IMPACT OF INSTRUCTIONAL VIDEO ON BASIC TECHNOLOGY STUDENTS' ACADEMIC PERFORMANCE IN JUNIOR SECONDARY SCHOOLS IN KADUNA STATE, NIGERIA

BY

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DECEMBER, 2016.

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA NIGERIA IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTERS DEGREE IN EDUCATION INSTRUCTIONAL TECHNOLOGY DEPARTMENT OF EDUCATIONAL FOUNDATION AND CURRICULUM FACULTY OF EDUCATION, AHMADU BELLO UNIVERSITY, ZARIA

DECEMBER, 2016.

DECLARATION

I declare that the work in this dissertation entitled, Impact of Instructional Video on Basic Technology Students' Academic Performance in Junior Secondary Schools in Kaduna State, Nigeria has been conducted by me and to the best of my knowledge, the information has not been presented partially or in whole for another degree or publication at any university. All sources of information used in this work are duly acknowledged by means of references.

_____	_____	_____
Bamidele Rotimi MED/EDUC/47026/2012-2013)	Signature	Date

CERIFICATION

This Dissertation titled "Impact of Instructional Video on Basic Technology Students' Academic Performance in Junior Secondary Schools in Kaduna State, Nigeria" by Bamidele Rotimi meets the regulations governing the award of Master of Education of Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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Dr. S. Salau Supervisor	Date
Dr. S.A. Zubairu Member, Supervisory Chairperson	Date
Professor B. Maina Head of Department	Date
Prof. K. Bala Dean School of Postgraduate Studies	Date

DEDICATION

I dedicate this Dissertation to my late parents Mr. Matthew Jonathan Bamidele and Mrs. Olufunmilayo Bamidele.

ACKNOWLEDGEMENTS

Glory and honour to the Lord Almighty, who is the same yesterday, today and forever more, for the opportunity given to me to complete this programme in good health. This work would not have been a success without the ameliorate efforts of so many wonderful people whose names are too many to mention, my God will reward you all. Nevertheless, it will be an act of ingratitude if the researcher failed to give thanks to the following great people whose contribution made this work a reality.

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ABSTRACT

The study was carried out to determine the impact of instructional video on basic technology student's academic performance in Junior Secondary Schools in Kaduna State Nigeria. The specific objectives of the study were to examine the impact of instructional digital video disc on the academic performance of students taught basic technology. It also examine the impact of instructional video on the academic performance of male and female students in junior secondary schools in Kaduna State. It consists of two research questions among which is what is the impact of instructional digital video disc on the academic performance of students taught Basic technology in junior secondary schools and two null hypotheses as a guide. Pre-test post-test quasi-experimental design was adopted. The population for the study is 22,226 junior secondary school basic technology students. One hundred and ninety three students were purposively selected for the study an intact classes were used for the two schools. This was divided into two (2) groups (A and B). Data collection phase lasted for six weeks, pre-test was given before exposing the students to the treatment variable. Mean and standard deviation were used to answer all the research questions, while t-test statistics was use to test null hypotheses one and two. All hypotheses were tested at 0.05 (P=0.05). The analysis of the findings revealed among others that, instructional digital video disc has significant impact on the academic performance of basic technology students. It was also found that, there is no significant difference in the academic performance of male and female students taught basic technology with instructional digital video disc. The study revealed that, maintaining the use of instructional digital video disc in teaching by the teachers of basic technology enhanced teaching and learning thereby improving students academic performance. It was recommended among others that, there is need for curriculum planners to emphasize the importance of using instructional video when teaching basic technology by the teachers in secondary schools. Teachers in secondary schools should be encouraged by school administrators to use instructional digital video disc when teaching basic technology.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Technology as people said is the bedrock of any nations, a nation without technology can never develop, the word 'technology' has often been misconstrued to relate only to professionals, and the schools has found it difficult to give it an appropriate place in the curriculum God'swill (2010) clearly shown that the development of technology begins from the society and end with the society and that is in every technology, the overall aim is to exploit the existing scientific and other knowledge for useful ends. In view of the central position of technology in academics and the social economic of the nation, poor performance in it can be catastrophic, not only to the students but also to the society at large. Deficiency in technology can be a great limitation to any nation and the people. Inspite of the importance of Basic technology in junior secondary schools, report from Education Research Centre (ERC) Kaduna Ministry of Education reveals that student's performance in basic technology has been generally poor. The result indicated that in the year 2010 only 42% passed the prescribed examination that is the education research centre examination at credit level, while 58% failed, also in the year 2011 only 39% passed at credit level while 61% failed. Ofili and Okore (2012) found that instructional video produced better learning outcome when used for teaching. The findings also revealed that male and female students performed equally better using instructional video package.

We are living in the era of science and technology where a child starts playing on a touch screen before he learns how to crawl. The power of technology has captured the

minds of this generation, this can be seen in the field of education, the technology of teaching students in this competitive scenario is the use of instructional materials like instructional video. In developed countries, teacher use instructional material and new technologies to facilitate learning, while in developing countries like Nigeria, research has it that 80% of teachers still make use of the conventional or traditional method of teaching to facilitate knowledge, this may look boring to the students after a while and the job of a teacher becomes only effective when he is able to pass knowledge to the students and the students is convinced by what is been delivered to them. (Ofili and Okoye, 2012 Pp. 18), in the same vein, Ogunleye (2000) states that the mind remembers three things, image, music and colour.

The use of instructional video in the classroom has the power to help students grasp, visualize and explain difficult concepts. The key is for the teacher to use this technology effectively because some of the topics taught in basic technology may be abstract to the students, the use of instructional video will make it real and concrete. Ayogu (2000) laments that frequent use of lecture method for teaching in Nigeria does not provide for sequence of learning experiences.

Ogunley (2000) reported that technology had not been effectively utilized for teaching and learning in most of the schools, therefore it has minimum impact on educational system. Educational technologists are of the view that audio and video instruction has high potential in teaching and learning situation (Abubakar, 2001; Yusuf, 1997).

The potential benefits of instructional video can not be underestimated in the contemporary world. Adams (1990) is of the opinion that video instruction is one of the

most influential of all the media for teaching, Agusibo (2000) reported that instructional video has a strong influence on learning but most teachers seldomly use them because they are not aware of their effectiveness. This has led to the use of conventional methods of teaching which has not helped in anyway to improve student's performance. For teachers to be able to pass knowledge to the students effectively and meet up with their counterpart in developed countries, he needs to integrate the use of instructional video in his teaching (Kochnar 1995).

1.2 Statement of the Problem

Over the years, the performance of junior secondary three students in education resource centre (ERC) examination in Kaduna states has been very poor. For instance, in the year 2010 only 42% passed the prescribed examination i.e. education resolve centre at credit level while 58% failed, in the year 2011 only 39% passed at credit level while 61% failed (Kaduna State Ministry of Education). This poor performance has been linked to many factors such as inappropriate admission policy into secondary school, negative attitude of students to the subject, inadequate coverage of syllabus on the part of the teachers, lack of adequate tools and equipment to teach basic technology in Junior secondary school. Cardenas (2008) opined that the use of instructional video to teach will help to concretize abstract thought in the minds of the students compare to the use of conventional or traditional method of teaching. Therefore, the study tends to examine the impact of instructional video on basic technology students' academic performance in junior secondary schools of Kaduna State, Nigeria.

Most people are very conversant with the traditional method of impacting knowledge to the students in the classroom. This practice could be boring to he students

after a while and some of the topics taught to the students may look abstract to the students even when they are well taught by the teacher. Therefore, the absence of instructional media in teaching basic technology in junior secondary schools will not allow for optimal understanding, performance and achievement among students of junior schools in Kaduna State: Gulati (2008) opined that, there is evidence in research that instructional media can help students to learn and teachers to teach more effectively. This has revealed that the academics has moved more towards practical bases rather than being just theoretical. Cardenas (2008) states that every students can not understand everything that is verbally taught to them, so the use of media in teaching proves to be more interesting, creative and attractive.

1.3 Objectives of the Study

This research investigated the impact of instructional video on basic technology students' academic performance in junior secondary schools in Kaduna State. Therefore, the study examined:

i. The impact of instructional video on academic performance of basic technology students;

ii. The impact of instructional video on the academic performance of male and female students in junior secondary schools in Kaduna State.

1.4 Research Questions

This research provided answers to the following research questions:

i. What is the impact of instructional video on the academic performance of students taught basic technology in junior secondary schools in Kaduna State?

ii. What is the impact of instructional video on the academic performance of male and female students taught basic technology in junior secondary schools in Kaduna State.

1.5 Null Hypotheses

The following hypotheses were formulated for this research work:

i. There is no significant difference in the academic performance of students taught basic technology using instructional video teaching strategy and those taught using conventional method of teaching.

ii. There is no significant difference in the academic performance of male and female students exposed to instructional video teaching strategy.

1.6 Significance of the Study

At the end of this study it is expected that the study may help to boost and add positive impact on the academic performance of the students and change students attitude to learning basic technology. Most students are used to the conventional method of teaching, they are not conversant with the use of instructional video or any other instructional materials, therefore, the outcome of this study may be an eye opener to the students and the teachers on the use of instructional materials to impact knowledge to the students. Practically, the findings of this work will help teachers to identify the modes of instructional materials that should be applied base on ability, age, level and their gender. It is also hoped that result of this study may help the curriculum planners to be able to plan well, organize well and integrate instructional digital video disc into the school curriculum. Academically, it is hoped that the findings of this study would add to the local literature in the school library. In addition, it is hoped that findings from this study

could encourage the school administrator to provide training for teachers on the use of instructional digital video disc and media that will facilitate learning.

1.7 Scope of the Study

The scope of this study is the entire junior secondary school student in Kaduna State. The scope was further delimited to two Government Junior Secondary Schools in Zaria metropolis which were purposively selected for this study, they are Government junior secondary school Kwangila Zaria and Government Junior Secondary School Jama'a. The topic metal work, hand tools was chosen as a concept taught to the students, this is due to the fact that it had been identified by teachers to be difficult topic because, it involves identifying different metal work hand tools which may not be readily available for the students to see and identify.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter deals with the review of some selected literature on the following headings: theoretical framework, concept of instructional media, classification of media, importance of media in education, learning from media and technology, learning from television, instructional video and its importance in education, impact of instructional material in teaching and learning basic technology, review of empirical study, and summary of reviewed literature.

2.2 Theoretical Framework

This examines some theories which support the use of instructional digital video disc in teaching and learning.

Paivio's Dual Coding Theory (1970).

Mayer's cognitive theory of multimedia learning (2001).

Paivio's Dual Coding Theory (1970)

The theory assumes that cognition involves the activity of two qualitatively different mental codes, a verbal code specialized for dealing with language in all its forms and a nonverbal code specialized for dealing with non-linguistic objects and events in the form of mental images. These coding systems are separate but interconnected so that they can operate independently, in parallel, or through their interconnections. The linguistic or verbal code dominates in some tasks, the nonverbal code dominates in others, and both systems are frequently used together. The great diversity and flexibility of cognition all comes from activity within and between these codes. No deeper, abstract

code is assumed. Dual coding theory is based on the common assumption of continuity between perception and memory. External experiences occur through the stimulation of people's senses and are encoded in memory traces that retain some of their original, concrete qualities as words and things. The theory is, therefore, multimodal because both verbal and nonverbal experiences can occur in different sense modalities, including vision, hearing, and touch (Braille) in the case of language, and all five senses in the case of mental images (Sadoski, & Paivio, 2004).

Theories of working memory that propose different, modality-specific memory stores are generally consistent with dual coding theory. For example, the working memory theory of Baddeley and Hitch (1974) proposes a phonological loop for rehearsing inner speech and a visual spatial sketchpad for manipulating visual images. Dual coding theory assumes that long-term memory is modality specific as well (Sadoski, &Paivio, 2004).

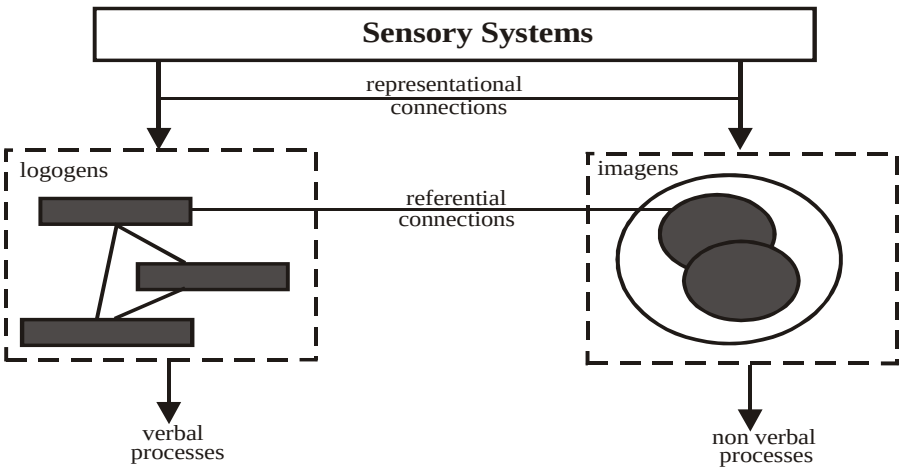


Figure 2.1: Dual Coding Theory

Dual coding theory also assumes innate contributions to cognition and individual differences because all human nature is the product of the interaction of genes and the environment. More layers of complexity are built on these basic assumptions, including accounts of meaning, memory, knowledge organization, and learning. One direct

implication of the theory is that pictures or concrete language (e.g., juicy hamburger) should be understood and recalled better than abstract language (e.g., basic assumption), a consistent research finding (Paivio, 2007).

The dual coding theory presupposes that a multimedia presentation will be more effective than a unimedia presentation. Text-audio and text – audio – picture will be more effective than text - only presentation, since the multi media will engender synergistic interactions between the different coding systems to facilitate learning.

Mayer's Cognitive Theory of Multimedia learning (2001)

In multimedia presentation, the information processing system in human beings uses both words (printed text, spoken text) and pictures (drawing, charts, graphics, maps, photos, animation and video) together rather than words alone. Multimedia environment is compatible with how humans who are endowed with the senses for words and pictures learn. The design of multimedia environment should be compatible with how people learn. Mayer (2001) presented a cognitive model of multimedia learning to represent human information processing system. This theory incorporates the dual coding theory and the modality principle.

In Figure 2.2 there are three frames, "second, third, fourth", of human memory namely: sensory, working and long-term memory. Pictures and words come in from the outside world through a multimedia presentation and enter sensory memory through the eyes and ears. Sensory memory allows for pictures and printed text to be held as exact visual images for a very brief time period in the visual sensory memory and for spoken words and other sounds to be held as exact auditory images for a very brief time period in the auditory memory.

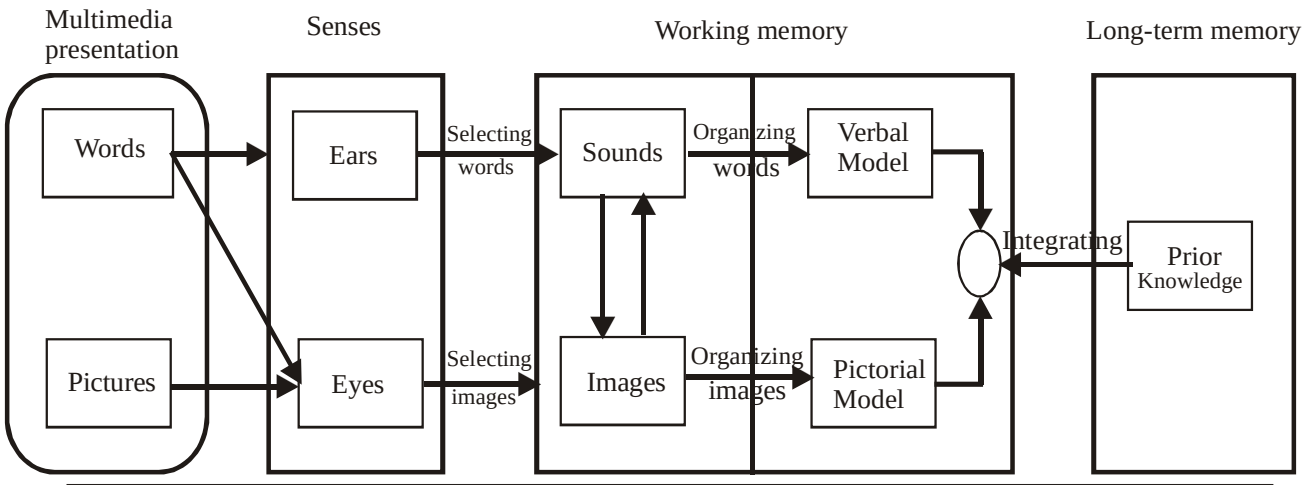


Figure 2.2: Cognitive Theory of Multimedia Learning (Mayer, 2001)

The arrow from the pictures to the eyes corresponds to a picture being registered in the eyes; the arrow from the words to the eyes corresponds to the printed text being registered in the eyes. The central work of multimedia learning takes place in the working memory. Mayer (2001) advocated that the working memory is used for temporarily holding and manipulating knowledge in active consciousness. The visual sensory memory and the auditory memory go into the working memory, that is, the visual images of pictures and sound images of words as represented in the left hand side of the box labelled working memory. The arrow from sounds to images represents the mental conversion of a sound (such as the spoken word "cat") into a visual image (such as an image of a "cat"); that is, when you hear the word "cat", you might also form a mental image of a "cat". The arrow from images to sounds represents the mental conversion of a visual image into a sound image, that is, when you see a picture of a "cat" you may mentally hear the word "cat". These processes may occur by mental association in which the spoken word "cat" primes the image of a "cat" and vice versa. In contrast, the right side of the working memory box represents the knowledge constructed in working memory; pictorial and verbal mental models and link between them. The major cognitive

processing required for multimedia learning is represented by the arrows labelled selecting images, selecting sound, organizing images, organizing words, and integrating.

The box labelled long-term memory is the learner's storehouse of knowledge. Unlike the working memory, long-term memory can hold large amounts of knowledge over long periods of time. For a person to actively think about material in the long-term memory, it must be brought into the working memory, as indicated by the arrow from long-term memory to working memory. The learner represents an active agent in the learning process via multimedia. He attempts to construct a meaning for the information presented through the following three major mental processes: Selection, Organization and Integration. Selection is a mental process where the individual learner pays attention to relevant information presented to him verbally or non-verbally. Mayer (2001) defines selection as choosing the right information and adding it to the working memory. On the other hand, Paivio (1996) defines selection as a process that involves selecting verbal stimulation "words" to construct verbal base "text base" and selecting non-verbal stimulation to build non-verbal base "pictorial base" information to be sent to short-term memory.

After the learner has selected the verbal and non-verbal information, the next step is organization. This process involves ordering and organizing information that have been selected meaningfully and logically. Clark and Mayer (2008) state that organization is a mental process performed on text "selected words" in order to organize them in a verbal model that is capable of interpreting this verbal information. The organization process is also performed on image base" selected images" to organize them in an image model capable of intercepting them.

As the verbal model and visual model are constructed, the integration process follows. Integration means making connection between the verbal and image models. Moreno and Mayer (2001) indicate that such processes involve connecting organized information in the verbal and image models with relevant and similar information stored in long term memory. Paivio (1986) noted that integration involves making referential connections between both verbal and image models. In multimedia, information is presented to the learner in more than a single form such as words, images, motion pictures, sounds and other forms. Therefore, the capacity of the learner to processes information presented to him via multimedia depends on the capacity to select, organize and integrate these forms of information.

Multimedia presentation provides a richer source of stimuli that will make information processing more effective, provided that none of the working memory channels is overloaded. With reference to the three strategies adopted in this study namely text +only, text+ animation, text + narration and text+ animation + narration text-audio-picture, none is expected to overload any of the cognitive circuits. This is so because the audio narration explains the picture and or text successively. Consequently, the three-code strategy is expected to be the most effective.

Integrating Paivio's Dual Coding Theory and Mayer's Theory into Instructional Video

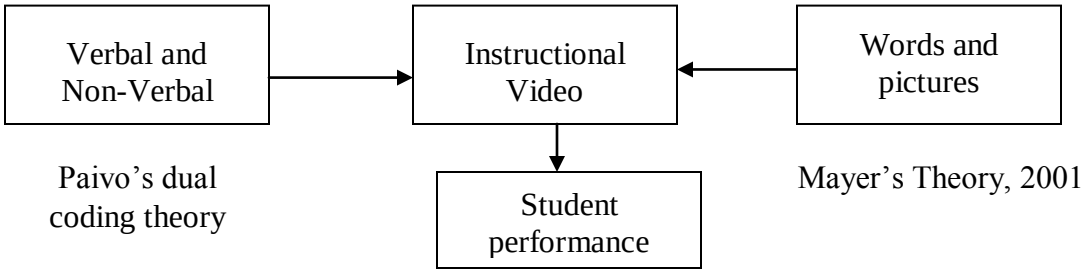


Figure 2.3:

Source: Mayer's and Paivio's Theory Adopted, 2016.

2.3 Concept of Instructional Media

Media is defined differently by authors and experts. According to Moore, Burton & Mayer (1996) media has various components in learning environment which support the learners to learn, assimilate and comprehend. Berge (1998) also see media as physical means which we used to send messages to the students and stimulate them to learn. Going through these definitions above, media are forms of communication either printed or audiovisual. Instructional media encompasses all the materials and physical means an instructor or teacher might use to implement instruction and facilitate learners achievement of instructional objectives. This may include traditional materials such as chalkboards, handout, charts, slides, overheads, real objects, flash card and video tape or film as well as newspapers and methods such as computer, DVDs, CD Roms the internet and interactive video conferencing. According to Akanbi (1988) in general term media means television, radio, newspaper. Considered as a whole and as ways of entering or spreading news or information to a large number of people. In teaching, all teaching materials which involves the use of different kinds of media such as visual and prints are sometimes known as multimedia or mixed media. There are various kinds of media, but audio-visual media are the most appropriate media for learners, especially young learners.

Audu (2002) defines media in education as the media of communication used in teaching and learning, they are aptly described as information carrying technologies that can be used for instruction. Audu (2002) posits that instructional devices which both teachers and learners can refer to and use as sources to obtain knowledge new idea to acquire new skills and competencies. They are all learning resources. A wise and proper

use of them makes instruction more vivid and the instruction process easier for the teacher: Instructional media can be defined as a broad range of resources that can be used to facilitate effective and efficient communication in teaching and learning process. They can also be referred to as channels through which messages, information, ideas are conveyed or disseminate (Abimbade, 1997). Generally, instructional media can be defined as information carrying technologies that have learning content that can be stored, retrieved and transmitted between the teacher and the students. It forms the means of information communication between the teacher and students that are linked together to transmit or convey meanings, intents, feelings, emotion, skills, values, beliefs or knowledge to produce desirable outcome which should be observable and measurable, (Abdulsalam, 2007). Instructional media adds elements of reality by providing concrete examples. To some extent, all media help perception, understanding and transfer of knowledge which provides reinforcement of knowledge of results that enhance retention. This is however, a tremendous technology that can be used as a tool to overcome the traditional isolation of the classroom setting. Braum, (1997). The learning environment of assisted classroom instructional technology is different from the traditional classroom setting. Teachers are therefore adviced to incorporate or integrate instructional media in teaching and learning situations. This is because pre-recorded audio-visual media can solve the inadequate of the learners experiences. Instructional media create the possible direct interaction between learners and their environment. Media produce some observation and keep the basic concrete and real concepts of the teaching and also arose and motivate learners. Media integrate the experience from the concrete things to the abstract ones. Deporter and Hernacki (2000) in Quantum states that, instructional digital

video disc can be created optionally, physically and mentally through learning environment. He went further to point out some advantages of using media in teaching and learning process.

Talabi (2014) asserts that instructional digital video disc (idvd) are generally design to provide realistic images and substitute experience reach curriculum experiences. Media are considered the most efficient facilitator in the educational set up.

Talabi (2014) outlined the advantages associated with using instructional media as follows:

There is standardized information delivery: Each student sees and learn the same message, hence forming the basis for further study, practice and appreciation.

Attention is ensured: Through the use of instructional media, students are therefore kept informed. The clearity and coherence of a message, the attractiveness of changing images, the use of certain special effects as well as the impact and ideas that can create or cause effect.

The quality of learning: This can be improved through careful integration of pictures and words. Media can communicate elements of knowledge in a well organized, specific and clearly defined manner. Through much effort from students, learning can be expected to reach an acceptable competency level.

Learning can be enhanced: Since there is reduction of repeated information. This enables important aspects of lessons to be delved into.

Learning becomes interesting, this alert instructors are continuously searching for refreshing ways of generating and expending interest.

They extend the scope of experience for example, by using various media, concepts can be taught through real life demonstration.

Instructional media helps to supply a lower rate basic for conceptual thinking while increasing learner's interest. This simply mean that the media helps to stimulate self-activity in learners, making learning more permanent.

Instructional media enhances retention and transfer of knowledge and support learning through examples and visual elaboration.

Elicit Students Response: This present information to students and those questions to them, getting them involved in answering the questions.

Provide feedback: Media can be uses to provide feedback relating to a test or class exercise. Enhance retention and transfer. Pictures enhances retention especially to the students, it also helps the students visualize a lesson and transfer abstract concepts into concrete easier to remember objects.

Assess Performance: Media is an excellent way to pose assessment questions for the class to answer or students can submit, mediate presentation as classroom projects.

Educational media plays view significant role in the teaching learning process, media can be referred to as the wide variety of instructional materials such as video, television charts, models, mock-ups, textbooks, chalkboard, other projected and non projected devices which bring about efficiency and effectiveness in teaching and learning process and invariably promote and enhance the achievement of instructional objectives. According to Agun and Imogie (2012) states that educational media refers to all forms of information carriers. In addition, they are materials that can be used to record, store,

preserve and transmit or retrieve information. Media are essentially tools and devices through which stimuli can be passed on or obtained.

2.3.1 Classification of Media

Instructional media or educational media are of various types. Variety of educational or instructional media are available in the educational science and there is no water tight classification of media. The classification of instructional media may be perceived according to the level of technology for example low level or high level technology materials. They can also be classified as projected or non projected media. They can further be classified as projected and non projected media.

Heinich, Molenda, Russel (1996) in Ogwo curriculum development and educational technology has presented two good examples of ways in which educational media may be classified.

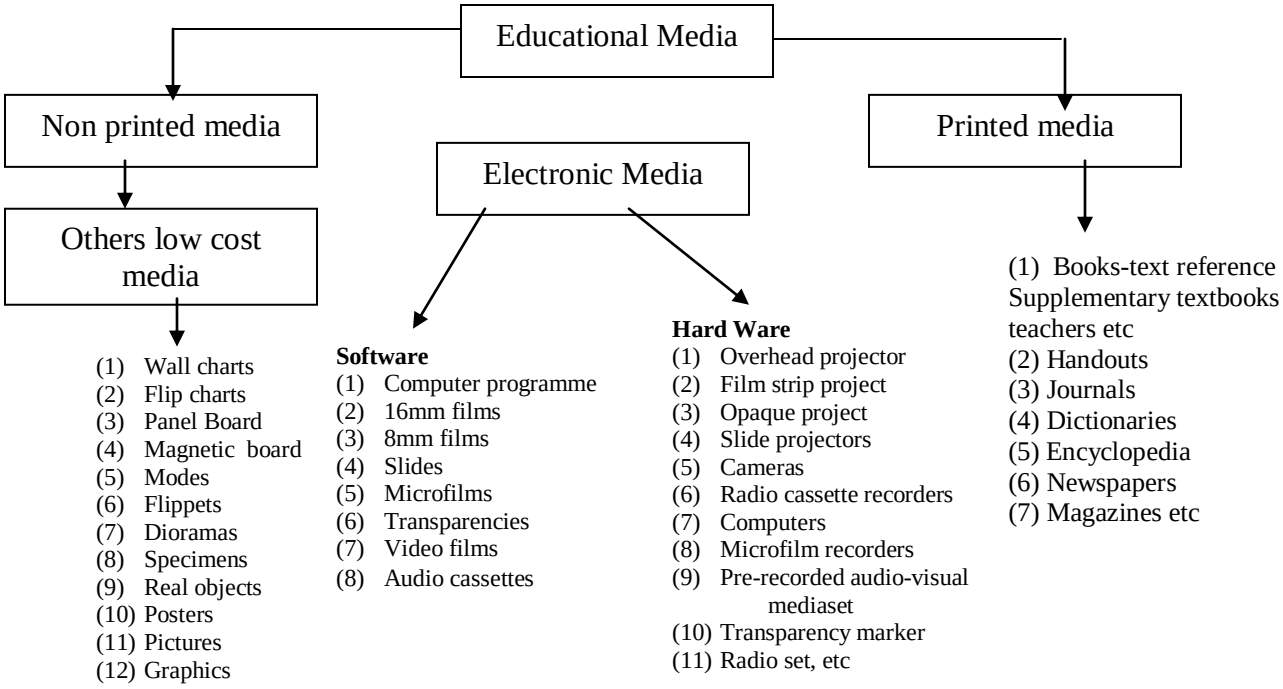


Figure 2.4: **Printed and Non-Printed Media**

Table 2.1 can be referred to as classification according to printed media and non printed media, you find books, handouts, journals, dictionaries, encyclopedia, newspapers, magazines. Under non-printed media, you find chalkboard, wall charts, magnetic board, models etc. Electronic media is divided into software and hardware under the software we have computer programmes, films, slides, video films and audio cassettes etc and under hardware, we have overhead projector, radio cassette recorders, television sets, radio set etc.

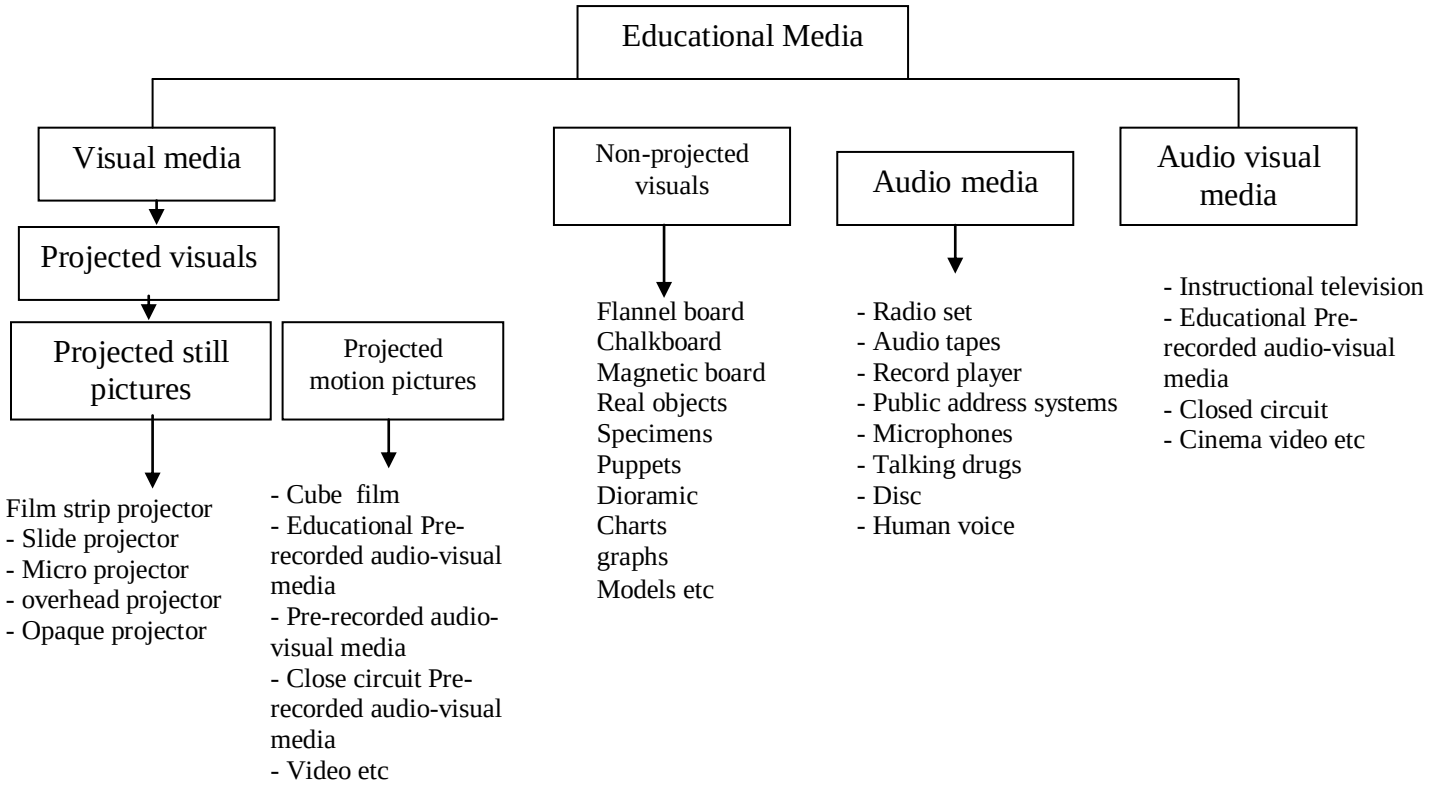


Figure 2.5 Classification of Educational Media by Human Senses

Instructional media can be classified according to the senses they engage Ayeni (2003). Gulati (2008) in his own view opined that this classification also dwells on the projected and non-projected. Under projected still pictures we have film strip, projector, slide projector etc while under projected motion pictures, we have instructional

television, video etc under projected motion pictures, we have instructional television, video etc. Under non-projected visuals; we have chalkboard, flannel board, real objects, models etc under audio media, we have radio sets, audio tapes, record players, public address systems, microphone, talking drums, human voice etc while under audio visual, we have instructional televisions, video, cinema and so on.

Ellington and Race (1993) also divided educational media into visual, Audio and Audio visual as follows:

2.3.2 Importance of Media in Education

With respect to technology, people want to know whether various new technologies are more effective, motivating than others and whether technologies can reduce cost within education. The question about the impact of media and technology in terms of increasing access to education and reducing the costs of education are specially high on the agendas of politicians and government agencies around the world. In USA, the panel of educational technology of the president's committee of advisors on science and technology (1997) included as one of its six major strategic recommendations that technology be used to "ensure equitable universal access" (p.5). Another part of the same report called for realistic budgeting for technology-related expenditures within schools, noting that the much-doubted nature on-investment for educational technology was a long term prospect.

Another reason for the attention being paid to media and technology in education, reflects commercial or cooperate interests. Although printed material continues to be "the dominant medium format" in schools (Molenda, Russell & Smaldino, 1998), a real presidential report on the USA recommends that "at least five percent of all the public

educational spending in the United States approximately 13 billion annually in constant in 1996 dollars) should be embarked for technology-related expenditures". (president's committee of advisors on science and technology 1997. Similar investments are underway throughout the world in both developed and developing countries. It is no wonder that global corporations, such as sony and investing in large scale educational technology initiatives. Rerelman's (1993) in his book titled school's out:

Cuba, (2006) "Bringing the electronic media in the schools for children. Many children who are tuned off by school are not turned of by one or another of the electronic media: quite the opposite. An educational system that capitalized on this motivation would have a chance of much greater success. Each medium has its own profile of cognitive advantages and disadvantages and each medium can be used to enhance the impact of others. Interaction in the class if properly presented, via technology such as using Instructional digital video disc as, film and teaching machines in a similar way or manner a teacher will teach.

Dorr, (1992),

> "The most positive research news about learning "from" Instructional digital video disc can be found in the classroom where forty years of research shows positive effect on learning from the Instructional digital video disc program that are explicitly produced and used for instructional purposes.

According to Johnson (2012) more importantly, there is strong evidences that Instructional digital video disc is used most effectively when it is intentionally designed for education and when teachers are involved in its selection, utilization and integration into the curriculum".

Increasingly, Instructional digital video disc is coming into school via video disc player and television. The star schools consortium in the USA is one of the largest such enterprise, providing scores of telecourse in thousands of schools across the nation. According to Moore Burton & Mayer (1996) most often, programmes received satellite dish or cable are recorded by media specialists or technology coordinators and subsequently made available for teachers when and how they choose.

Devaney, (2004) states that studies of the large-scale implementations instructional digital video disc have shown mixed results. Three major forms of utilization have been investigated.

Instances where the total instructional program is delivered via televised teachers.

Instances where there is an integration of teacher-directed instruction with Instructional video program.

Instructional video is used to supplement teacher-centred instruction, either for enrichment or remedial purpose. Cuban (2006), reports that total Instructional digital video disc programs in Elsavador have met with enthusiasm. Some studies indicated that students in rural schools where quality teachers were less likely to be available, benefited the most from Instructional digital video disc.

Instructional video has been rarely used to totally replace teachers in any country and is usually used in coordination to supplement the regular curriculum. In the same vein Dale (2006), said that the result are much more positive. A large scale of teachers in USA conducted in 1991 by the cooperation for public broadcasting indicates that "Instructional digital video disc is a firmly established teaching tool that is positively regarded by classroom teachers and increasingly well supported with equipment and

programming" Dorr (1992) concluded that "There is no doubt Instructional digital video disc is an effective means of achieving traditional instructional goal".

2.3.3 Roles of Multimedia in Teaching

"Multi media" is a term frequency heard and use among educational technologist today. Unless clearly defined, the term can alternately mean "a judicious mix of various mass media such as print, audio and video" or it may mean the development of computer-based on a mass scale and yet individualized use of learning. In essence, multi-media merges multiple levels of learning into an educational tools that allows for diversity in curriculum presentation. According to Kings (2004) multi media is the existing combination of computer hardware and software that allows you to integrate video, animation, audio, graphics, and test resources to develop effective presentation on an affordable desktop computer. He further states that multimedia is characterized by the presence of text, pictures, sound, animation and video, some or all which are organized into some coherent program". Today's media is a carefully woven combination of text, graphic art, sound, animation, and video elements. When you allow and end user, i.e. to control 'what' and 'when' and 'how' of the elements that are delivered and presented, it becomes interactive multi media.

As such, multimedia can be defined as an integration of multiple media elements (audio, video, graphics, text, animation, etc) into one synergetic and symbolic whole that results in more benefits for the end user than any one of the media element can provide individually.

The term multimedia describes a number of diverse technologies that allow visual and audio media to be combined in new ways for the purpose of communicating.

Applications include entertainment, education and advertising. Media often refers to computer and Instructional digital video disc technologies. Nearly all media are built with a CD-Rom, DVD Drive and a good sound and video card, the term media also describes a number of dedicated media appliances, such as digital video recorders (DVRs), interactive Instructional digital video disc MP3 player, advanced wireless devices and public video displays. Multi-media technology is very useful in the classroom environment. The usefulness of the composition of multimedia has been found to be very useful. It gives opportunity to learners to have access to all varieties of teaching styles that appeal to learning, with this, the learners are able to learn at their own pace and at their own understanding. It also makes teaching easier for the teachers, it gives opportunities to the teachers to inculcate ideas into the learners with minimal difficulties.

Different forms of media are very useful in classroom teaching-learning for effectiveness and efficiency of the teaching-learning process. Classroom teachers should use different kinds of media to promote effective learning especially in teaching basic technology but there might arise a situation where a single medium may not promote effective learning. In this situation it will become imperative to the teacher to employ various combination of media for instructional purposes.

The employment of various combinations of media approach to teaching and learning is termed multimedia. Media combinations are referred to as multimedia system.

Multimedia concept as asserted by Heinich, Molenda & Russel (2005) involves more than using multiple media for a given instructional purpose. It rather involves integration of each medium and medium format into a structures, systematic presentation.

In the multimedia system, each instructional medium is designed such that it complements others. The current move forward individualization of instruction learning and the encouragement of active learner participation in the teaching-learning process has promoted the use of multimedia system in the classroom, teachers are now encourage to incorporate multimedia system in the teaching learning process so as to make the process effective .

As multimedia, learning involves all the sense organs of the body. A teacher who is experienced and knowledgeable in his area of specialization should adopt it when it is obvious that a single medium might not clarify the subject matter or concept to be taught.

He highlighted that multimedia system are also multisensory and thus stimulate learning as it takes place in the world outside the classroom. In the classroom today, learning has gone multimedia, individual are constantly learning through all their senses and a multitude of stimuli such as magazines, radio, television. In the classroom situation a teacher who wants to adopt the multimedia systems in the presentations can for instance combine two inch slides with audio tape. Also teachers may combine filmstrips with audio tape for instructional purposes as in the case, with slides-audio tape presentations. In the teaching-learning process, classroom teachers are concerned with optimum learning taking place in the learning taking place in the learners. , in attempt to achieve this, they employ varieties of educational media. Educational media according to Davis (1997), play vital roles in the teaching teaching-learning process, he said further that teachers should essentially be familiar with the principles of designing and producing, selecting and utilizing educational media in the teaching of their subject.

2.3.4 Learning "from" Media and Technology

The foundation for the use of media as "tutors" in schools is "educational communication", i.e. the deliberate and intentional act of communicating content to students with assumption that they will learn something "from" these communications.

Jonassen and Reeves (2008) said, there are two major approaches to using media and technology in schools, students can learn "with" media and "from media and technology. Learning "from" media and technology is often referred to in terms such as instructional media (Hannafin, Hannafin, Hooper, Rieber and Kini, 1996; Seela, Berry, Fullerton and Hon 1996). Learning "with" technology, less widespread than the "from" approach is referred to in terms such as cognitive tools.

2.3.5 Learning "from" Television

Since the first educational television broadcast began in Lowa in 1933, there have been decades of research focused on the educational effects of television and yet controversies about the impact of television in schools.

(Postman, 1995, 1994, 1985, Winn, 1985) maintain that television viewing is cognitively debilitating. A review of the television research literature, however, indicates that such claims are largely based upon subjective observation rather than theory guided investigations and there is no conclusive evidence that television stultifies the mind (Seels, Berry, Fullerton and Horn, 1996). There is no consistence evidence that television increases either hyperactivity or passivity in children. He said, television on cognitive development, scholastic achievement, and social behaivour are research investigations into the positive effects of television viewing on factors such as interest, creativity and limitation. A well known developmental psychologist at Harvard University, is a

proponent of the idea that certain kinds of television stimulate creativity and imagination in young children. However, the research results supporting these types of positive hypothesis.

2.4 The Effective use of Information Communication Technology in Learning

Information communication technology (ICT) have become common entities in all aspects of life. Daniel (2002) information communication technology (ICT) in a very short time have become one of the basic building block of modern society, the role of information communication technology (ICT) in education is becoming more and more important and its importance, will continue to grow and develop. Information and communication technology (ICT) may be regarded as the combination of information technology with other related technology. The various kinds of information communication technology (ICT) products available and having relevance to education, such as, teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counselling interactive voice response system, audiocassettes and CD Roms have been used in education for different purposes. Sharma, (2003); Sanyal, (2001); Bhattacharya and Sharma (2007). The field of education has been affected by information communication technology (ICT) which has undoubtedly affected teaching learning and research. (Yusuf, 2005). A great deal of research has proven the benefits to the quality of education, in the same vein, Al-Ansari, (2006) information communication technology (ICTs) have the potential to innovate, accelerate, enrich and deepen skills, to motivate and engage students to help relate school experience to work practices, create economic viability for tomorrow as well as strengthening teaching and helping schools change. (Davis & Tearle, 1999); Lenke & Coughlin, 1998; cited by Yusuf, 2005). As

Jhurrev (2005) states, much has been said and reported about the impact of technologies especially televisions, computers in education.

Conventional teaching has emphasis content for many years course have been written around textbooks. Teachers have taught through several teaching methods and presentations, interspersed with tutorials and learning activities designed to consolidate and recharge the content. Contemporary settings are now favouring curricular that promote competency and performance. Curricular are starting to emphasize capabilities and are concerned more with how the information will be used than with what the information is all about.

According to Kings, (2006) the integration of instructional digital video disc can help revitalize teachers and students. This can help to improve and develop the quality of education by providing curricular support in difficult subject areas. To achieve these objectives, teachers need to be involved in strategies which include teaching partnership with instructional television as a tool. According to Zhaon and Cziko (2001), three conditions are necessary for teachers to introduce information technology into their classrooms: teachers should believe in the effectiveness of technology, teacher should believe that the use of technology will not cause any disturbances and finally teacher should believe that they have control over technology includes phenomena as diverse as books, films, television and the internet. With respect to education, media are the symbols system that teachers and students use to represent knowledge, technologies are the tools that allow them to share their knowledge with others.

2.5 Overview of Instructional Television

Instructional video and its importance in Education

Teachers are expected to understand how audiovisual can increase and facilitate the knowledge of students in the class, in addition, teachers who wish to teach the student well and make a physical change can do so by using audio-visual as instructional tool Resissman (2013).

The instructional designer should also consider the use of video in designing new classroom material, when these materials are to be use in interacting learning programmes, how the instructional digital video disc is to be used. Instructional designers should consider using video in interacting learning programs in order to motivate learners, convey important information, demonstrate procedures, display models, promote active learning and knowledge use visual cues and signals Philip (2004).

Online resources such as discovery education provide thousands of video chips for teachers to use in teaching their lessons. Research have shown that better learning outcome result from learning programmes that contain video Romanov (2007).

The importance of using video in teaching:

1. It is used for important information; learning programmes can use video base multimedia instruction package to focus students attention on specific subject matter Alossi and Foolip (2001); However, the use of poor video can be detrimental to misleading a student attention (Park and Hopleins 2000).
2. Video can be used to motivate learners, it can also be used for learning auditory and programmes, it could be used as engaging expensive for people of all ages Choi and Johnson (2007).

3. Instructional digital video disc also contribute to learners satisfaction and the students found learning programme that use video to be more useful than the traditional or conventional teaching method Montazemi (2006).

2.6 Impact of Instructional Material in Teaching and Learning Basic Technology

Instructional materials if creatively, efficiently and effectively utilized by teachers of basic technology to teach students will enhance learning, improve learning and teaching performance, improve both the teacher and students competence and also make teaching and learning more meaningful.

Instructional material also stimulate the learners' interest making teaching and tie learning more productive and taking care of wide audience and large number of students in the classroom situation, it also helps in overcoming physical limitation in the conventional method of teaching and learning therefore making learning become more concrete, real and immediate. It also contribute to performance analysis and solve students problem, helping to individualize instruction. MKPA & Izuagba (2003), noted that in order for instructional material to be useful, they must satisfy some criteria, which include the following:

The instructional material must be appropriate to the age of the learners, it must not be above the learners age, also instructional materials should be relevant to the topic, lesson and the subject to be taught, it must be simple to both learners and teachers and must be adequate in size, the learners must be interested in the instructional material to be used by teachers.

2.7 Review of Empirical Study

Ofili & Okoye (2012) examined the effect of video compact disc instructional package on academic performance of senior secondary school Biology students in Uyo local government of Akwa-Ibom State.

The methodology used by the researcher is the experimental design. A pretest – post-test, treatment control design with two schools randomly selected for the study. The findings revealed that, there is a significant difference in the academic achievement of the students taught with video compact disc and those taught without it. This is in consonant with the report of Anulobi (2009), who discovered that the use of video compact disc in teaching enhanced academic achievement. The past research was different from the present study on the basis of year group used in the study. the past used senior secondary school while the present study used junior secondary school, the past research was conducted on Biology which the present was conducted on Basic Technology, the past research conduct its research on video compact disc instructional package while the present research was conducted on instructional digital video disc. The past research was conducted in Akwa Ibom state of Nigeria while the present research was conducted in Kaduna State. The similarities of the past research work and the present research work is that both were on secondary school students and they are all video instructional packages.

Gambari, Gbodi and Olumba (2011) conducted a research on the effect of Audio and Video Compact Disc Instructional packages on students performance in senior secondary schools phonetics in Minna, Nigeria.

The research design adopted for this study was the pretest posttest experimental control. The findings in the research indicated that the students taught using video

compact disc instructional package (VCIP) and those taught using audio compact disc instructional package (ACDIP) performed significantly bitterly than their counterparts taught using the conventional normal classroom instruction. The past research was different from the present study on the basis that the past research was on phonetics while the present is on Basic Technology, the past research was on effect of Audio and Video compact Disc instructional packages while the present research is on instructional digital video disc, the past research study was on senior secondary schools while the present is on junior secondary schools the past research was carried out in Minna Niger State while the present research study was carried out in Kaduna state. The similarity of the past and present research work is that they were both carried out in secondary schools and they were both video instructional package.

Oshokoya (2007) conducted a research on the effect of video-taped instruction on secondary school students achievement in History. The result of the findings revealed that students taught with video-taped instruction performed better than those taught with the conventional method, it also revealed that gender was not a significant factor on students achievement in history, when video taped instructional are used. Also, it was revealed on the findings that the mean achievement scores of male and female students were greatly improved. The result was in line with Agommuoh and Nwewi (2003) who opined that students taught using video taped instructional performed significantly well than those taught using conventional/traditional method. The past research was different from the present on the basis that, the past research was conducted on effect of video taped instruction while the present is on instructional digital video disc instruction, the past research was carried out from University of Ibadan and the present in Ahmadu Bello

University, Zaria. The past research work was conducted on history while the present is on basic technology. Similarly of the research work is that they are both carried out on secondary school students and are all on video instruction.

Okerele and Afolabi (2015) conducted a research on the effect of video on the teaching of library studies among undergraduates in Adeyemi College of Education Ondo State.

Based on the findings in this research work, it was revealed that attitude of learners towards the course; library instruction programme were altered based on the teaching method they were exposed to. Gender did not contribute significantly to the variation in students attitude.

The past research work is different from the present in the sense that it was carried out in library science and also the study was carried out in higher institution while the present research work is carried out in Basic technology and also in a secondary school; the past research work was carried out in Ondo State Nigeria while the present study is carried out in Kaduna State Nigeria. The similarity in this past and present research study is that they are both carried out for academic purpose also they are both video package used for academics.

Doosuur and Igyuve (2014) conducted a research on the use of Audio-visual materials in the teaching and learning processes in College of Education in Benue State Nigeria. The findings revealed that the lecturers in the college rarely use audio-visual resources in teaching. The chalkboard is the only audio-visual aid used by the lecturers, it was also revealed in the study that audio-visual aid brings different benefits to the students; also the study revealed that the awareness of availability of audio-visual

resources created by the Liberian is not impressive and that a good number of lecturers improvise some of the material when necessary. The past research was different to the present research study for the fact that, the past was conducted in a College of Education while the present is conducted in a secondary school, the past research was conducted in Benue State while the present research is conducted in Kaduna State. The past research conducted its research generally in teaching while the present research is conducted basically on teaching Basic technology. The past research was conducted on both students and lecturers while the present research was conducted on students in secondary schools. Both the past and present, research are similar in the use of video as instructional material or packages.

Oguz (2014) conducted a research on effects of the computer-based instruction on the achievement and problem solving skills of the science and technology student. This study is based on the pretest – posttest control group design. The population of the study consist of 52 students, twenty six (26) in the experimental group and twenty six 26 in the control group. The main research questions are as follows: Does the computer base science and technology instructions have any effects on the achievements and the problem solving skills of the students. Is there any significant different between the means of the post-test achievements scores corrected according to the pre-test achievement scores of the control group taught by the traditional method and those taught according to computer based science and technology programme? The result indicated that there is a statistically significant increase in the achievements and problem solving skills of the students in the experimental group that received the computer based science and technology instruction.

The past research work is different from the present in the following ways, it talked about the effects of computer based instruction and the present research work talked about impact of instructional digital video disc, also the past research talked on the achievement and problem solving skills of science and technology students while the present research work talked about the performance of students in teaching and learning Basic Technology.

Similarly, the two research work are similar because they were all instructional materials, they were both carried out in education and also they were science based research in education.

Owusu (2013) conducted a research on impact of the use of audio-visual aids to complements the traditional lecture method on the performance of Ghanian senior High School Physics students compared to the use of only the traditional method, the following null hypotheses were formulated to guide the study. There is no significant difference between the mean posttest achievement scores of senior high school students taught with audio-visual aided instruction and those taught through the traditional approach. There is no significant difference between the mean posttest achievement scores of senior High school students taught with audio-visual aided instruction and those taught through the traditional approach? There is no significant difference between the mean scores of male and female students taught with audio visual aids and those taught with traditional method. Quasi-experimental research design was adopted for the study the study used non-randomized pretest posttest group design. The study sought to find out the impact of the use of audio-visual aid compare to the traditional method. A total of 65 students in senior High school form sample size. The findings in the study revealed that the senior

high schools student exhibited higher achievement than those in the control group. Also, the result of the study is in line with other studies which found that students learn better when audio visual aids are used (Fillmore 2008). The post research was different from present research in the following ways; the post research is conducted in Ghana while the present research is conducted in Nigeria. The past research was conducted in senior high school, while the present research is conducted in junior secondary schools. The post research was conducted in physics while the present research is conducted in Basic Technology. They were both similar because they are all video instructional packages, they were both pre-test post test methodology and they both used Quazi experimental research.

2.8 Summary

A lot of literatures were reviewed in this work, on the topic impact of instructional video on basic technology students' academic performance in JSS in Kaduna state. The instructional media are used to send messages to the students and stimulate them to learn. Going through these definitions above, media are forms of communication either printed or audiovisual. Instructional media encompasses all the materials and physical means an instructor or teacher might use to implement instruction and facilitate learners achievement of instructional objectives. This may include traditional materials such as chalkboards, handout, charts, slides, overheads, real objects, flash card and video tape or film as well as newspapers and methods such as computer, DVDs, CD Roms the internet and interactive video conferencing.

According to Akanbi (1998) in general term media means television, radio, newspaper.

The gap which this study intend to fill is that in all the literature review so far, non has stress on the impact of instructional video on basic technology students performance in junior secondary schools in Kaduna State. It is the hope of this research work to narrow or close the gap and integrate the use of new technologies into teaching and learning. It is believed that media and multimedia in general facilitates teaching and learning, the Mayer's cognitive theory of multimedia learning integrates Pavio's theory of dual coding, it assumes that when the video of what is to be learnt is shown to the students during the process of learning, it will provide a richer stimulus that will capture the attention of students and make information processing and learning more effective.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the steps and methodology to be used in conducting this research. These include the research design, population, sampling procedure, research instrument, validity of the instrument, reliability of the instrument, procedure for data collection and data analysis.

3.2 Research Design

This study adapted the quasi-experimental design, pre-test post-test, control group design. One of the groups received treatment using video instruction while the other received treatment using conventional method, hence becomes the control group. The objective of the design is to test the effect of the independent variable that is the treatment which is reflected in the design. Symbolically, the design is presented in figure XX

$$EG \longrightarrow O_1 \longrightarrow X_1 \longrightarrow O_2$$

$$CG \longrightarrow O_1 \longrightarrow O_0 \longrightarrow O_2$$

3.3 Population of the study

The population of this study consists of the junior secondary school students in Zaria. The major characteristics of the population comprises of male and female students in Kaduna state secondary school. It comprises of a total of 11,481 male students and a total of 10.745 female students which sums up to 22,226 junior secondary schools students. Detail of this is presented in Appendix M.

3.4 Sample and Sampling Procedure

In the selection of the schools for sampling, purposive sampling was employed. The schools were selected on their population, availability of basic technology teachers and whether the subject (basic technology) is offered in the schools. The total number of students used for sampling is 193 students. The sample size is described as a sub-set of a population selected to meet specific objectives (Olayiwola, 2007). The sample size were also from an intact class of the two schools purposively selected for sampling. This is shown in Table 3.2.

S/NO.	Name of School	Male	Female	Total
1.	School A	57	42	99
2.	School B	56	38	94
	Grand Total	**113**	**80**	**193**

3.5 Instrumentation

Based on the fact that the research is a quasi-experimental research design, the topic used for this study is metal work, hand tools. Lesson note is prepared as a guide for the teacher, demonstration method is used for effective teaching of the topic stated above. Detailed of the lesson plans are shown in appendices A,B,C,D and E. A self developed test instrument titled Instructional Video and test items were used for the collection of data. It consists of 40 objectives questions which carries 2.5 mark each giving a total of 100 marks. The test instrument was developed according to the topic stated above and the instructional video was also designed based on the topic above. This will last for 40

minutes. The researcher developed two instrument for the study and used for data collection: (i) Instructional video (ii) test items.

3.5.1 Instructional Video

The instructional video is to enable students understand some of the topic and subtopic taught to them, since some of these topics look abstract to the students. Integrating the use of instructional video into teaching basic technology in junior secondary school will enable the abstract thought in the mind of the students to be concretized or real. This is in line with Owusu (2013) who conducted a research on impact of the use of audio-visual aids to complements the conventional lecture method.

3.5.2 Test Items

In the test items, there were 40 items and there wasn't any rejected neither amended during the cause of the research procedures.

3.5.3 Lesson Plans

A lesson plan was stated to guide the researcher in impacting knowledge to the students in other to achieve the objectives.

3.5.4 Module

The module used is JS 3 and the topic is metal work hand tools which comprises of sub unit in basic technology such as marking out tools, measuring tools, driving tools, cutting tools, scrapers, care for metal work hand tools.

3.6 Validity of the Instrument

The instrument as formulated by the researcher were validated through the research supervisors, expert in the department and professionals in the area of audio

visuals, also ascertain its appropriateness. Also, corrections and suggestions that will validate the instrument were also incorporated.

3.7 Pilot Testing

A pilot testing was conducted in Government junior secondary school Muchia. The main aim was to determine the reliability coefficient of the items in the instrument (test items). A total of 30 copies of the test items were administered, answered and returned. The pilot study was conducted once in the school.

3.8 Reliability of Instrument

The reliability of the instrument was determined by the statistical analysis of the data collected from the pilot study. The split half method was used, where the instrument items were divided into two halves of "odd" and "even" numbers. The reliability of the whole instrument was determined using Pearson reliability. In this method, the scores of the "odd" and the even items of the test were calculated using Pearson product moment correction to determine the r. The value obtained, from each instrument were then adjusted to give full length reliability index using Pearson Brown formular:

$$r = \frac{2r1}{1+ r1}$$

Where r= reliability coefficient of 0.99 was obtained. This reliability coefficient is considered adequate for the internal consistencies of the instrument. Olayiwola (2007) stated that an instrument is considered reliability if its reliability coefficient has between 0.74 and closer to 1, the more reliable is the instrument. He also recommends that a reliability can be calculated if the reliability coefficient is high and positive, the instrument will be adjusted to fit the purpose. This was carried out using SPSS package.

3.9 Procedure for Data Collection

The researcher obtained a letter from the Department of Education Foundation and Curriculum, Ahmadu Bello University, Zaria for permission to conduct the study in the affected junior secondary schools. With this approval, the following steps were taken to conduct the experiments. The letter was taken to the zonal education office Zaria for permission to collect data in the schools. A pre-test was administered to the students in each group thereby selected those that perform well to form the group. After which the experimented group were taught with instructional video package. The duration for the researcher period was six weeks, this is done with lesson plan, instructional video package. Demonstration method was used to teach the students, there after a post-test was administered to compare the Performance of the two Groups. This is in line with Olayiwola (2007) who states that experimental group can be divided into groups or selections. For effective control in the process of conducting the research work. At the end of the treatment in the two groups, achievement test was administered to the students based on the topic taught. Time for the test lasted for one hour (1 hour). The researcher administered the test to two groups in the schools with the help of two research assistants that had been trained by the researcher on the use of instructional video to teach basic technology to ensure objectivity in the supervision/Invigilation. Detail of the test questions and marking scheme can be seen in appendixes K & L.

3.10 Procedure for Data Analysis

The mean and standard deviation of the performance of students for pre-test and posttest for experimental group were computed to answer the research questions. Independent t-test statistics was used to test null hypotheses 1 and 2 at $P \leq 0.05$.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

This chapter presents the analysis of the data collected for the study. The data was based on test scores obtained from students exposed to experimental and control groups.

4.1 Analysis of Pre-test Scores

Table 4.1: Mean and Standard Deviation of Pre-test Scores of Students Taught Basic Technology Using Non-Video

Group	N	Mean	DF	Standard Dev.
Expt. Pre-test	50	22.38	98	5.659
Control Pre-test	50	22.92	49	5.742

4.2 Answers to Research Questions

Answers to the two research questions were as shown using mean and standard deviation, while the analysis of each of the two research questions is as presented in Table 4.2 to 4.3.

Research Question one: What is the impact of instructional video on the academic performance of students taught basic technology in junior secondary schools?

To answer research question one, the post test scores of students taught using instructional video and the post test scores of the control group were used. The analysis of data generated is as presented in Table 4.1.

Table 4.2: Means and standard deviation of post-test scores of students taught Basic Technology using instructional video and those taught without.

Group	N	Mean	DF	Standard Dev.
Expt. Post-test	50	49.960	49	8.350
Control post-test	50	24.020	49	6.600

The result in Table 4.2 indicates that, post-test performance of students taught using instructional video is better than that of students taught without it. This therefore, showed that instructional video significantly improve students' academic performance.

Research Question Two: What is the impact of instructional video on the performance of male and female students taught basic technology in Junior schools in Kaduna State?

To answer research question two, data collected were analyzed using mean and standard deviation.

Table 4.3: Mean and standard deviation of posttest scores of male and female students under experimental group

Group	N	Mean	DF	Standard Dev.
Expt. Post-test males	25	49.680	24	8.854
Expt. Post-test Females	25	49.840	24	7.998

Table 4.3 presents the means and standard deviations of the post test scores of male and female students taught basic technology using instructional video. The mean and standard deviation for male students were 49.6801 and 8.854 and that of the female students were 49.840 and 7.998. The result therefore, indicated that no significant difference exist on the performance of male and female students taught using instructional video. It means that instructional video has impact on the performance of male and female students in junior secondary schools in Kaduna state.

4.2 Test of Null Hypotheses

Results of data used to test the null hypotheses are presented in table 4.4 to 4.6.

Null Hypotheses One: There is no significant difference in the academic performance of students who were taught basic technology with instructional video and those taught using conventional method.

To test null hypotheses one, post test scores of students taught basic technology with instructional video was compared with the post test scores of students taught using conventional method (lecture method) using t-test statistics at 0.05% level of significance.

Table 4.4 Impact of instructional digital video on Students' 'academic performance

Group	N	Mean	Std Dev.	DF	t-cal.	Sig.
Expt.	50	24.0200	6.60083			
				98	18.099	.000
Control	50	49.7600	8.35088			
P = 0.05						

t = (98) = 18.099 P = .001 < .05

From Table 4.4 the t-calculated was 18.099 which is greater than the t-critical (1.99) at 5% level of significance (p=0.05). The analysis therefore showed that, instructional digital video disc has significant impact on the academic performance of basic technology students. Therefore, the null hypothesis which states that, there is no significant difference in the academic performance of students who were taught Basic Technology with instructional video and those taught using conventional method was rejected.

Null Hypothesis two: There is no significant difference in the academic performance of male and female students taught basic technology

To test null hypothesis two, post-test scores of male and female students exposed to instructional digital video disc were compared using t-test analysis at 5% level of significant (p = 0.05).

Table 4.5 Impact of instructional video on male and female Students' 'academic performance

Group	N	Mean	Std Dev.	df	t-cal	Sig.
Male	25	49.6800	8.85400			
Female	25	49.8400	7.99833	24	0.60	.952
P = 0.05						

t (24) = .60, P=.952 > .05

Table 4.5 present t-test analysis of the difference between the academic performance of male and female basic technology students taught using instructional video disc. The analysis indicated that t-calculated value of 0.60 was less than the t-critical value of 1.99 even at 0.05 levels of significance. This means that, there is no significant difference between the academic performance of male and female students. The null hypothesis which states that, there is no significant difference on the academic performance of male and female students taught using instructional video was not retained.

4.4 Summary of Major Findings

The major findings of this research work were summarized as follow;

1. The result of this work indicated that, instructional video has significant impact on the academic performance of basic technology students.
2. The study also revealed that, there is no significant difference in the academic performance of male and female students taught basic technology. .

4.5 Discussion of Major Findings

The study revealed that, instructional video has significant impact on academic performance of basic technology students. This was revealed by the findings table 4.1 in which the mean score for students exposed to experimented was greater than the mean score for students exposed to the conventional method. The result of hypothesis one revealed that there is no significant difference in the academic performance of male and female students taught basic technology with instructional digital video disc. This is in line with the findings of Anulobi (2009) who discovered that the use of video compact disc in teaching enhance academic achievement.

This also agreed with the findings of Ogunleye (2000) who noted that instructional video is used for enrichment, that is an added resources, similar to a film recording that is supposed to add value to a subject of study, he pressed further to say that it is also used for team teaching in the classroom and provide opportunities for all (male and female) students to learn. Also in support of this findings Oshokoya (2007) conducted a research on the effect of video-taped instruction on secondary school students Achievement in history, it has a mixed population of male and female. The result confirmed that students taught with video taped instruction perform better than those

taught with the conventional method, it also revealed that gender was not a significant factor on student's achievement in history. It also revealed that the mean achievement scores of male and female students were greatly improved when video instruction is used in teaching them. This is in line with Ogommuoh and Nwewi (2003) who opined that students taught using video instruction performed significantly well than those taught using conventional/traditional method. Owusu (2013) conducted a research on impact of the use of audio-visual aids to complements the traditional or conventional lecture method on the performance of Ghanian senior high school physics students. The findings in this research study revealed that the senior high school students exhibited higher achievement than those in the control group. This findings is in line with Fillmore (2008 which opined that students learn better than audio-visual aids are used to teach them.

Oguz (2014) also conducted a research on effect of the computer Based instruction on the achievement and problem solving skills of the science and technology students and finds out that there is a statistically significant increase in the achievements and problem solving skills of the students in the experimental group that received treatment. This also agreed with Chukwu (2000) who observed that instructional digital video disc can be considered as learning resource in that it can provide learners with access to knowledge and information in a more direct and concrete forms and provide physical models and improve academic performance.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

The summary, conclusion and recommendation as well as suggestion for further studies would be presented in this chapter as follows:

5.1 Summary

5.2 Conclusion

5.3 Recommendation and

5.4 Suggestion for Further Studies

5.1 Summary

The study was carried out to determine the impact of instructional video on basic technology students' academic performance in Junior secondary schools in Kaduna State Nigeria. Pre-test post-test quasi experimental design was adopted for the study. The study has two specific objectives two research questions and two null hypotheses as a guide. The entire twenty two thousand two hundred and twenty six junior secondary basic technology students one hundred and ninety three students were purposively selected for the study. This was then divided into two groups. Data collection lasted for four weeks where pre-test was given before exposing the students to the treatment variable.

In data analysis, mean and standard deviation were used to answer all the research questions, while t-test statistics was used to test hypotheses one and two. All hypotheses were tested at 0.05 level of significance. The analysis of data used to answer question one revealed that instructional digital video disc has significant

impact on the academic performance of basic technology Students. This was revealed by the findings in table 4.1 which the mean score for students exposed to experiment was greater than the mean score for students exposed conventional lecture method. The result for t-test analysis on Table 4.4. also revealed that instructional video has significant impact on the academic performance of basic technology students. This was because t-calculated was greater.

Answer to research question two showed that, there is no significant difference in the academic performance of male and female students taught basic technology with instructional video. This was affirmed by the analysis in Table 4.2 which showed a mean score of female students to experiment (49.6800) to be statistically equal to the mean score of female students exposed to the same treatment on table 4.4. was less. This therefore revealed that, no significant difference exists in the academic performance of male and female students taught basic technology with instructional video.

5.2 Conclusion

From the result presented in chapter four, this study revealed that instructional video has significant impact on the academic performance of basic technology students. The study also revealed that there is no significant difference in the academic performance of male and female students taught basic technology with instructional video. Result from the study made this conclusion to be drawn that maintaining the use of instructional video in teaching by the basic technology teachers

will enhance teaching and learning thereby improving students academic performance.

5.3 Recommendations

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

1. The findings of this study revealed that instructional video has significant impact on the academic performance of basic technology students, it is therefore recommended that the curriculum planners should emphasize the importance of using instructional video to teach basic technology by the teachers of junior secondary school.
2. Teachers in junior secondary schools should be encouraged by the school administrators to use instructional video when teaching basic technology as it was found to be more effective than lecture method.

5.4 Limitation of the Study

The school used in this study were state schools that is (public school). Federal and private schools were not part of the study. This study is limited to only state schools in Kaduna State, therefore, this short coming can affect the generalization made from the findings of this research.

The only topic used to teach students in this research work in all the basic technology topics is metal work hand tools, other topics may also have their peculiarities which may limit the generalization of the present findings on other topics.

5.5 Suggestions for Further Studies

The impact of instructional video on students other than basic technology in junior secondary schools in Kaduna State can be carried out. Also research on the use of instructional video on other subject area can be carried out.

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APPENDICES

APPENDIX A

Kaduna State Ministry of Education,

Zonal Office Headquarters,

Zaria.

Date: 22/01/16

The Principal/Proprietor,

GJSS Kwangila

LETTER OF INTRODUCTION

BAMIDELE

The bearer is Student ..... In

the de of/from EDU. FOUNDATIONAL AND CURRICULUM MED/EDUC/47026/2012-2013 and

wish to conduct a research in the following areas:-

1. IMPACT OF INSTRUCTIONAL DIGITAL VIDEO -
2. DISC ON BASIC TECHNOLOGY STUDENTS'
3. PERFORMANCE IN JUNIOR SECONDARY SCHOOLS
4. IN KADUNA STATE NIGERIA
5. ----------

I am directed to request you to allow him/her the use of your facility accordingly please.

ZONAL EDUC. OFFICE ZARIA

12/01/16

Sani Aminu Soba

For: Director.

APPENDIX B

Kaduna State Ministry of Education,

Zonal Office Headquarters,

Zaria.

Date: 22/01/16

The Principal/Proprietor,

GJSS Jamma

LETTER OF INTRODUCTION

BAMIDELE ROTIMI

The bearer is BAMIDELE ROTIMI (Student) In the de of/from EDUC. FOUNDATIONS AND CURRICULUM MED/EDUC/4202/2012-2013 and wish to conduct a research in the following areas:-

1. IMPACT OF INSTRUCTIONAL DIGITAL VIDEO-
2. DISC ON BASIC TECHNOLOGY STUDENTS'
3. PERFORMANCE IN JUNIOR SECONDARY SCHOOLS
4. IN KADUNA STATE NIGERIA
5. ---

I am directed to request you to allow him/her the use of your facility accordingly please.

ZONAL EDUC. OFFICE ZARIA

28/01/16

Sani Aminu Soba

For: Director.

APPENDIX C

DEPARTMENT OF EDUCATIONAL FOUNDATION AND CURRICULUM
Faculty of Education
AHMADU BELLO UNIVERSITY, ZARIA
Email: efceduc@abu.edu.ng

Vice-Chancellor: **Professor Abdullahi Mustapha,** *B.Sc (Hons) Pharm (ABU). Ph.D (London), FPSN*
Ag. Head of Department: **Dr. Bashir Maina,** *B.Ed (Unimaid), M.Ed,, Ph.D (ABU)*

Our Ref: DEFC/S.25

Date: 20/01/2016

Dear Sir,

LETTER OF INTRODUCTION

The bearer, BAMIDELE ROTIMI, with Registration Number MED/EDUC/47026/2012-2013, is a student in this department. He /~~She~~ is carrying out research, being part of requirement for graduation, in MED INSTRUCTIONAL TECHNOLOGY. He/She needs certain information in your organization. Kindly, allow him/her have access to information in your organization. The information obtained will be used for research purpose only. The topic of his/her research is:

IMPACT OF INSTRUCTIONAL DIGITAL VIDEO DISC ON BASIC TECHNOLOGY STUDENTS' PERFORMANCE IN JUNIOR SECONDARY SCHOOLS IN KADUNA STATE NIGERIA

Thanks in anticipation of your kind response.

Yours sincerely,

Head of Department
Dept. of Educational Foundation & Curriculum
A. B. U. Zaria

21/1/2016

Dr. Bashir Maina
Head of Department

APPENDIX D

WEEK 1

LESSON PLAN

Subject: Basic Technology

Topic: Metal Work Hand Tools (Marking Out Tools)

Class: JS 3

Sex: Mixed

Duration: 35 Minutes

Average Age: Thirteen

Behavioural Objectives: At the end of the lesson students should be able to:

(i) Identify, describe, sketch and use metal work marking out tools

(ii) List different metal work hand tool

(iii) Use different metal work hand tools

Previous Knowledge: Students had been taught wood work hand tools

Introduction: Teacher introduces his lesson by asking the students how many of them had seen these tool before.

Presentation: Teacher presents his lesson through the following steps:

Step 1: Teacher define marking out tools to the students

Step II: Teacher list and explain some of the metal work hand tools to the students

Step III: Teacher demonstrate the use of some of the metal work hard tools to the students.

Conclusion: The teacher conclude his lesson by giving summary of what he had taught the students and ask some questions based on the just concluded topic. E.g.

(i) What is marking out tools

(ii) List 4 marking out tools you know

APPENDIX E

WEEK 2

Subject: Basic Technology

Topic: Metal Work Hand Tools (Measuring Tools)

Class: JS 3

Sex: Mixed

Duration: 35 Minutes

Average Age: Thirteen

Behavioural Objectives: At the end of the lesson students should be able to:

i. Identify, describe and state the uses of measuring tools

Previous Knowledge: Students had been taught marking out tools

Introduction: Teacher introduces his lesson by asking the students how many of them had seen a ruler before or a tape rule.

Presentation: Teacher presents his lesson through the following steps:

Step 1: Teacher define measuring tools

Step II: Teacher list some of the measuring tools

Step III: Teacher explain them one after the other

Conclusion: Teacher conclude his lesson by asking the students some questions based on the topic taught e.g.

(i) What is measuring tools

(ii) List 6 types of measuring tools you know

(iii) Explain the function of each measuring tools listed above.

APPENDIX F

WEEK 3

Subject:	Basic Technology
Topic:	Metal Work Hand Tools (Driving Tools)
Class:	JS 3
Sex:	Mixed
Duration:	35 Minutes
Average Age:	Thirteen
Behavioural Objectives:	At the end of the lesson, students should be able to: (i) Define driving tools (ii) List different types of driving tools (iii) Explain the use of different types of driving tools mentioned
Previous Knowledge:	Students had been taught measuring tools
Introduction:	Teacher introduces his lesson by asking them how many of them had seen hammer, screwdriver or punches before.
Presentation:	Teacher presents his lesson through the following steps: Step 1: Teacher define driving tool Step II: Teacher list different types of driving tools to the students Step III: Teacher explain the use of different types of driving tools mentioned.

Conclusion: Teacher conclude his lesson by asking the students some questions based on what he had taught e.g.

(i) List four (4) types of hammers

(ii) How many types of punches do we have?

(iii) List 4 types of screw drivers you know

APPENDIX G

WEEK 4

Subject:	Basic Technology
Topic:	Metal Work Hand Tools (Cutting Tools)
Class:	JS 3
Sex:	Mixed
Duration:	35 Minutes
Average Age:	Thirteen
Behavioural Objectives:	At the end of the lesson students should be able to: (i) Define cutting tools (ii) List different types of cutting tools (iii) Explain different types of cutting tools
Previous Knowledge:	Students had been taught driving tools
Introduction:	Teacher ask the students that how many of them had seen hacksaw before?
Presentation:	Teacher presents his lesson through the following steps: Step 1: Teacher define cutting tools to the students Step II: Teacher list some of the cutting tools to the students Step III: Teacher explain different cutting tools to the students.

Conclusion: Teacher summarize his lesson and ask the students to answer some of these questions e.g.:

(i) Define cutting tools

(ii) List 5 types of cutting tools

(iii) Explain any three

APPENDIX H

WEEK 5

Subject:	Basic Technology
Topic:	Metal Work Hand Tools (Scrapers)
Class:	JS 3
Sex:	Mixed
Duration:	35 Minutes
Average Age:	Thirteen
Behavioural Objectives:	At the end of the lesson, students should be able to: (i) Define scrapers (ii) States the uses of scrapers (iii) List different types of scrapers (iv) Explain different types of scrapers
Previous Knowledge:	Students has been taught cutting tool.
Introduction:	Teacher ask the students that how many of them had seen a scraper before?
Presentation:	Teacher presents his lesson through the following steps: Step 1: Teacher define scrapers Step II: Teacher state the uses of scrapers to the students Step III: Teacher list different types of scrapers
Conclusion:	Teacher summarize his lesson and ask the students questions on what he had taught: e.g. (i) Define scraper (ii) State only one use of scraper

(iv) List three (3) types of scrapers

APPENDIX I

WEEK 6

Subject:	Basic Technology
Topic:	Metal Work Hand Tools (Care for Metal Work Hand tools)
Class:	JS 3
Sex:	Mixed
Duration:	35 Minutes
Average Age:	Thirteen
Behavioural Objectives:	At the end of the lesson students should be able to take care of the tools used in metal work.
Previous Knowledge:	Students had been taught scrapers
Introduction:	Teacher ask the students how many of them wash plate at home after eating?
Presentation:	Teacher presents his lesson through the following steps: Step 1: Teacher state to the students some of the care to be given to their tools immediately after use .

Conclusion: Teacher summarize the lesson and ask the students to answer some of the following questions:

(i) What is care?

(ii) List 6 cares that should be given to our tools immediately after use.

APPENDIX J

TREATMENT PACKAGE

Week One

Objectives: To familiarize (introduction of oneself i.e. the researcher, the students also to introduce themselves and also introduce the treatment package and the topic of the day to the students.

Step 1: The researcher welcomed the students and introduce himself to the students and also ask the students to introduce themselves.

Step II: The researcher told the students that he will be coming every week for a period of six weeks to teach them basic technology.

Step III: The researcher explained to the students that classroom rules and regulations will be followed strickly.

Step IV: The researcher introduced the topic to the students metal work hand tools (marking out tools).

Step V: The researcher showed the video of the making out tools to the students and explain them one after the other.

Step IV: The researcher states the use of different metal work hand tools shown to the students. And defined marking out tool to the students.

Step VI: The researcher asked the students some questions after given the students to ask questions.

Week Two

Objectives: At the end of the lesson, students should be able to:

Identify, describe and state the use of measuring tools.

Step I: The researcher defined measuring tools to the students.

Step II: The researcher showed the instructional digital video disc of measuring tool to the students.

Step III: The researcher explained the function of each measuring tool showed to the students.

Step IV: The researcher concludes his lesson by giving room for the students to ask questions.

Step V: The researcher asked the students some questions e.g.:

(i) What is measuring tool

(ii) Teacher asked the students to list six measuring tools

(iii) Explain the function of each measuring tools listed in the instructional digital video disc.

Week 3

Objectives: At the end of the lesson, students should be able to:

- Define driving tool.
- Identify and list different types of dividing tools.
- Explain the use of different types of driving tool watched in the instructional digital video disc.

Step 1: The researcher reminded the students of their previous knowledge that they had been taught measuring tools.

Step II: The researcher defined driving tool to the students.

Step III: The researcher play the instructional digital video disc to the students to see.

Step IV: The researcher explained as the instructional digital video disc is playing along to the students different types of driving tools.

Step V: The researcher gave room for the students to ask questions based on the instructional digital video disc they had watched.

Step VI: The researcher asked the students the following questions:

i. Define driving tools

ii. List only four types of hammers.

iii. How many types of punches do we have?

iv. List four types of screw drivers you know.

Week 4

Objectives: At the end of the lesson students should be able to:

- Define cutting tools
- List different types of cutting tools
- Explain different types of cutting tools

Step 1: The researcher told the students that in their previous lesson, they had been taught driving tool.

Step II: The researcher defined cutting tools to the students.

Step III: The researcher showed the instructional digital video disc of cutting tool to the students.

Step IV: The researcher list some of the cutting tools to the students as the students watch the instructional digital video disc.

Step V: The researcher explained to the students different cutting tools they watched on the instructional digital video disc.

Step VI: The researcher summarize his lesson and gave room for the students to ask questions based on the instructional digital video disc of cutting tools they watched.

Step VII: The researcher also asked the students some questions e.g.

- Define cutting tools
- List 5 types of cutting tools
- Explain any three types of cutting tools

Week 5

Objectives: At the end of the lesson, students should be able to:

- Define scrapers
- States the uses of scrapers
- List different types of scrapers
- Explain different types of scarpers

Step 1: The researcher told the students that they had been taught cutting tools in their previous knowledge.

Step II: The researcher define scrapers to the students.

Step III: The researcher played the instructional digital video disc of scrapers to the students.

Step IV: The researcher state the uses of scrapers to the students.

Step V: The researcher list different types of scrapers to the students.

Step VI: The researcher summarizes his lesson and ask the students to ask questions based on the instructional digital video disc watched.

Step VII: The researcher asked the student some questions e.g.

- Define scraper
- State only one use of scraper
- List three types of scrapers

Week 6

Objectives: At the end of the lesson students should be able to take care of the tools used in metal workshop.

Step 1: The researcher told the students that they had been taught scrapers in their previous knowledge.

Step II: The researcher plays the instructional digital video disc of how to take care of metal work hand tools.

Step III: The researcher state some of the care to be taken after a tool had been used to the students.

Step IV: The researcher also told the students that it is good to always use the right tools for the right job.

Step V: The researcher summarizes his lesson and ask the students to ask questions based on the instructional digital video disc they watched.

Step VI: The researcher ask the following questions:

- What is care
- List six cares to be given to our tools immediately after use.

APPENDIX K

SECTION B

INSTRUCTION: ANSWER ALL QUESTIONS

1. Which of these is used for marking out accurately and for checking flatness of a metal?
   (a) surface plate and table (b) scriber (c) odd-leg calipher (d) divider

2. All are marking out tools except
   (a) calipers (b) odd-leg caliper (c) dot punch (d) try square

3. Which of these is used for measuring and checking angles of 90^{o} or the squareness of edges.
   (a) odd-leg caliper (b) try square (c) dividers (d) scriber

4. Which of these is used for measuring the distance between two points.
   (a) protractor (b) micrometer (c) steel rule (d) vernier caliper

5. Which of these is used for measuring angles in degree and can also be used for checking any angle
   (a) micrometer (b) scriber (c) centre square (d) protractor

6. All are types of micrometer except
   (a) internal micrometer (b) venier micrometer (c) external micrometer
   (d) depth gauge micrometer

7. One of these can measure both internal and external dimensions over a wider range than is aliper
   (a) venier caliper (b) centre square (c) protractor (d) steel rule

8. Which of these is used for marking straight lines on metals
   (a) odd-leg calipers (b) scriber (c) try square (d) surface plate

9. One of these is used for riveting in an awkward position
   (a) straight peen hammer (b) outside aliper (c) inside aliper
   (d) venier aliper

10. All are hammers used in a metal workshop except
    (a) cross-peen hammer (b) straight pen hammer (c) claw hammer
    (d) plainshing head hammer

11. Which of these is generally used by panel beaters
    (a) cross peen hammer (b) claw hammer (c) blocking head hammer
    (d) planishing head hammer

12. One of these is best used by a sheet metal workers
(a) blocking head hammer (b) soft hammer (c) cross peen hammer
(d) ball pen hammer

13. Which of these is used for drawing down and riveting in an awkward position
(a) soft hammer (b) claw hammer (c) straight peen hammer (d) cross pen hammer

14. Which of these is used for drawing or marking lines across the end of a round bar
(a) vernier caliper (b) protractor (c) hammer (d) centre square

15. All are punches Except
(a) centre punch (b) pin punch (c) centre punch (d) bronze punch

16. Which of these is not a cutting tool
(a) file (b) saw (c) chisel (d) hammer

17. Which of these is used for removing rivets, cotter pins etc
(a) centre punch (b) pin punch (c) bell punch (d) bronze punch

18. Which of these is also referred to as automatic punch
(a) pin punch (b) center punch (c) bell punch (d) dot punch

19. All are measurement tools except
(a) dividers (b) calipers (c) metric rule (d) scale rule

20. All are screw drivers except
(a) flat screw driver (b) star screw driver (c) offset screw driver
(d) spanner

21. Which of these is used in an awkward position
(a) allen key (b) offset screw driver (c) star screw driver
(d) flat screw driver

22. All are chisel except
(a) flat chisel (b) round nose chisel (c) cross-cut chisel (d) golden chisel

23. All are files except
(a) hand file (b) round file (c) polygonet file (d) triangular file

24. Which of these is used for general work in the workshop
(a) round nose chisel (b) cross cut chisel (c) diamond nose chisel
(d) flat chisel

25. Which of this is best used for making oil grooves in a shaft
(a) flat chisel (b) diamond nose chisel (c) round nose chisel
(d) cross-cut chisel

26. _____ is used for removing small amount of metal by rubbing.
(a) chisel (b) plier (c) file (d) punch

27. All are files except
(a) square file (b) triangular file (c) round file (d) half triangular file

28. One of these is best used for filing corners in awkward positions
(a) triangular file (b) half round file (c) round file (d) hand file

29. Which of these is also called rat-tail file
(a) square (b) round file (c) triangular file (d) hand file

30. _____is used for removing slight irregularities on the surface of a metal.
(a) chisel (b) plier (c) scraper (d) file

31. All are different types of scrapers except
(a) flat scraper (b) half round scraper (c) triangular scraper
(d) round scraper

32. Which of these is best used in round holes of shorter length
(a) half round scraper (b) round scraper (c) triangular scraper
(d) flat scraper

33. Which of these can best be used for finding the center of a round bar
(a) pin punch (b) centre punch (c) bell punch (d) dot punch

34. Which of these is best used for driving in or out screws with hexagonal head.
(a) offset screw driver (b) spanner (c) allen (d) wrench spanner

35. Hammers are identified by their
(a) handle (b) strength (c) heads (d) weight

36. A nail can best be driven in to a wood through the use of _____
(a) plier (b) spanners (c) hammer (d) stone

37. One of these is used for tightening and loosing nuts and bolts
(a) trammel (b) ratchet (c) hand drill (d) spanner

38. Which of these is a cutting tool?
(a) hammer (b) file (c) square (d) clamp

39. All are parts of files except
(a) tang (b) cutting face (c) safe edge (d) Tang handle

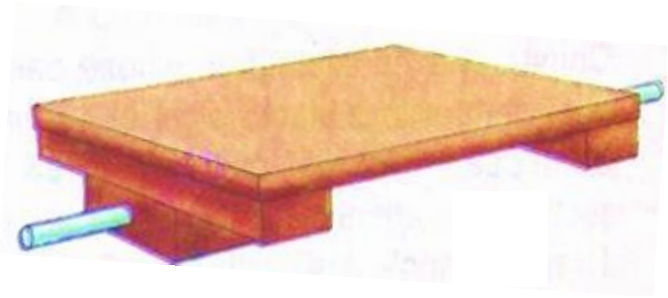
40. All are types of hacksaw except
(a) The adjustable (b) the tubula (c) the junior hacksaw and
(d) the senior hacksaw

APPENDIX L

MARKING SCHEME

(1)	A	(21)	B
(2)	A	(22)	D
(3)	B	(23)	C
(4)	C	(24)	D
(5)	D	(25)	C
(6)	B	(26)	C
(7)	A	(27)	D
(8)	B	(28)	A
(9)	A	(29)	B
(10)	C	(30)	C
(11)	D	(31)	D
(12)	A	(32)	A
(13)	D	(33)	C
(14)	D	(34)	C
(15)	D	(35)	C
(16)	D	(36)	C
(17)	B	(37)	D
(18)	C	(38)	B
(19)	A	(39)	D
(20)	D	(40)	B

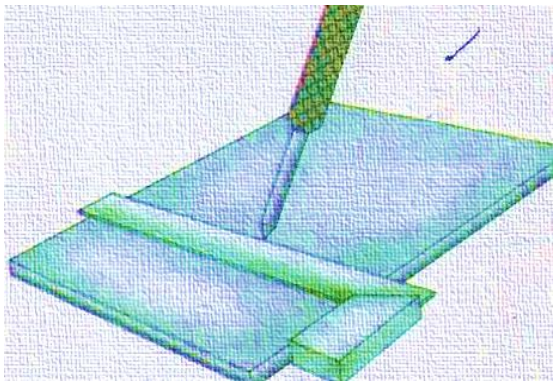
APPENDIX M



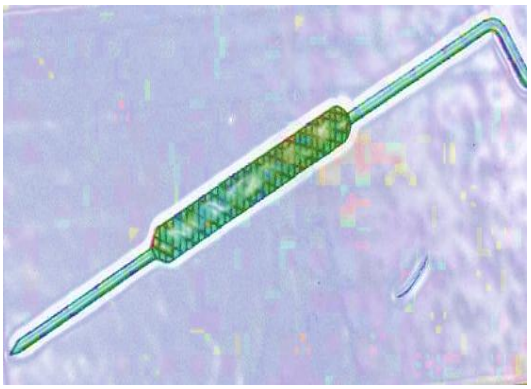
Surface Plate



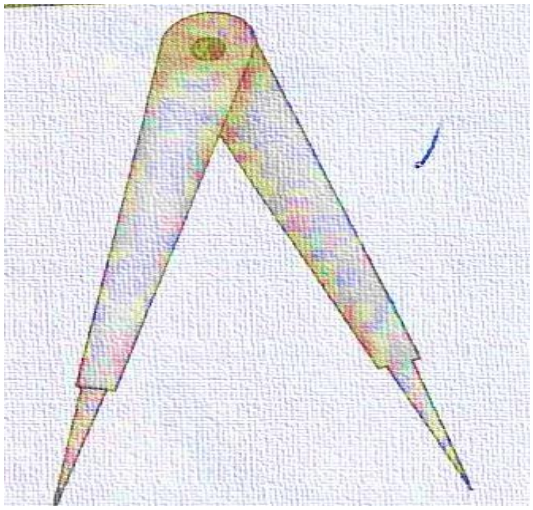
Surface Table



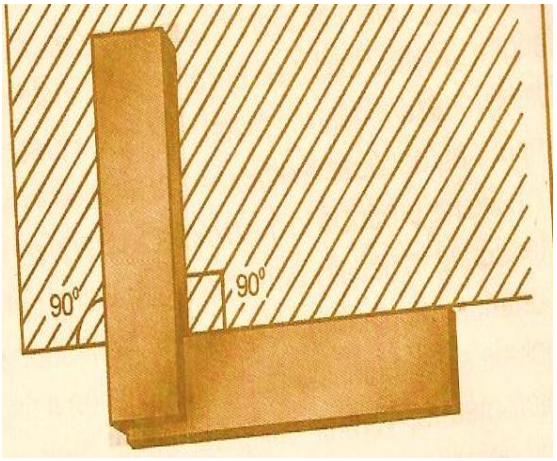
Scriber in Use



Scriber



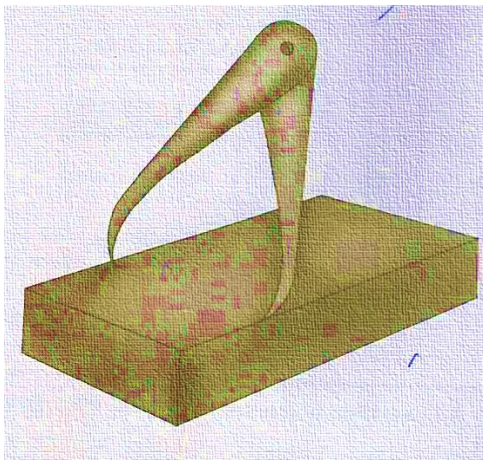
Divider



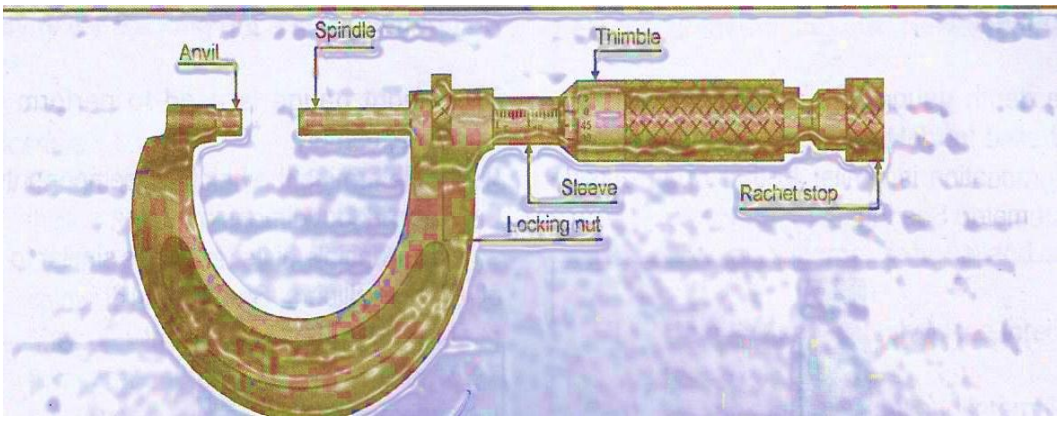
Try Square in use



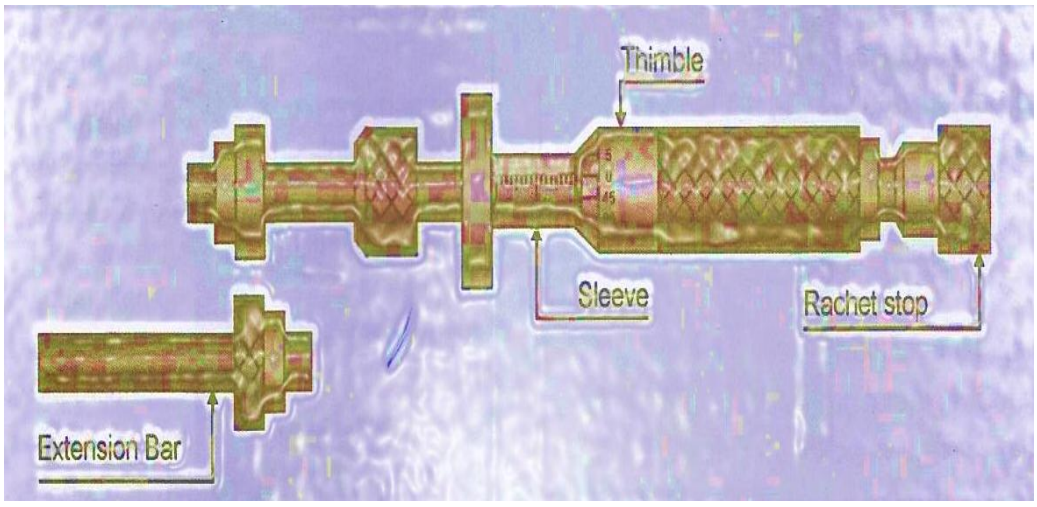
Inside Caliper in Use



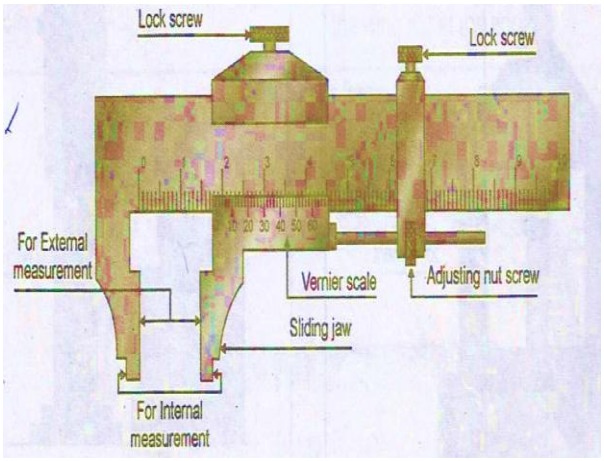
Outside Caliper In Use



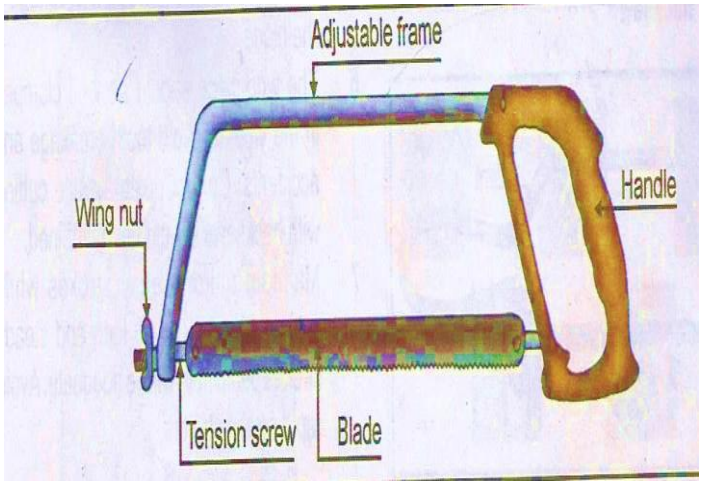
Micrometer Screw Guage



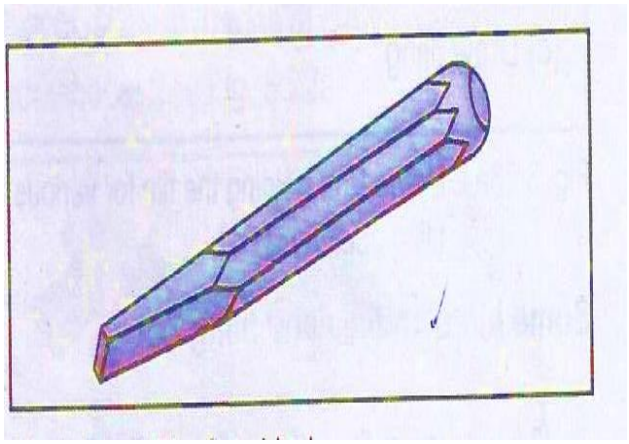
Depth Micrometer

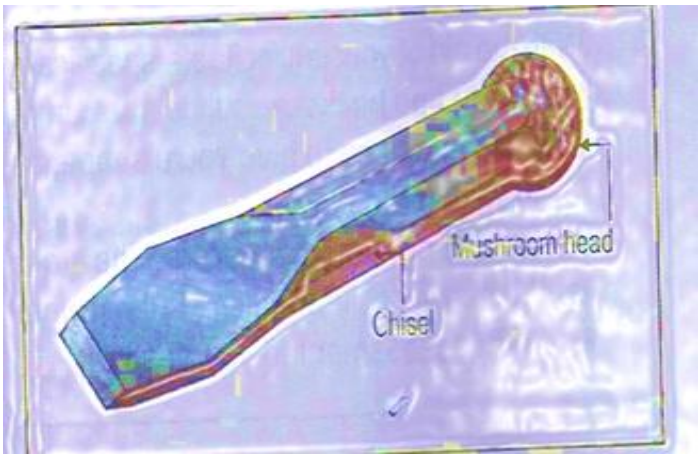


Vernier Caliper

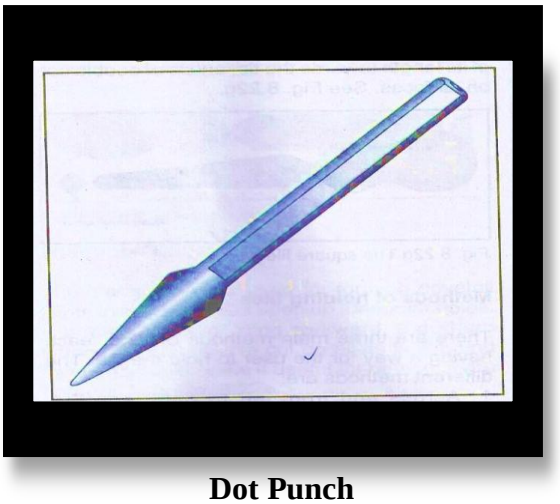


Hack Saw

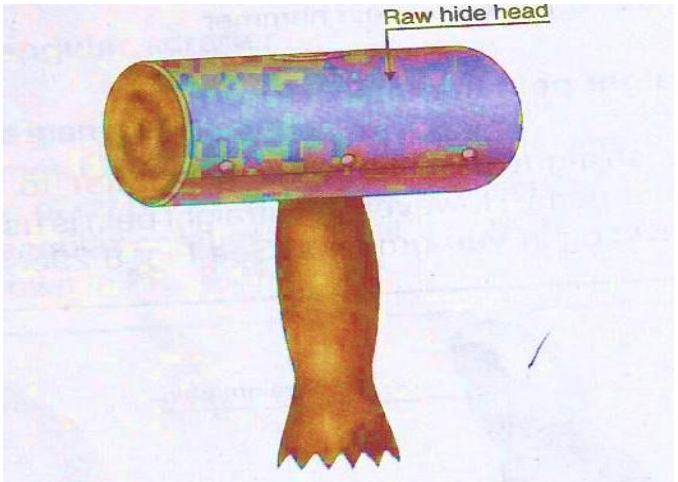




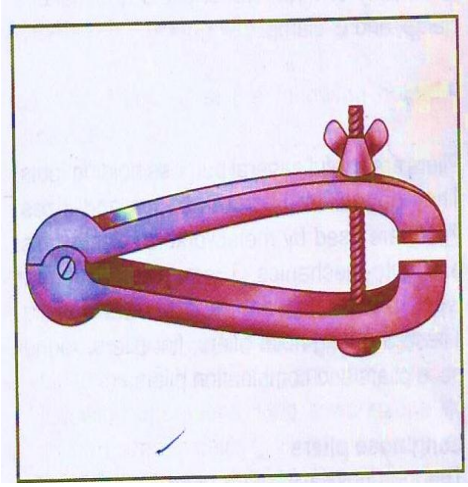
Chisels

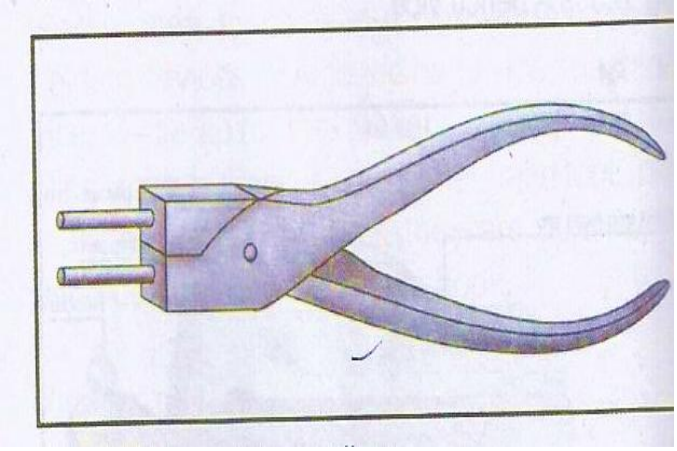


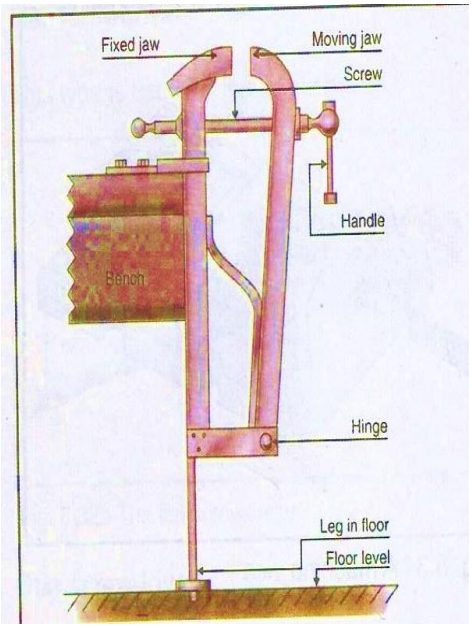
Dot Punch

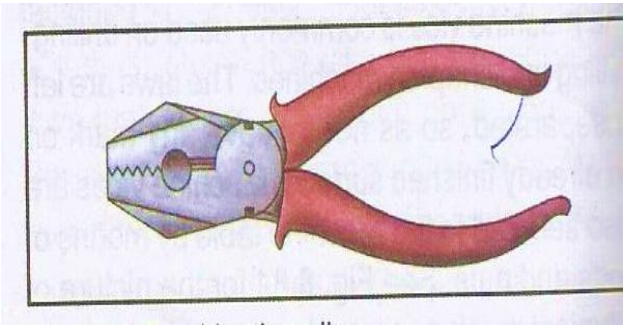


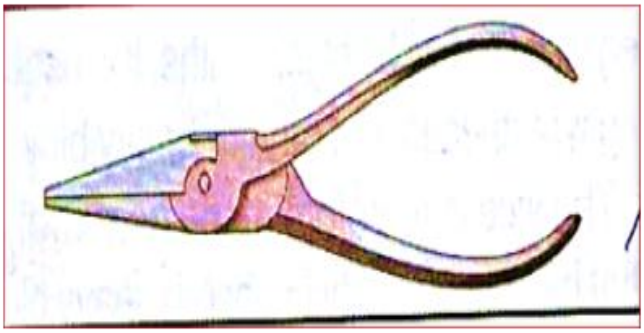
Mallet



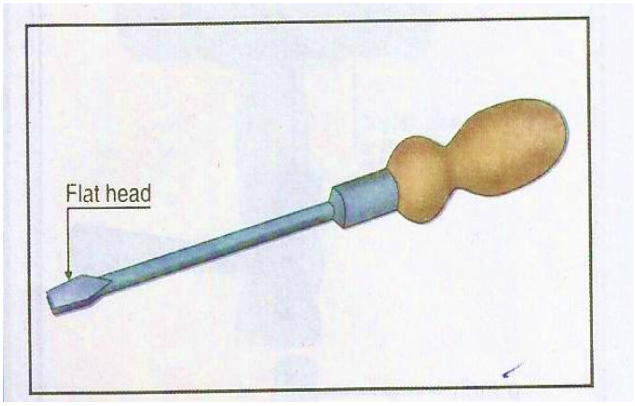



Fixed jaw
Moving jaw
Screw
Handle
Bench
Hinge
Leg in floor
Floor level

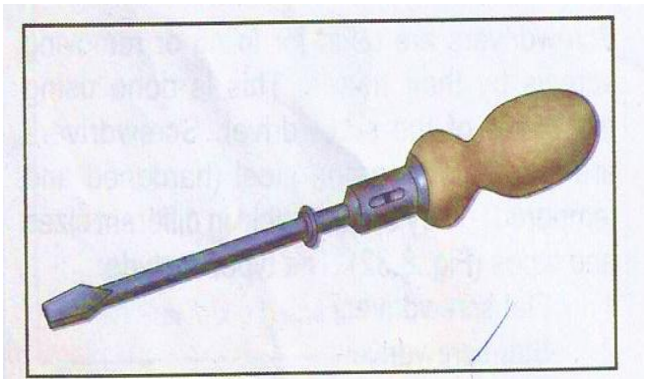




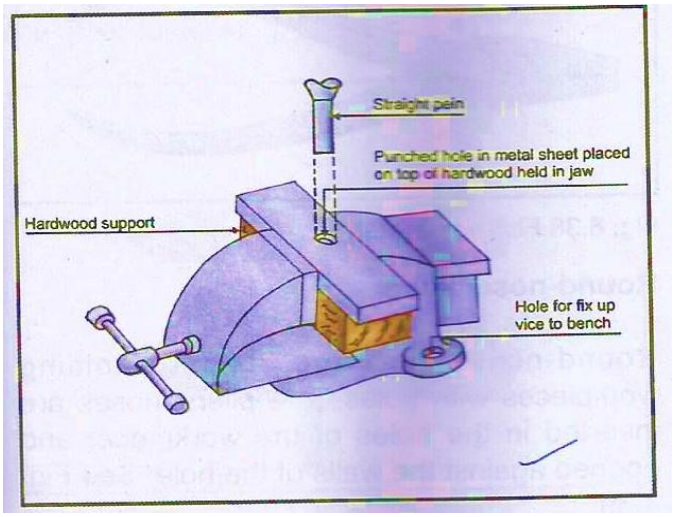
Clamps



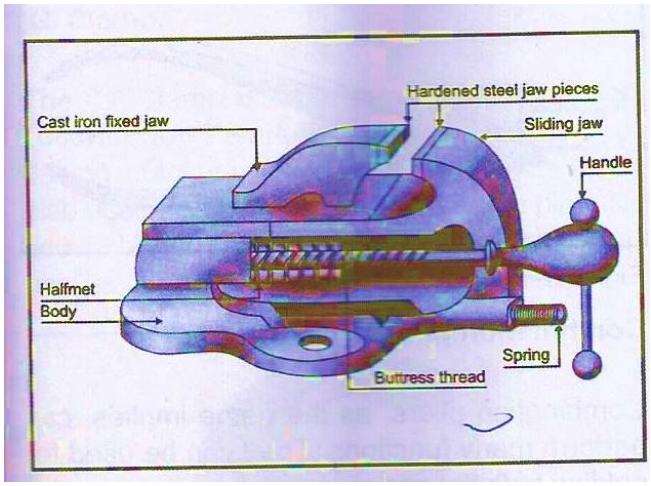
Flat Screw Driver



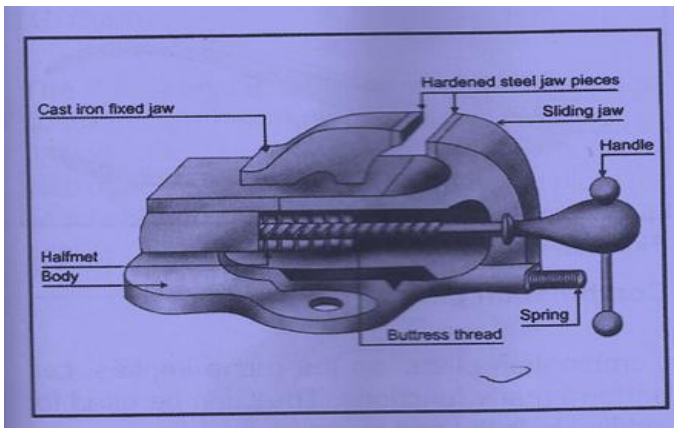
Star Screw Driver



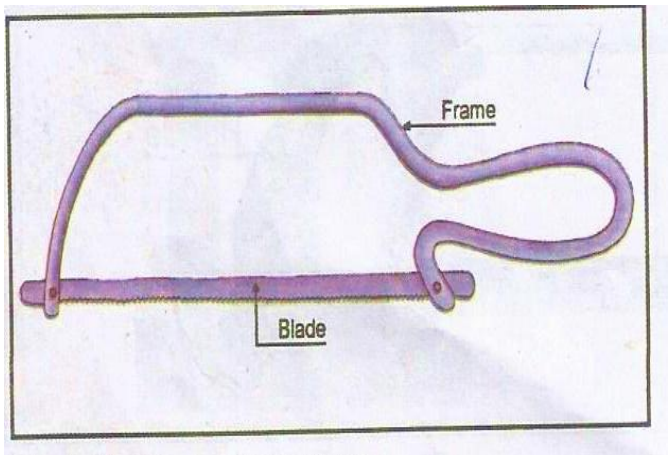
Bech Vice



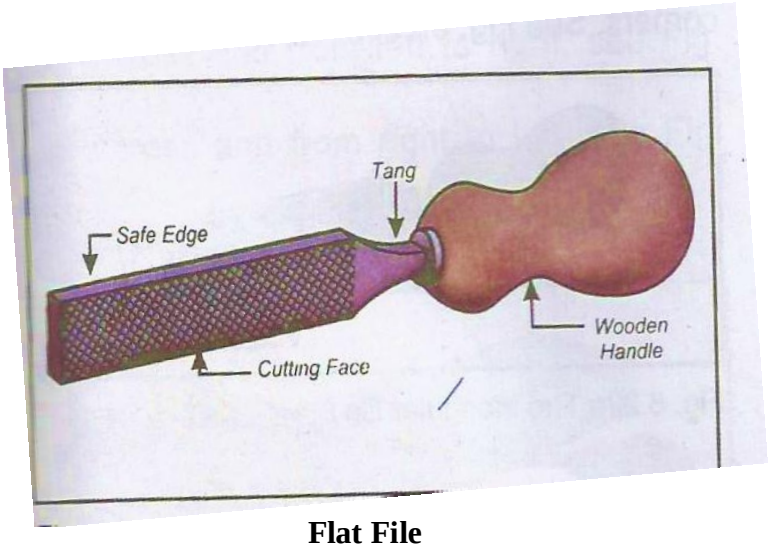
Machines Vice



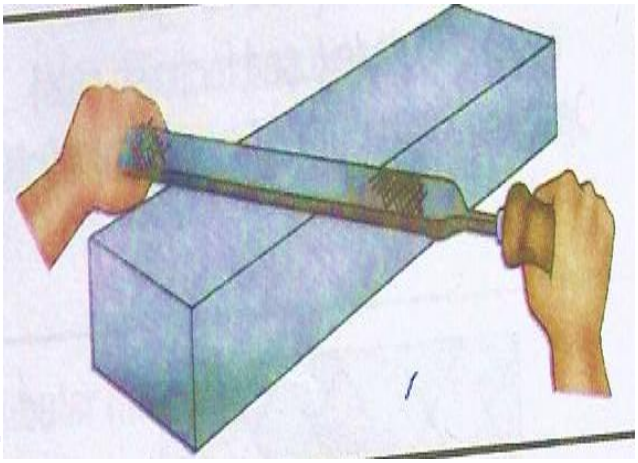
Machines Vice



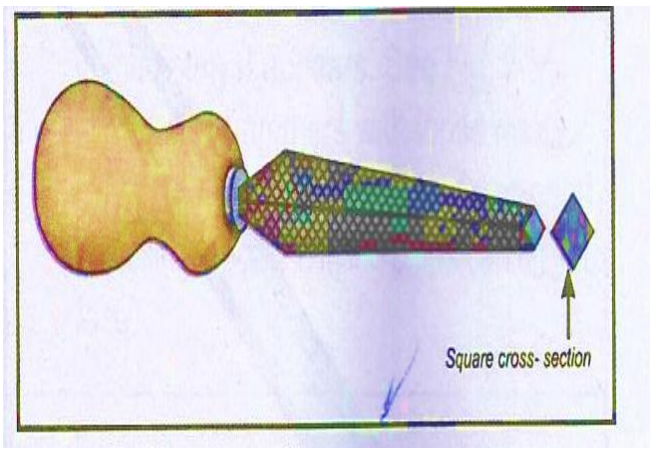
Junior Hacksaw



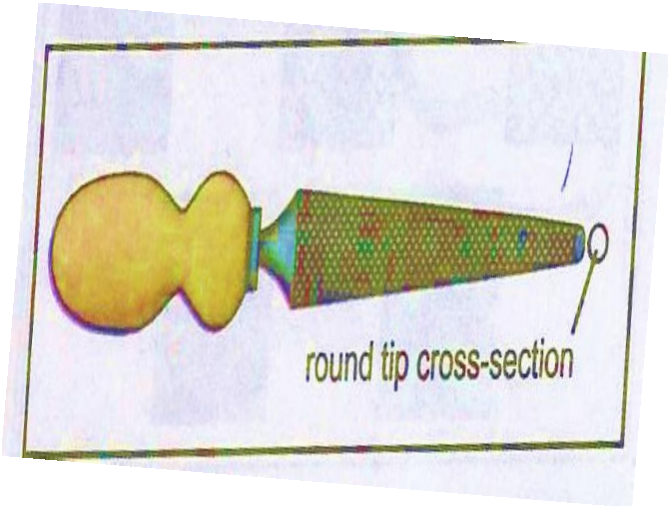
Flat File



Triangle File



Square File



Round File

APPENDIX N

	PRE-TEST SCORES	
S/N	CONTROL GROUP	EXPERIMENTAL GROUP
1.	15	18
2.	27	28
3.	23	32
4.	20	23
5.	24	16
6.	14	17
7.	16	38
8.	27	25
9.	18	19
10.	28	26
11.	32	36
12.	23	25
13.	15	15
14.	21	27
15.	19	23
16.	15	20
17.	22	24
18.	20	14
19.	24	16
20.	27	27
21.	18	18
22.	28	28
23.	32	32
24.	23	23
25.	15	15
26.	27	27
27.	23	23
28.	20	20
29.	24	24
30.	14	14
31.	16	16
32.	27	27
33.	18	18
34.	28	28
35.	32	32
36.	23	23
37.	15	15
38.	21	25
39.	19	20
40.	15	17

41.	22	24
42.	20	22
43.	24	26
44.	21	25
45.	19	20
46.	15	17
47.	22	24
48.	20	22
49.	24	26
50	25	26
Total	1119	1146
Mean	22.38	22.92
SD	1.2733	

	POST-TEST SCORES	
S/N	CONTROL GROUP	EXPERIMENTAL GROUP
1.	26	38
2.	18	48
3.	29	63
4.	30	61
5.	37	53
6.	31	42
7.	16	46
8.	22	37
9.	24	63
10.	29	53
11.	18	56
12.	28	46
13.	32	52
14.	23	50
15.	16	57
16.	17	41
17.	38	39
18.	25	52
19.	19	46
20.	26	61
21.	24	53
22.	21	54
23.	16	37
24.	17	52
25.	16	46
26.	25	67
27.	21	38
28.	25	40

29.	13	45
30.	15	48
31.	26	38
32.	18	48
33.	29	63
34.	30	61
35.	37	53
36.	31	42
37.	16	46
38.	22	37
39.	24	63
40.	29	53
41.	18	56
42.	28	46
43.	32	52
44.	23	50
45.	16	57
46.	17	41
47.	38	39
48.	25	52
49.	19	46
50	26	61
Total	1201	2488
Mean	24.02	49.76
SD	1.2733	

	POST-TEST SCORES	
S/N	EXPERIMENTAL GROUP BOYS	EXPERIMENTAL GROUP GIRLS
1.	67	38
2.	38	48
3.	40	63
4.	45	61
5.	48	53
6.	38	42
7.	48	46
8.	63	37
9.	61	63
10.	53	53
11.	42	56
12.	46	46
13.	37	52
14.	63	50
15.	53	57
16.	56	41

17.	46	39
18.	52	52
19.	50	46
20.	57	61
21.	41	53
22.	39	54
23.	52	37
24.	46	52
25.	61	46
Total	1246	1244
Mean	24.92	24.88
SD	1.2733	

T-Test of Ho1

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	EXPERIMENTAL	24.0200	50	6.60083	.93350
	CONTROL	49.7600	50	8.35088	1.18099

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	EXPERIMENTAL & CONTROL	50	.110	.445

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	EXPERIMENTAL - CONTROL	25.74000	10.05659	1.42222	28.59805	22.88195	18.099	98	.000

T-Test of Ho2

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BOYS	49.6800	25	8.85400	1.77080
	GIRLS	49.8400	25	7.99833	1.59967

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	BOYS & GIRLS	25	-.236	.257

Paired Samples Test

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	BOYS – GIRLS	.16000	13.25607	2.65121	5.63184	5.31184	.060	24	.952

APPENDIX M

Ministry of Education, Kaduna State 2015/2016 Session Enrolment of Student in Junior Secondary BY Class Gender

S/N	Name of School	JSS I		JSS II		JSS III		Total		
		M	F	M	F	M	F	M	F	Grand Total
1.	GTSS Chindit Barrack	343	-	335	-	225	-	963	-	963
2.	GJSS Rimin Doko	319	234	226	173	173	145	718	552	1270
3.	Gjss Kofan Jatau	100	150	120	110	70	180	290	440	730
4.	GJSS Aminu	383	117	522	128	390	110	1295	355	1550
5.	GJSS T/Wada	189	247	191	263	200	228	580	738	1318
6.	GGJSS D/Bauchi	-	410	-	460	-	350	-	1,220	1120
7.	GJSS T/Saibu	80	22	100	20	110	30	290	72	362
8.	GJSS Muchia	148	107	170	132	172	128	490	367	857
9.	GJSS Zaria	201	-	215	-	158	-	-	574	574
10.	GJSS Magajia	180	70	94	37	119	43	393	150	543
11.	GJSS Chindit Barrack	-	330	-	330	-	270	-	930	930
12.	GJSS K/Doka	398	176	406	199	500	232	1304	607	1911
13.	GGJSS Pada	-	300	-	255	-	245	-	800	800
14.	GJSS Kinkiba	40	05	46	06	30	04	116	15	131
15.	GJSS Aba	28	10	42	03	34	03	104	16	120
16.	GJSS Matari	28	06	20	03	19	02	63	11	74
17.	GJSS Mangi	06	02	04	03	03	02	13	07	20
18.	GJSS Bogari	28	06	39	11	34	06	101	23	124
19.	GJSS Chikaji	160	120	130	110	155	95	446	325	720
20.	GJSS Dinya	33	07	24	11	24	06	81	24	105
21.	GJSS Gimba	73	39	44	25	54	23	171	87	258
22.	GJSS Ainai	40	30	39	21	42	08	121	59	150
23.	GSS Yakasai	31	11	40	16	51	18	122	45	167
24.	GSS T/Jukun	98	2122	185	175	218	242	501	629	1130
25.	GSS K/Kuyambana	158	57	163	58	160	47	481	162	643
26.	GSS Dakace	75	78	80	72	50	85	200	155	355
27.	GGSS K/Gayan	-	347	-	277	-	225	-	849	849
28.	GSS Gyallesu	128	81	103	50	102	45	333	176	509
29.	GGSS Zaria (WTC)	-	150	-	189	-	196	-	541	541
30.	Barewa College	200	-	230	-	210	-	-	640	640
31.	Alhudahuda College	200	-	250	-	240	-	-	690	690
32.	GSS Likoro	100	40	82	36	107	18	289	94	383
33.	SIASS K/Karan ‘A’	20	05	22	05	22	08	64	18	82
34.	SIASS K/Karau ‘B’	110	190	110	170	107	143	327	503	830
35.	GSS Kugu	102	15	70	07	60	13	232	35	267
36.	GSS Richifa	49	06	41	09	33	06	123	21	144
37.	GJSS (jnr) Kwangila	25	28	28	30	20	20	20	20	189
38.	GJSS Jama’a	30	20	20	30	30	35	20	25	210

Kaduna State Ministry of Education, 2016.