% audio-visuals and 74% visuals were frequently used in the sampled schools.

Keywords: Instructional Resources, Teaching Basic Technology, Juniour Secondary Schools, Ogbomoso South Local Government Areas, Ogbomoso North Local Government Areas.

INTRODUCTION

Nature has given every nation some natural resources and the extent to which each nation or country utilizes the gift depends on the nation's mastery of technology. The caveman discovered how to make and to use tools, developed a logical sequence for activities and evolved processes that added value to his life. (Akuru et al, 1999). The total use of knowledge, skills, tools and materials to cater for essential needs and solve problems constitute what could be described as 'technology. Technology plays a functional role in wealth creation, improvement of the quality of life, real economic growth and transformation in any society. Also, it has power to transform the way we collect, store, process, communicate for information learning and teaching.

Ogbonna et al, 2003) asserted that, technology began from the earliest existence of man on earth. However, as the early man became more aware of his existence, he found himself in contact with nature and its abundant resources such as land, water, animals, rocks, among others. Man also recognized some of his basic needs such as food, shelter and clothing and began to seek ways of satisfying them. Issa (2004) defined technology as the application of science to solve problems and for the development of mankind.

No country can attain greatness unless she directs her efforts in technology to develop the resources in the nation; that is technology begins from the society and ends with it. Technology is aimed at exploiting the existing scientific and other knowledge for useful ends. Technology is developed and not transferred as many people think but it is said to be developed when knowledge, skills and

procedures for making, using and doing things are improved (Tukur, 1999). Some years ago, there were no houses and cars, people lived in caves and used stone weapons to kill animals for food. Early man found it very difficult to travel and whenever it is necessary to do so, it is done by trekking or by using animals such as donkeys, camels among others. Most farmers in Nigeria then cultivate the land, using hands and other crude implements which involve a lot of manual labour. (Ogbonna, et al 2003)

All these happened at the time when people were technological primitive. This was the time when human beings had not yet discovered how to make life easier for themselves by using machine. Today, technology is gradually developed and its impacts can be felt in many spheres of life. For instance, different types of luxury houses are now in vogue. These range from bungalows to multi-storey buildings which are usually well furnished. Also, modern farmers can prepare large areas of land for farming using tractors and consequently produce food in abundance than traditional farmers. More so, in terms of transportation, people can travel by; road, air, rail or sea. It is also possible to send messages through; handset, telephone, telegraph, radio, television and computer, these also are applicable in the field of education. This is to affirm that technology has always been a major means for creating new physical and human environments. (Akuru, et al; 1999).

Different people and scholars have attempted to define the term “technology”, such include (Heinich et al 1982), they viewed it as both a process and product. As a process, it is the systematic application or scientific of the organized knowledge to practical task of production of goods or services. As a product, it means the hardware and software, which result from the application of technological process. In the same vein, Rowntree (1990) defined technology as a step by step procedure, a systematic treatment of an act to facilitate the process of production. Technology is regarded as a way of doing things leading to the development of processes and devices which is indispensable to the stable enhancement of the quality of life of human being through the application of knowledge derived from systematic investigation of natural forces and materials. (National Policy on Science and Technology, 1996).

Ezeh (1995) viewed technology as multifaceted phenomenon in materials created and advanced by man to be freed from enslavement by nature. It involves the academic and practical study of materials with the ultimate intension of applying them to the service of mankind. Oxford Advanced Learners' Dictionary sixth edition (2000) defines technology as scientific knowledge used in practical ways in industries for designing new machines. Microsoft Encarta Dictionary (2002) also defines it as application of tools and methods of applying technical knowledge to practical task.

Anyabolu, Bamiro, Elekwa, Okolie, Onyedima and Okorie (2003) defined technology as cultural traditions developed in human communities for dealing with physical and biological environment. However, these cultural traditions referred to bodies of knowledge, skills and procedures for making, using and doing things. This is to say that, technology involves the methods and processes by which people produce and process what they eat, drink and wear. Bature (2003) defined technology as a process undertaken in all cultures which includes the systematic application of organized knowledge, tools and materials for the extension of human environmental challenges.

From the above definitions, technology can be defined as, the application of acquired and tested knowledge about the universe for the improvement of human life. It is the method and process developed by people to enable them provide for the needs of the society such as food, shelter, clothing transportation, communication, good health, education and security. This means that technology is a process (method) and product (material) which makes life easy and stress free. It makes our work easier, faster neater, more accurate and more reliable.

In addition to this, technology leads to economic development of the community where it is used and can be applied to all areas of human life such as business, politics, social, religion, education, among others, (Elekwa, 2009). As a result of the importance of technology, Nigeria as a nation pronounced the inclusion of pre-vocational studies (Basic Technology) in the junior secondary school curriculum (FRN,2004).

Information technology is also to be incorporated in various aspect of human endeavour such as banking, commerce, education among others. The Federal Government of Nigeria having realized that the level of technology of a nation. Determines the level of advancement and development of such a nation. This made her approved the teaching of technological related subjects in all the Junior secondary schools in Nigeria and named it Introductory Technology now Basic Technology.

According to the National Policy on Education FRN (2004), it is on record that students who completed junior secondary school can stream into:

(a) the senior secondary school;

(b) the technical college;

(c) an out of school vocational training centres, or

(d) an apprenticeship Scheme (P 31)

The Streaming shall be based on the result of the test to determine academic ability, aptitude and vocational interest and as much as possible to achieve a transition ratio; 60:20:10:10 accordingly;

the senior secondary school	60%
the technical college	20%
the vocational training	10%
the apprenticeship scheme	10% (FRN, 2004. P. 19)

It can be deduced from the above plan that it's a commendable innovation and part of the ways to make the youth to be technologically literate only that its implementation is yet to be manifested. This can be as a result of variance and wide gap that exist between the planning and implementation of educational policies in Nigeria, which affect the effective teaching of Basic Technology in the Junior secondary schools of the country. Following the decision of the Federal Government to introduce the 9-year Basic Education programme and the need to attain the Millennium Development Goals (MDGs) by 2015 and the criticality of getting National Economic Empowerment and Development Strategies (NEEDS) i.e value re-orientation, poverty eradication, job creation, wealth generation and use It is

therefore, imperative that the existing curriculum for primary and junior secondary schools should be reviewed, re-structured and re-aligned to fit into a 9-year Basic Education programme of the National Educational Research Development council (NERDC,2007).

The National Council on Education (NCE) also approved a new curriculum structure, namely: Lower Basic Education Curriculum (primaries. 1-3), Middle Basic Education Curriculum (primaries 4-6) and Upper Basic Education Curriculum (JSS1-3) with the subjects listed. As a result of this revised curriculum that was based on a 9-year Basic Education, the subject title has changed from "Introductory Technology "to Basic Technology". The subject is borne out of desire of educationists in Nigeria to provide education that will fit into the culture and development trend of the nation. This kind will prepare students towards acquiring manipulative skills for effective participation in nation building by:

(i) inculcation of technology literacy that is basic understanding of and capability in technology,

(ii) exposure of students to the world of work to match their talent and interest for wise vocational choice, and

(iii) inculcation of positive attitude towards work as a source of human identity, livelihood and power.

Basic Technology deals with the fundamental of engineering and technology which is to be taught as an integration of Technical Drawing, Building Construction, Woodwork, Metal Work, Electrical and Electronics, Automobile Mechanic , Food Technology and Computer Education (Friday, 2008). The inclusion of Basic Technology/Introductory Technology in the school curriculum calls for a well-planned curriculum and NERDC (2004) suggested some useful and relevant instructional materials/resources to prevent the teacher from wasting much time in trying to explain concept in abstract. Therefore, the place of instructional resources in successful implementation of curriculum can not be over-emphasized as a channel through which information or messages can be disseminated to learners.

Yusuf (1999) defined instructional media as different forms of information carriers which are used to record, store, preserve, transmit or retrieve information(s) for the purpose of teaching and learning. They are used by the teachers to present and illustrate teaching points while students use them to ensure maximum learning. They can be classified as projected and non-projected, print or non-print, audio, visual, or audiovisual etc.

Abolade (1997) stated that instructional resources are human and non-human materials supports or aids that a teacher uses to pass information to the learners in the classroom. Apart from its ability to enhance positive attitude of learners towards learning, it also helps them in making use of their various functioning sense organs to the maximum. According to Onwuakpa and Nweke (2000) as quoted by Nneji (2003), a school system has about five different resources; namely

i. Human Resources: are various individuals who as a result of their experiences, training or expertise in their various fields of endeavour or professions are considered knowledgeable to be useful and is willing to make available some needed information as regards the effective teaching and learning of the subject i.e Basic technology. Examples are; teachers (instructors), technicians, technologists, workshop or laboratory attendants, operators etc. Non-Human Resources are the facilities and materials used in learning environment which is the focus of this research;

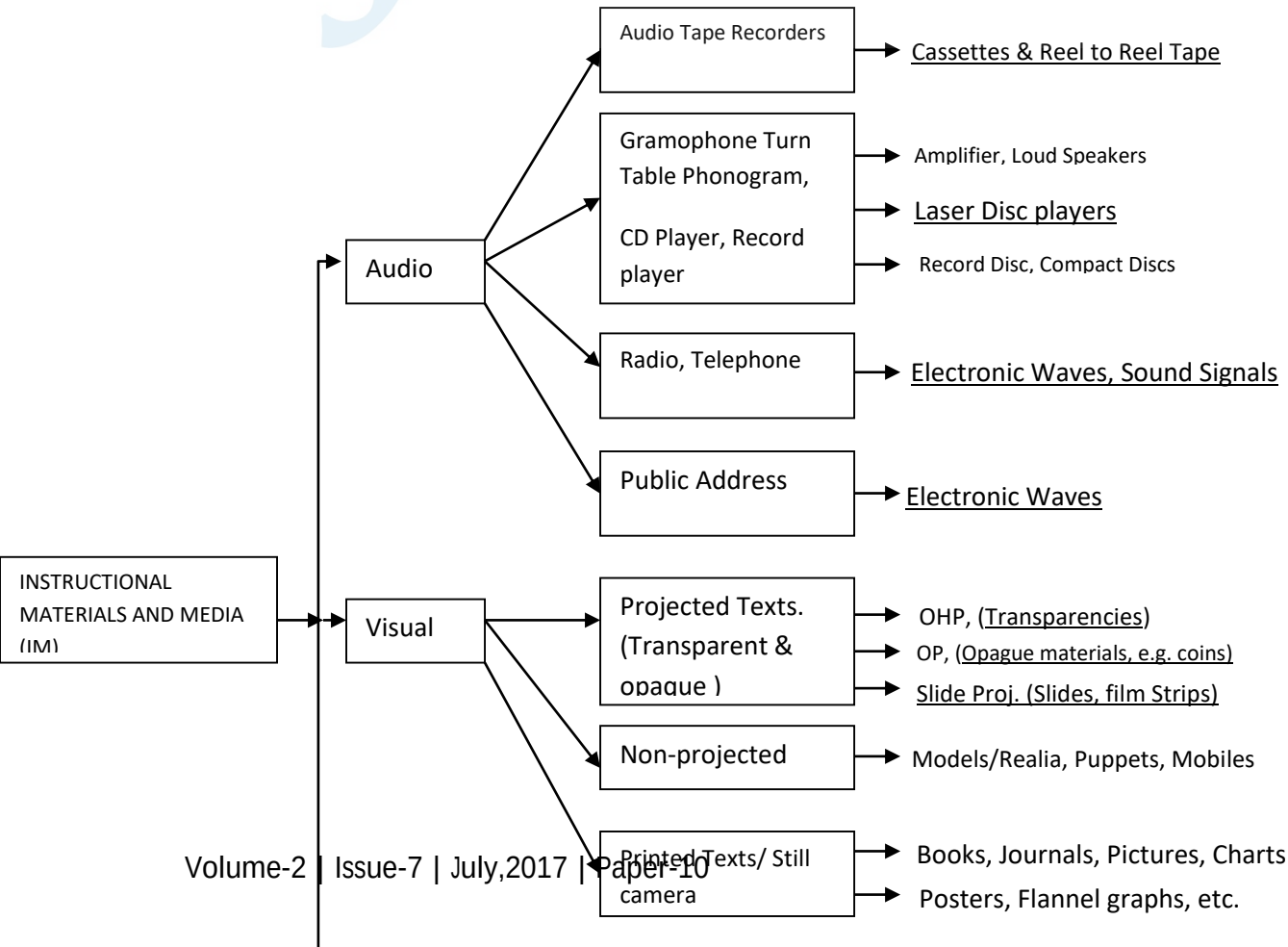
ii. Facilities or Physical resources: are the various infrastructure that are used for effective teaching and learning in its environment e.g buildings, workshops, still pictures, motion pictures, tools, machines, appliances, laboratory, darkroom e.t.c.

iii. Material Resources: are the products of technology that can be used to facilitate the teaching and learning of Basic Technology in school e.g. Audio, Visual and Audio Visual materials.

iv. Time Resources: These include; school calendar and time table.

v. Institutional Resources: are existing in various forms which manifest in; religious set-up, economic, political arena, social cultural centres, markets, industries, banks water cooperation etc.

Also, Olumorin (2009) classified instructional materials/ media as audio, visual and audio-visual as can be seen in figure 1.



Olumorin, (2010). EDT. 660 Mimeograph (Adapted)
NOTE: Software are underlined

Figure 1: Taxonomy of Instructional Materials/Media Hardware and Software

Fakomogbon (1997), worked on development of captioned video tape instructional package in Introductory Technology for hearing impaired students and his findings revealed that more facilities and equipment are needed for effective teaching and learning. Abolade (2007) conducted a study on teaching and learning of chemistry in secondary schools in Kwara central Senatorial district. Ogunyemi (2004), studied infrastructures for effective teaching of Introductory Technology in Nigeria Junior Secondary schools in Lagos State. From the aforementioned studies, their findings revealed that facilities and infrastructures were in short supply.

Aleburu, (2003) conducted a study on enhancing effective implementation of technology education in a democratic Nigerian education system. Idris, (2006) worked on assessment of constraints affecting effective workshop management in tertiary institutions. Fajemirokun, (2003) also investigated

curriculum innovation for sustainable technology education in Nigeria. The findings from these independent studies showed that there were:

(a) lack of facilities for teaching and learning on the various levels of our educational system,

(b) lack of basic infrastructures like; building spaces and workshop

(c) lack of proper planning and funding during the implementation of the programme, and

(d) over- crowded classes by the students which also hinder the effective implementation of technology education.

Also these studies examined the influence of teaching strategies on technology related subjects and the assessment of facilities for teaching other subjects but not Basic Technology. This research therefore, is to assess the availability, functionality, adequacy and frequency of use of the instructional resources for teaching Basic Technology in Junior Secondary Schools in Ogbomoso, Oyo state, Nigeria.

The main purpose of this study was to assess the instructional resources for teaching and learning Basic Technology in the Junior Secondary Schools in Ogbomoso, Oyo State of Nigeria. Specifically the research:

1. identified the instructional resources available for teaching Basic Technology in Junior Secondary Schools, in Ogbomoso,
2. determined the functionality of the available instructional resources,
3. ascertained the adequacy of the available instructional resources for teaching Basic Technology according to the standard set by NERDC 2007; and
4. found out the frequency of use of the available instructional resources.

Objectives and Contents of the Junior Secondary Schools Basic Technology Curriculum

Basic Technology can be defined as an essential skill, knowledge or method applied to a particular subject or an activity. Jimoh, Amao, olasehinde and Musa (2003) as cited by Issa (2004) defined technology as the product of science, They see it as the application of scientific laws and principles to satisfy human needs. Salami (1997) opined that technology is the practical application of scientific knowledge which serves as the fuel of engineering. It is the fruit of applied science, the concrete expression of research done in laboratory to meet human needs.

The word technology is derived from the Greek word "techne" meaning art of skill and "logia" meaning science or study (Adegboye, 2000). UNESCO (1998) defines technology as:

> "…the know-how and creative processes that may assist people to utilize tools, resources and systems to solve problems and to enhance control over the natural and made environment in an endeavour to improve the human condition." P 3

Also, Bamiro et al (2007) define technology as the methods and processes by which people produce and process what they eat, drink, wear and provide shelter for themselves and communicate with one another. Therefore, technology refers to the ways by which people use their inventions and discoveries to satisfy their needs and desires which involves practical engagement i.e. the act of doing. As the subject name implies, basic technology reflects the basic nature of technology which are knowledge, skill, creativity and attitude. It serves as a basic stepping stone to the study of specific technical or vocational subject and eventually makes a career out of it. Basic Technology Curriculum is designed for a minimum use of expensive equipment that makes teaching and learning to be facilitated by the use of real life experiences through industrial visit, use of information and communication technology (ICT), instructional materials and audio-visual aids.

Agbamu (1996) believed that as a nation, the level of development would be determined by the recognition granted to the teaching of science and technology. That means, if a nation takes active steps to promote these and at various levels of her education, the product will lead to the development of her own technology which can take her to the higher standard. Effective technology programs

encourage students to be productive, innovative and enterprising. This involves generating ideas and taking action as well as developing technique and products that satisfy human needs.

However, the subject has been carefully structured into a teaching sequence which is hoped to be most effective. The subject cannot be taught without equipment because it is practically oriented. The theory is minimal but largely consists of simple explanation or description of how certain simple results are to be obtained with tools and equipment. (NERDC, 2007).

The Federal Government on realizing the significant role that Basic Technology play in the industrialization of the country decided to introduce it into the school system and make it a core pre-vocational subject at the Junior Secondary School level. Globally, Basic Technology has been accepted as part of general system of education but called different names in different countries. While UNESCO calls it "General Technical Education", the United Kingdom calls it "Handicrafts" and Canada calls it "Industrial Art" Others call it names like "Elementary Technology", "Basic Technical Education" etc (Olorunselu, 1990).

Putting the above fact into consideration, Basic Technology as one of the core subjects offered at the Junior secondary school level and as a practical oriented subject plays significant role in the development of the nation. It is hoped that the possessor of such relevant education will be able to uplift the nation up technologically. According to Jekayinfa & Kolawole (2005), "the singular purpose of education is to produce a useful citizen" which Basic Technology is one of such subjects that is geared towards the acquisition of scientific knowledge and technological skills, especially practical skills needed for the country's industrialization. This gave birth to a new system to replace the old 6-3-3-4 system. The 9-3-4 basic educational system became Nigeria's response to the prevailing world order, which placed tremendous emphasis on technological excellence.

The systems also emphasize that teaching and learning processes should be directed towards the achievement of the National educational goals by;

(i) Inculcation of technological literacy, that is technology,

(ii) exposure of students to the world of work, to match their talents and interests for wise vocational choice, and

(iii) inculcation of positive attitudes towards work as a source of human identity, livelihood and power. (NERDC 2007 p iv).

The contents under the theme are made to reflect the basic nature of technology, that is knowledge, skill, creativity and attitude and the students assessment should be based on these elements. Also, the curriculum is designed for minimum use of expensive equipment. Teaching and learning are therefore to be facilitated by the use of real life experiences through industrial visits, use of information and communication technology (ICT), instructional materials and other audio-visual aids. A minimum number of four (4) periods of forty (40) minutes per week are to be assigned on the time- table for the subject and the implement will depend on availability of qualified teachers, equipment, teaching materials and opportunities for excursion. (NERDC, 2007. PP. IV-V). Some of the recommended instructional resources are ; Pictures, Charts, Realia, Drawing instruments, Hand tools, Capacitors, Resistors, Transistor, Integrated circuits, Machine parts, Models, Electrical appliances, Audio – visuals, Machine, Radio, Tapes among others. (NERDC, 2007, Pp. 1-36)

Nigeria as a nation, aware of the importance of technology to the national development, introduced the teaching of basic technology as a subject at the Junior Secondary School as a means of nurturing the development of technology in the country. In order to reduce ignorance about technology and help to lay a solid foundation for the national development, the subject, Basic Technology goals and objectives include;

- to provide pre-vocational orientation for future training in technology,
- to provide basic technology literacy for every day living ,
- to stimulate creativity,
- preparing the learners for entry into employment and advancement in his chosen career,
- meet the manpower needs of the society,

- Increase the options available to each students, and
- to enable the learners to wisely select a career. (FRN, 2004 pp 30-35)

In order to attain the above stated objectives, Basic Technology includes pre-vocational themes such as:

- You and Technology
- Safety
- Materials and Processing
- Drawing Practice
- Tools and Machines
- Applied Electricity and Electronics
- Energy and Power
- Maintenance,
- Building.

Edigan (1994) as cited in Issa (2004) regarded the inclusion of pre-vocational subjects in the Junior Secondary School curriculum as the greatest assets of the 9-3-4 system of curriculum. Olorunselu (1990) and Issa (2004) quoting UNESCO (1981) outlined the following objectives for teaching Basic Technology:

(1) Adjustment of education to industrial and social needs: Basic technology should provide young people the opportunity to learn about Technology and its products through exploration of materials, tools, technique and processes of production. It should also serves the needs of the society by producing well-informed, well adjusted and cohesive citizenry.

(2) Change of attitude, the development of creative and imaginative approach: Basic technology should encourage children to develop interest in technology and appreciate the dignity of labour as well as the spirit of teamwork. Furthermore, it should encourage the development in children the creative and imaginative attitude towards solving the problems posed by their environment.

(3) Requirement for further vocational and Technical education: Basic technology should provide the basic pre-vocational foundation for further development of employable skills and training in technical and vocational education.

(4) Improvement of learning process: Basic technology with well balanced theoretical and practical activities should promote development of valuable skills in the repair and maintenance of equipment needed for everyday living.

Hence, it is obvious that Basic technology which is a core subject in the 9-3-4- system of education, involves the academic and practical study of materials and sources of energy with the sole purpose of providing a broad based skills development approaches to practical knowledge. These skills acquired are used in the service of man thereby providing for his daily needs and making his environment more conducive for his continual survival.

Factors Influencing Students' Performance in Technology related Subject

Learning of technological subjects can be influenced by so many factors either positively or negatively among which are: learners' achievement levels, Gender, availability and Utilization of instructional resources, environmental factor, facilities and materials.

Previous performance of learners as a prediction of future achievement has been examined by many researchers such as Marjoribank (1978), Donald, (1983), Yusuf, (1991), Amuda (2003) and Issa, (2004) whose work is on picture which revealed that the ability level of the learner whether low, medium or high, influences the extent to which picture could produce positive or negative impact on the learner (Yusuf, 1991). Donald (1983) in his research on good and poor readers discovered that poor readers were affected while good readers improved tremendously. In this finding, he discovered significant difference due to the illustrations on the reading text. Thus illustrations, when used for instruction, can be influenced by previous ability level of the learner.

Similarly, Bloom, (1982) as cited by Issa (2004) using the concept of Mastery Learning at the University of Chicago sought to find ways by which slow learners (low achievers) could be given an extra time and help, to raise their achievement level in mathematics based on their findings. In educational laboratories and classrooms, series of researches carried out became evident that a large portion of slow learner can learn to the same level of achievement as the fast learners (high achievers) and appear to learn equally complex abstract ideas. They could apply ideas to new problems and retain ideas equally well in spite of the fact that they learn with more time and help. Furthermore, their interest and attitudes towards the subject in which they obtained the achievement criterion become as positive as those of fast learners. Hence, a situation where students with low achievement level either in technology or mathematics could be brought to the same high level of achievement as those of the fast learners, thus mastery of learning is said to have taken place (Amuda-Okuku, 2003).

Finally, learning environment is another factor that influences students' achievement in technological subjects of Nigeria secondary schools. According to Marjoribank (1978), family environment is a significant influence in the development of child's cognitive ability and effective characteristics. This implies that interest of parents is related to their children's interest in technology.

Gender can be referred to the condition of being male or female, boy or girl, man or woman. This is the two classes of human beings all over the world i.e. biological groups. So when we talk of gender, we are referring to man or woman as a social group. (Tunde-Awe, 2003). An area of educational research that has generated conflict and non-conclusive finding is sex factor on students' performance (Yusuf, 1997). It is accepted that literacy rates are higher among females than males in every part of the world (Banks, 1998). Research findings debunked the ideas of sex as had significant influence on learner's performance.

Kahle and Meece (1994) reported that intervention of programmes have been mounted in several parts of the world to engage girls and women more in science and science related careers. Most intervention programmes were carried out with the objectives of:

(i) Improving girls' confidence and self perceptions of their ability to do science,

(ii) Demystifying science; and

(iii) Implementing teaching strategies that actively involved girls' in science lessons and developing girls' skills of doing science.

Kahle and Meece, (1994) added that the intervention indicate that the gender gap is closing in Mathematics achievement while reverse is the case with science achievement. Jegede (1996) reported that in USA, women constitute only sixteen percent (16%) of all employed scientists and engineers while thirty percent (30%) and twenty-one percent (21%) of the degree awarded at the Bachelors and Doctorate Degree in Natural Science and Engineering are for male and female respectively. In Nigeria, the picture is said to be gloomier and abysmal.

Biologically, some factors within the learner and cultural variables could account for differences in abilities of boys and girls or man and woman. In the traditional African societies and many other societies in the world, (gender) determines the role to be ascribed to either male or female. African men are expected to be aggressive, domineering, adventurous, restless and so on while women are expected to be docile, reserved, subservient and dependent. The consequences of this societal or cultural expectation is that a specific learning ability is less marked out in female than male. For example, Lovell (1958) as cited in Issa (2004) stated that the practical mechanical-spatial-physical abilities are well marked in boys than in girls. However, Bank (1988) in an extensive review of research works submitted that boys generally achieved higher scores than girls in Mathematics and Physical sciences. Boys in most countries outperform girls in Biology, but girls in Wales, England and New Zealand achieve higher scores than boys in Literature and French as a foreign language.

Thomsone (1975) concluded that in reading, attainments have been found to be lower for boys than girls.

Science Teacher Association of Nigeria, STAN (1992) reported that less than ten percent of the total enrolment in Nigerian University for Science and Technology based disciplines are female. Only six percent of those who enrolled in West African Examinations Certificate and Senior School Certificate Examinations (NECO) are girls. Emerging data on differential gender performance in science seem to indicate that elementary students do not exhibit any gender differences in achievements and attitudes toward science. (Shaw and Doan 1992) that gender differences increase from age nine and thirteen (Kahle and Meece, 1994).

Lawal (1991) also, carried out a diagnostic study of reading problem of Nigeria primary school pupils in Oyo town in Oyo State. His studies also revealed that there was no significant difference in the reading problem of male and female. Allele-Williams (1987) discovered that there is no biological proof that women are inferior to men in intellectual ability. She said mans' numerical strength in the science and technology is not a proof of superiority, rather it is a reflection of mans' dominance in institutionalizing socio-cultural values, which has accrued in education. Akande (1997), on a television interview said that if equal opportunities are continually given to girls, we would have the best technologists among them. Amara (1987) during Commonwealth African Regional Workshop organized on genetics stereotyping on Science, Technology and Mathematics (STM) education; identified the causes of low participation of women in the science and technology as;

(a) teachers' creation of impression for female students that it is difficult and girls cannot cope with,

(b) early marriage that will not allow girls to stay longer in schools to read those courses; and

(c) socio-cultural factors regarding society and religion that restrict women activities to house caring, children rearing etc.

From the workshop some strategies were formulated to encourage and extend the access of girls to science and technology at all levels, some of which are;

(i) Science and Technology oriented activities, which will improve the life of the rural women education programme.

(ii) Formation of Nigerian Association of Women Scientists (NAWS).

Anderman and Young (1994) indicated from their studies that girls report revealed less confidence than boys in their ability to perform well on science and technology tasks in the classroom. In their examination at individual and classroom level differences on the general and science specific motivation and cognition scales as well as the end-of-year grades in applied sciences girls were found to be more learning focused than boys and less ability focused. Boys are more self-efficacious than girls and get lower end-of-year grades in the subject than girls.

Roles of Resources in Teaching and Learning Basic Technology

According to the Oxford Advanced Learner's Dictionary (2005), resources are something that can be used to help achieve an aim, especially a book, equipment, among others, that provides information for teachers and students. These are all information channel that is processed through the use of devices that could assist learners in seeing, hearing, feeling and in becoming aware and alive with the information being communicated to them. Teaching and learning involve a process of passing and receiving information in order to facilitate a change in behaviour. Therefore, resources (media) in education parlance means the channels, tools, materials and equipment that are used by the teacher and the students in achieving the educational goals.

Obianwu and Azubike (1994) generalized resources as the various method used for disseminating information which are: tools, teachers and all types of projected and non-projected aids. They further emphasized that all devices; human, machine and materials that are utilized by educators to present a tool, body of information in teaching and learning process are called resources. Ajelabi (2000) saw resources as channels of disseminating messages, information, ideas and knowledge. Also, it can be a

collection of materials and equipment that can aid effective communication. He clarified further that when all these devices, equipment and materials are used for teaching and learning purpose; then the name educational resources or instructional resources is used to describe them. Finally, he concluded that:

Educational resources are broad range of information carrying resources that constitute an integral component of classroom teaching and learning that are utilized in an instructional process with the hope of facilitating effective and efficient communication in teaching and learning process (p.46)

We can deduce from these definitions therefore, that what qualifies resources for being tagged instructional or educational is when they are used for communication and dissemination of information in a teaching and learning environment.

Another thing to note here is that, instructional resources are learners' centered. That is from the planning to acquiring and utilizing of the resources, learner is the main focus. While commenting on the domain of Educational Technology, Onasanya and Adegbija (2007) reiterated that, the major aim of Educational Technology is to help the learners to achieve a systematic solution to learning problems. They argued that the existence of learning resources and evaluation of production and utilization of instructional resources will be null and void without the inclusion of the learners whom they view as being unavoidably significant in all aspects of Educational Technology.

Ajelabi, (2000) was of the same view when he clarified some misconceptions of Educational media. He disagreed with the notion of referring to instructional media as 'apparatus' or teaching aid and emphasized that while the emphasis of teaching aid is teachers-centered, teacher-managed and teacher-controlled, while instructional resources is learner-centered. He then submitted that the design, preparation, production and utilization of these instructional resources are aimed at facilitating learning not teaching alone.

Furthermore, resources are sources of support for learning, including support system, instructional materials and environment. It can include whatever is available to help individuals learn and perform

competently. According to Seels and Richey, (1994), human resources are support staff and subject matter experts which serve as resource for teachers and learners. These people have advanced knowledge and experiences dealing with specialized learning resources for example Teachers, Technicians, Technologists, Workshop or Laboratory Attendants, Operators, among others Examples of instructional resources that teachers often used are: Textbooks, Chalkboards, Posters, Charts, Pictures, Computers, Flannels Graphs, Projectors, Radios, Televisions, audio visual , Tapes, Workshops, Drawing Room, Transparencies, Machines, Hand Tools, Photographs, Models among others. When these are properly used, it saves the problem of over population and overcrowding in the classroom. All these are referred to as non-human resources. Gagne (1984) classified media(resources) into four; printed media, graphics, photographic and electronics. Likewise, Onasanya and Adegbija 2007, agreed with this by classifying media (resources) into printed, projected (electronic) and non-projected media. When a medium of learning experience is well designed, produced and validated, it becomes a valuable resource which has the flexibility of serving a single learner as well as a sizeable or large class of learners (Gagne et al, 1974).

Kemp and Smellie(1989), Akinpelu (1992), Obainwu and Azubike(1994), Ogunmosule (1995), Ajelabi (2000), Otunla (2005), Onasanya and Adegbija (2007), Salawu (2007), Ajayi (2008), Ojukurolola (2009) and Olajide (2010) identified some roles and importance of resources. Some of their views and others are highlighted below:

(a) instructional resources ensure extension of students' imagination beyond what they can easily think about or appreciate. Students are better positioned to think beyond their immediate environment when teacher make use of instructional resources thereby bring no limitation to their imaginative power and more learning will be achieved.

(b) it makes abstract issue become concretized and the impression of the students are reinforced and retain for further use in other subject areas. They can even be transferring it to their day- to –day life:

(c) instructional resources ensure the presentation of ideas sequentially and systematically. This makes it possible for teachers and learners to progress from simple concept to the difficult ones and thereby avoiding confusion in the process;

(d) mastery of skills is also made possible by the use of instructional resources most especially Basic Technology which is a practical oriented subject;

(e) as some of these resources are products of specialist who are more knowledgeable than the regular classroom teachers, they can easily replace the teacher. For instance, documentaries are produced with high professionalism, therefore, there are enough teachers with or without any teacher;

(f) education is more productive and useful when there is adequate use of instructional resources because students acquire more skills and gain deeper insight into the concept unlike when they are taught abstractly or verbally

(g) students are exposed to real educational experience through the use of instructional resources which develop their sense of self confidence that help them to face such circumstances later in life;

(h) it does not reckon with human short comings like, bias, discrimination, temperament and fatigue which can impede learning;

(i) it makes learning to be immediate by bringing distance events to the school or learning centre environment without exposing the students to hazards or delay;

(j) good utilization of instructional resources enable learners to learn at their own pace by working individually. The slow learners will not be in a hurry, thereby preventing them from effective learning and the fast learners will not be delayed thereby occasioning boredom.

(k) they promote equal access to education with the aid of their unique features of portability, visibility and accessibility because it does not recognize age limit, language barrier or ecological impediments. These features are mostly exploited in distance learning. (Paraphased).

The importance and roles of instructional resources are inexhaustible due to various ways that each type or category affect communication and information dissemination in school environment. What is

essential to note is their indispensability in teaching and learning process as observed by Onasanya and Adegbija (2007). They also opined that It is not an exaggeration to say that successful teaching and learning depends largely on the instructional resource used (p 14). This assertion sums up how important the instructional resources are to educational development, particularly in teaching and learning of Basic Technology.

Problems of Resources in Teaching and Learning of Technology related Courses

Nowadays, Nigeria is looking for a functional educational system where in the role of technical educator cannot be relegated to the background. It is in the recognition of this that made the National Policy on Education to give the directives on education that will fit into the culture and development trend of the nation as quoted by Omotosho (2000). But in our country of today, reverse is the case which makes us to fail in aspirations. According to the study carried out by Aleburu (2003) and Science Teachers Association of Nigeria (2008), the followings are identified as the problems confronting the effective teaching and learning of technological courses in Nigeria.

- problem of funding,
- curriculum inadequacy,
- insufficient number of trained technical personnel,
- inadequate provision of the infrastructure needed,
- lack of equipment and materials,
- problem of equipment installation,
- adherence to traditional method of teaching,
- over-crowded classrooms,
- lack of proper planning during implementation of the curriculum,
- lack of spare parts and the unaffordable prices of the few that were occasionally found in the market,
- wrong method of educational policy,

- ineffective utilization of instructional resources where available and
- lack of proper co-ordination of technology programmes (Pp 1-3).

Since the inception of 6-3-3-4 system of education, successive governments have been paying a lip service to technological education (Njoku, 1990). Also, UNESCO (1998) opined that government had not done much in providing the necessary funds for the purchase of equipment. Lukewarm attitude of students during teaching of the subject, ignorance on the part of school administrators, teachers and students towards its importance contribute a lot.

Lawal (2000) stated that the problem with technical and vocational educational system in Nigeria is that no single part is adequately taken good care of. The deteriorating global economy has been one of the popular complaints preventing government from providing adequate fund to execute technological education programmes at a result oriented level. Also wideness of the syllabus, lack of adequate and workable equipment with insufficient of trained teachers.

In the late 1970s, through early 1980s, Nigeria had to 'employ' Technical Instructors from Ghana. As soon as the economy of Ghana bounced back, these hired teaching personnels resigned their appointment and went back to their country. For a long period of time now our technical colleges remain deficiently staffed in terms of quality and quantity. The National Board for Technical Education (NBTE 1995) identified lack of buildings to house the equipment as well as necessary equipment to carry out the practical aspect of the various subjects taught under technology as problem of technology in Nigeria. In the 1980 at the introduction of the teaching of Basic Technology as a subject in all the Junior Secondary Schools in the country, the Federal Government ordered the importation of equipment from three countries (Bulgaria, Hungary and Czechoslovakia) for distribution to each state in 1985. During the said period only very few schools were able to install these equipment due to lack of fund and availability of workshop to house them. The condition of most of these uninstalled equipment had deteriorated beyond any repair while most are carted away by hoodlums (Hassan 2006). More so, it was as if the then Federal Government was not ready for the implementation of the 6-3-3-

4 educational system because the teachers that were to implement the programme had not been trained. It has equally been observed that, the NPE was only presented on paper but it Implementation in the real life has remained in mirage especially in teaching and learning of Basic Technology which is one of the subjects that can provide basic knowledge in the field of technology. Consequently, emphasis was more on theory than practical, students could not acquire the necessary skills needed in industrial technology that will transform the nation to a status of industrial advancement. (Uwaifo and uddin 2009).

Fakomogbon (1997), Ibraheem and Gegele (2007) observed that imported equipment for teaching of Introductory Technology (Basic) in the mid-1980s was not installed but rather they were either kept in stores or were left outside. This eventually led to rusting as a result of misuse. They equally observed that many equipment cannot be operated without adequate supply of electricity. While most schools in the cities and villages do not have electricity supply.

Similarly, Olaitan (1991) analyzed the Basic Technology curriculum and identifies that the major shortcoming is its shallow statement of the condition for implementation. The curriculum objectives are obviously inadequate, as they do not cover the broad range of objectives for pre-vocational studies. The content coverage for the three years appeared to be too broad and treated in-dept for the level of students. He also added that effective implementation of the curriculum is seriously constrained by lack of adequate trained teachers.

Ibrahim (2010), stated that there were no enough human and non-human instructional resources for teaching basic Technology in junior secondary schools in Ilorin.

Appraisal of the Literature Reviewed

The review of the literature for this study is carried out with intension to known the views of experts on the development of teaching and learning of Basic Technology in Nigeria Junior Secondary Schools on: objectives and contents of Nigeria Basic Technology curriculum, factors influencing students'

performance in Technology related subjects, roles of resources in teaching and learning Basic Technology and problems of resources in teaching and learning related courses.

The following studies were reviewed on objectives and contents of Nigeria Basic Technology Curriculum as stated in the National Policy on Education FRN, (2004) which spelt out the philosophy and goals of Education in Nigeria with emphasis on functional education. Ivowi (1995) highlighted the nature of introductory Technology. Daramola (2004) defined the word curriculum as part of school academic programmes that guides the learning experiences of the learner. Adegoke (2005) who was quoted by Abolade (2007), observed the nature of effective curriculum which includes dynamism that should be based on the society's need. CESAC (1985) and Osuola (1999) spelt out the objectives of introductory Technology. NERDC (2007) explained the need to review the curriculum of Introductory Technology, while Owolabi, (2003) viewed technology as panacea to national development Agbamu (1996) opined that, recognition granted to the teaching of science and technology by a nation is one of the determinants of the level of development of such a nation. While contributing, Jekayinfa and Kolawole (2005) asserted that the purpose of education is to produce a useful citizen.

On the influence of learners' achievement levels, studies like, Yusuf (1991) who worked on pictures to determine the ability level of the learners- whether low, medium and high, find out that pictures can produce positive or negative impact on the learner. Donald (1983) worked on good and poor readers, and discovered significant difference when illustrations are used in the reading text. Issa (2004) in his study on concept of Mastery Learning found out that when extra time and help are given to low achievers, they can as well perform as high achievers. Likewise, the interest and attitude towards the subject can influence the learners' achievement level as found out by Amuda-Okuku, (2003).

Studies were equally reviewed on the influence of gender on students' performance. Researches by Yusuf (1997) and Bank (1998) revealed that the idea of sex had significant influence on learners' performance. Also Kahle and Meece (1994) reported that intervention of programmes have been

mounted in several parts of the world to engage girls more in science careers with specified objectives. STAN (1992), reported that less than ten percent of the total enrolment in Nigeria University for Science and Technology disciplines are female and six percent of those who enrolled in West African Examinations Certificate and Senior School Certificate Examinations (NECO) are girls. Allele-Williams (1987) said men's numerical strength in the science and technology is not a proof of superiority; rather it is a reflection of mans' dominance in institutionalizing socio-cultural values, which has accrued in education. Anderman and Young (1994) indicated from their studies that girls report less confidence than boys in their ability to perform well on science and technology task in the classroom.

The related literature reviewed on roles of resources revealed that, they are inexhaustible due to various ways that each affect communication and information dissemination in school environment. This results in their indispensability in teaching and learning process. Onasanya and Adegbija (2007) observed that, "it is not an exaggeration to say that successful teaching and learning depends largely on the instructional resources used". The assertion sum-up how important the instructional resources are to educational development particularly in teaching Basic Technology.

Many studies were reviewed on problems of resources in teaching and learning of technology courses like Science Teachers Association of Nigeria (2008), Aleburu (2003), Lawal (2000), UNESCO (1998), Fakomogbon (1997) and NBTE (1995) with conclusion that, it is not properly fund, curriculum not adequately implemented, insufficient numbers of trained technical personnel, poor installation of equipment, over-crowded of the classrooms, wrong-method of educational policy, improper co-ordination of technology programmes to mention a few.

The above researchers dwell much on the strategies for improving performance using teachers as instrument, Government laxity, poor management, poor funding of our educational sector among

others but proper stocking and adequacy in terms of frequencies of use are omitted, and that is the focused of the study.

DATA ANALYSIS AND DISCUSSION OF RESULTS

Table 1: *Number of instructional resources available for teaching Basic Technology in the sampled schools.*

S/N	Instructional Resources			Number Available
1	Workshop			39
2	Hand tools	-	Hammer	349
3			Saw	327
4			Hand file	404
5			Pliers	350
6			Try-Square	326
7	Machines	-	Circular Saw	11
8			Surface Planner	8
9			Thicknesser	5
10			Wood lathe	11
11			Centre lathe	9
12			Power Saw	5
13			Pedestal grinder	9
14			Milling Machine	2
15	Instructional Audio Tape			22
16	Television/Monitor Set			36
17	Audio C.D's on Technology			18
18	Video Players & Recorders			30
19	Computer (Monitor, C.P.U & Printers)			148
20	Projectors			10
21	Video CDs			46
22	Chalkboard			453
23	Wall Posters on Technology			197
24	Photographs on Technology			155
25	Models on Technology			205
26	Printed Media (Textbooks & Workbook)			412

According to the data collected from both private and public schools on the availability of instructional resources for teaching Basic Technology, as showed in table 1, it was be observed that, there were inadequate numbers of resources required for teaching Basic Technology in Junior Secondary Schools in Ogbomoso. From the responses given, there were only 39 workshops, 60

machines, 310 audio-visual in all the 75 schools sampled. Hand tools and visual were fairly available in number 1756 and 1,422 respectively.

Therefore, it can be deduced from the analysis that there were shortage of workshops, machines and Audio-visual resources for teaching Basic Technology in Ogbomoso as at the time of carrying out this study, while the supplies of Hand tools and Visual resources can be improved upon.

Table 2: *Number and percentages of the instructional resources' functionality available in the schools:*

S/N	Instructional Resources			Functional		Not Functional	
				No.	%	No.	%
1	Workshop			10	26.7	29	73.3
2	Hand tools	-	Hammer	224	64	125	36.0
3			Saw	174	53.3	153	46.7
4			Hand file	237	58.7	167	41.3
5			Pliers	200	57.3	150	42.7
6			Try-Square	178	54.7	148	45.3
7	Machines	-	Circular Saw	1	10.0	10	90.0
8			Surface Planner	1	10.0	7	90.0
9			Thicknesser	1	10.0	4	90.0
10			Wood lathe	1	10.0	10	90.0
11			Centre lathe	1	10.0	8	90.0
12			Power Saw	1	10.0	4	90.0
13			Pedestal grinder	1	10.0	8	90.0
14			Milling Machine	0	0.0	2	100.0
15	Instructional Audio Tape			3	14.7	19	85.3
16	Television/Monitor Set			9	25.3	27	74.7
17	Audio C.D's on Technology			2	9.3	16	90.7
18	Video Players & Recorders			6	20.0	24	80.0
19	Computer (Monitor, C.P.U & Printers)			77	52.0	71	48.0
20	Projectors			1	8.0	9	92.0
21	Video CDs			8	17.3	38	82.7
22	Chalkboard			453	100.0	-	-
23	Wall Posters on Technology			121	61.3	76	38.7
24	Photographs on Technology			70	45.3	85	54.7
25	Models on Technology			96	46.7	109	53.3
26	Printed Media (Textbooks & Workbook)			412	100.0	-	-

Table 2 showed that only chalk boards and printed media are hundred percent (100%) functioning while other twenty four (24) items fell between 8% and 64% which implied that most of the available instructional resources in schools sampled were not functional.

Table 3: *Number and percentages of the five classes of available instructional resources for teaching Basic Technology in the sampled schools.*

S/N	Classes of Instructional Resources	Functional		Not Functional	
		No.	%	No.	%
1	Workshop	10	26.7	29	73.3
2	Hand tools	1,011	57.6	745	42.4
3	Machines	3	5.2	57	94.8
4	Audio-visuals	65	20.9	245	79.1
5	Visuals	1,010	70.7	412	29.3

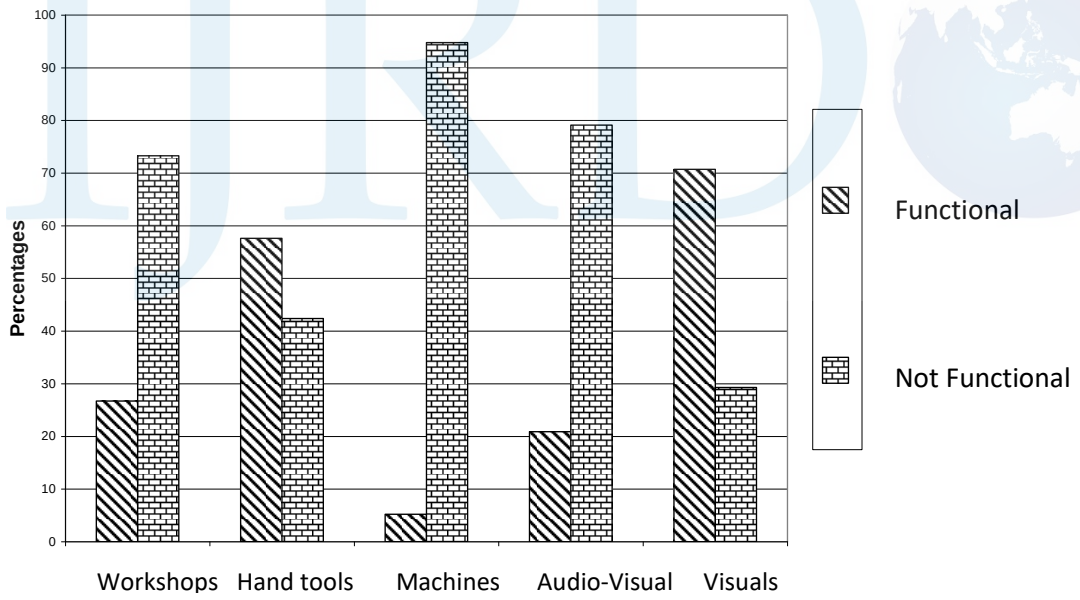


Fig 2: *Bar Chart illustrating the functionality of the available instructional resources*

From table 3 and figure 2, the result revealed that 10 out of 39 available workshops were functioning, 3 out of 60 machines and 65 out of 310 audio-visuals are functioning which means that 5.2% – 26.7% were functioning. Between 57.6% and 70.7% of Hand tools and Visuals were functioning. Therefore, the data analyzed to answer the research questions revealed that greater

percentage of the available instructional resources for teaching Basic Technology in Junior Secondary Schools in Ogbomoso were not functioning well.

Table 4: *Number and percentages of recommended, available and difference of each item in the sampled schools.*

S/N	Instructional Resources	Recommended no per school	Expected total no of the samples	Quantity Available	Differences in %
1	Workshop	1	75	39	52.0
2	Hammer	30	2,250	349	15.5
3	Saw	30	2,250	327	14.5
4	Hand file	30	2,250	404	18.0
5	Pliers	30	2,250	350	15.6
6	Try-Square	30	2,250	326	14.5
7	Circular Saw	2	150	11	7.3
8	Surface Planner	2	150	8	5.3
9	Thicknesser	1	75	5	6.7
10	Wood lathe	2	150	11	7.3
11	Centre lathe	2	150	9	6.0
12	Power Saw	1	75	5	6.7
13	Pedestal grinder	4	300	9	3.0
14	Milling Machine	1	75	2	2.7
15	Instructional Audio Tape	2	150	22	14.7
16	Television/Monitor Set	2	150	36	24.0
17	Audio C.D's on Technology	10	750	18	2.4
18	Video Players & Recorders	2	150	30	20.0
19	Computer (Monitor,C.P.U &	15	1,125	148	13.2
20	Printers)	1	75	10	13.3
21	Projectors	10	750	46	6.1
22	Video CDs	Each Arm	Total No. of	453	100.0
23	Chalkboard	10	Arms	197	26.3
24	Wall Posters on Technology	10	750	155	20.7
25	Photographs on Technology	10	750	205	27.3
26	Models on Technology	6	750	412	91.6
	Printed Media (Textbooks & Workbook)		450		

From table 4, the result revealed that 23 items out of 26 fell within range 2.7% and 27.3% difference which proved that the resources were far below the recommendation of NERDC, while Chalkboards, workshops and textbooks were adequate as specified.

Table 5 revealed that, twenty four (24) out of twenty six (26) items used were not frequently used (6.7% - 45.3%) which implied that the available instructional resources were under-utilized. But the chalkboards and printed media as traditional media were fully utilized by the teachers.

Table 6: *The frequency of use of the available instructional resources for teaching Basic Technology in number and percentages according to classes used.*

S/N	Classes of Instructional Resources	Frequently used		Seldom used		Not used at all	
		No.	%	No.	%	No.	%
1	Workshop	10	26.7	3	6.7	26	66.6
2	Hand tools	568	32.3	430	24.5	758	43.2
3	Machines	3	5.0	8	13.3	49	81.7
4	Audio Visuals	52	16.8	54	17.4	204	65.8
5	Visuals	1052	74.0	112	7.9	258	18.1

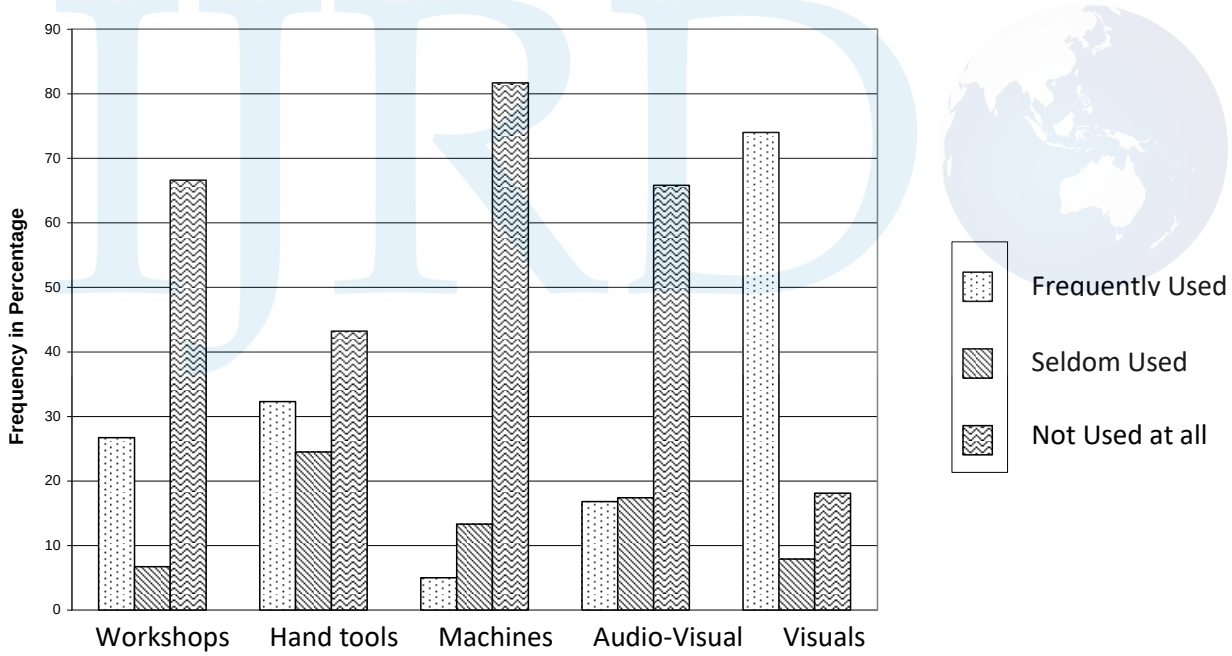


Fig. 3: *Bar Chart illustrating the frequency of use of the available instructional resources.*

From tables 6 and figure 3, it could be observed that, 26.7% of the workshops, 32.3% of hand tools, 5% of machines, 16.8% of audio-visuals and 74% of visuals of the available resources were frequently used. Also, from the available instructional resources of these schools, only 6.7%, 24.5%, 13.3%, 17.4% and 7.9% respectively were fairly or seldom used, while 66.6% of the workshops, 43.2% of the hand tools, 81.7% of the machines, 65.8% of the audio-visuals and 18.1% of the visuals were not used

at all. It can be deduced from the above analysis that most of the instructional resources available for teaching Basic Technology in the Junior Secondary Schools in Ogbomoso were not frequently used except the visuals.

CONCLUSION AND RECOMMENDATIONS

On the availability of instructional resources for teaching Basic Technology in Junior Secondary Schools, findings showed that there were shortage of; workshops machines and audio-visuals for teaching Basic Technology in Junior Secondary Schools in Ogbomoso. (39, 60, & 310 respectively), while hand tools (1,756) and visuals (1,422) were mostly available. Supported this view were; Fakomogbon, (1997) and Fakomogbon, Ibrahim & Gegele (2007) who identified that, facilities and equipment needed for effective teaching and learning were in most cases were not adequate for the students offering vocational subjects (Basic Technology inclusive). Likewise the findings of Aleburu (2003) and Abolade (2007) on lack of facilities for teaching and learning of technology related subjects and Chemistry respectively were in agreement with this study.

The available instructional resources were not functional because it was discovered that from the sampled schools, only 26.7% of the workshops, 5.2% of machines and 20.9% of audio-visuals were functioning for teaching Basic Technology in Ogbomoso Junior Secondary Schools. This have led to ineffective teaching and learning of practical aspects of the subject, which is in agreement with the findings of Agbamu, (1996) on the criticality of functional instructional resources.

The findings of this study on whether the available instructional resources were adequate as recommended by NERDC 2007, for teaching Basic Technology in Junior Secondary Schools revealed that, only three items out of twenty six items used met the recommendation while others fell within range of 2.7% and 27.3%. The three were: chalkboard, Textbooks and Workshops, that even used in theconventional method. This is contrary to the recommendation of NERDC, 2007.

The findings on the frequency of use of the available instructional resources showed that most of them were not used at all even up to 81.7% of the available machines, for example, while visuals were the only medium used frequently. It could therefore be inferred that teachers of Basic Technology in Ogbomoso Junior Secondary Schools were not making good use of the available instructional resources for teaching the subject, that is contrary to recommendation of NERDC, 2007, Kemp and Smellie (1989), Akinpelu, (1992), Otunla (2005), Onasanya and Adegbija (2007) among others on the significant of resources in teaching and learning process.

Conclusion

The results of this study showed that instructional resources were available for teaching Basic Technology in Junior Secondary Schools in Ogbomoso but not enough for effective teaching and learning of the subject. Also, it was discovered that, the available instructional resources were not functioning well in the schools sampled which can be concluded that the available resources were not functional.

On the level of adequacy of the available instructional resources with the specification of NERDC 2007, the results of the study indicated that, most of the resources were far below the recommendations This may be due to lack of fund as the principal factor.

However, it can be concluded from the findings that, most of the instructional resources available for teaching Basic Technology in the Junior Secondary Schools in Ogbomoso were not frequently used except the visuals.

Recommendations

The following recommendations were made based on the findings of this study.

1. Government and proprietors of schools should always. provide fund for the procurement of Basic Technology Resources (Workshops, Machines, Hand tools, audio-visuals and visuals), so that the practical aspect of the subject can be taught effectively in schools.
2. Curriculum planners should mandate it for school owners to procure functional instructional resources for effective teaching and learning of Basic Technology.
3. Frequent inspection and accreditation must be thoroughly carried out by the examination bodies and ministry of education to affirm what is on ground at inception of schools and periodically to ascertain the adequacy of the instructional resources.
4. Seminar, workshops and in-service training should be organized for teachers in order to assist them to acquire necessary skills on how to effectively use available instructional resources.

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