EFFECT OF MNEMONIC TECHNIQUES ON MEMORY RETENTION AND ACADEMIC PERFORMANCE OF PRIMARY FOUR PUPILS A CASE STUDY OF AL-AMIN PRIMARY SCHOOL BAUCHI

BY

MOHAMMED GARBA

SPS/11/MED/00054

A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES THROUGH THE DEPARTMENT OF EDUCATION, BAYERO UNIVERSITY KANO,
IN FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS DEGREE IN EDUCATIONAL PSYCHOLOGY

NOVEMBER, 2015

APPROVAL PAGE

This research report has been read and approved as meeting the requirement for the award of master degree in psychology Bayero University, Kano.

_____ _____
Prof. Aisha M. Madawaki Date
External examiner

_____ _____
Prof. M.I. Yakasai Date
Internal Examiner

_____ _____
Prof. M.Y. Bichi Date
Supervisor

_____ _____
DR. Ahmad Muhammad Garba Date
P.G. Cordinator

_____ _____
Prof. T.M. Garba Date
Head of Department & Chief Examiner

_____ _____
Prof. Sa'id Ahmad Date
Dean, P.G. School

CERTICATION

I certified that this research work was conducted, written and compiled by me. I also certify that to the best of my knowledge this work has not been presented wholly or partially for any degree or publication else where.

Mohammed Garba
SPS/11/MED/00054

DEDICATION

I dedicated this work to my late parents. May their soul rest in perfect peace, Amin.

ACKNOWLEDGEMENT

In the name of Allah, the Beneficent, the Merciful. All praise are due to Allah, the most high with whose guidance and acceptance, we are able to see to the successful completion of our M. Ed Programme in Bayero University Kano.

May the peace and benedictions of Allah be upon the last in the chain of the prophets, Prophet Muhammad (S. A. W.), his Sahabas and those who follow their foot steps to the day of Judgement.

I am sincerely grateful to my supervisor Prof. M. Y. Bichi for his patience, fatherly and scholarly advice, and most importantly guidance and supervision of this research work, without which it would not have been successful. May Allah reward and bless him abundantly for what he did to me.

I must acknowledge the courage and inspiration I got from my Uncle Aliyu B. Shehu. my Friend Abubakar Garba and my Families. I thank you all, may Allah reward you abundantly. Amin.

Also the Head of Department Prof. T. M. Garba, Master of Education Cordinator Dr. A. M. Garba, Dr. A. M. Lawan, Dr. Salisu Shehu and all staff of the Department of Education. Then my friends especially Abubakar Garba, Garba A. Moh'd., Auwal Ishaq, Nasiru B. Ningi and my families.

ABSTRACT

This study investigated the effect of mnemonic techniques on memory retention and academic performance of primary four pupils A case study of Al-amin primary schools Azare, Bauchi State, Nigeria. The study adopted the pre-test –pos test control group, quasi; experimental design. One Hundred pupils selected randomly and divided into two groups (experimental and control groups). Three hypotheses were formulated and tested using t-test for independent and dependent samples. The results showed that the students in experimental group performed significantly better than the control group, Thus implying that mnemonics techniques are effective in enhancing pupils' performance. Also, it was found that there is no significant sex difference in the pupil's performance within experimental group. Thus, implying that the effect of mnemonic techniques on pupils performance does not differ by sex. In view of this, it was recommended among others that Government and school administrators should organize periodic and regular training, seminaras and workshops for teachers to update their knowledge on current and innovative teaching strategies such as mnemonic devices.

TABLE OF CONTENTS

CHAPTER ONE
INTRODUTION

1.1 Background to the Study

Teachers and educational administrators frequently act on results obtained with several kinds of tests used in schools. In a primary school setting, the classroom teacher depends largely upon achievement tests for measuring the progress of pupils in a particular subject area. In the words of Aiken (1979), the most popular types of tests in schools are measures of achievement – the level of knowledge, skill accomplishments in an area of endeavour.

Pupils academic achievement depends to a large extent on comprehension of basic concepts taught in the classroom and also on their ability to retain and retrieve the information over a long period of time. Practically, all daily activities, such as talking, reading and socializing depend largely on information about environment learnt and stored in the mind or brain. Memory allows us to retrieve events from the distant past. It enables us to learn new skills and to form habits. "Without any sort of memory, humans would quickly perish" (Henry, 2006).

"Teachers are under a lot of pressure to have their students not only understand the concepts, but also be able to retain the information over a longer period of time" (Delashmutt, 2007), Unfortunately, not much attention is paid to strategies and techniques of enhancing the memory capacities of learners as

important means of retaining and retrieving information for application to cope with life, hence the need for this study.

1.2 Statement of the Problem

Practically, inadequate instruments that could correlate between memory retention and academic achievement of pupils' performance during schooling make prediction of pupils very difficult. No one could perfectly ascertain the ability of pupils to remember factual information, answer questions and demonstrate comprehension of whether or not a candidate (pupil) could perform or achieve. Through, the use of mnemonic techniques, it is more likely that the pupils could be able to remember factual information and answer questions because it's a memory enhancing instrument/ strategy that involved teaching pupils to link new information that is taught to those they already know.

This study is therefore, concerned with the effect of mnemonic techniques on memory retention and academic performance. Specifically of seeks to find out how effective are mnemonic techniques in enhancing memory retention and academic performance of primary four pupils Al-Amin Primary School Bauchi State, Nigeria.

1.3 Objectives of the Study

The objectives of this study are as follows: -

(i) To find out if there is any difference in performance between pupils taught without the use of mnemonics and those taught with the use of mnemonics.

(ii) To find out the extent to which girls performance differs from boys' performance in the control group.

(iii) To find out the extent to which girls performance differs from boys' performance in the experimental group.

1.4 Research Questions

The following research questions were raised to guide the study in order to realize its objectives.

(i) Is there a significant difference in performance between pupils taught with the use of mnemonics and those taught without the use of mnemonics?

(ii) To what extent is the girls' performance different from the boys' performance in the control group?

(iii) To what extent is the girls' performance different from boys' performance in the experimental group?

1.5 Hypotheses

In order to provide answers to the research questions posed above, the following hypotheses were postulated and tested:

Ho1: There is no significant difference in the pupils' performance between the experimental group and the control group.

Ho2: There is no significant sex difference in the pupils' performance within the control group.

Ho3: There is no significant sex difference in the pupils' performance within the experimental group.

1.6 Significance of the Study

This study was carried out in order to ascertain the effect of mnemonic techniques on memory retention and academic performance of p4 pupils in Al-Amin primary school in Bauchi State. If the mnemonics are found to have effects on memory retention and the p4 pupils academic performance, the researcher aims at advising the local government education authorities (LGEA) and the State Universal Basic Education Board (SUBEB) to use similar instruments for administration onto the pupils in order to accelerate their memory retention and academic performance. The findings would equally pave way for other states or regions to adopt it and or construct similar tests for their personal uses. On the area of policy making, the result obtained from this study would equally help in the evaluation, revision and improvement of the curriculum.

This study would assist classroom teachers to ascertain whether or not their pupils are operating at their maximum retention capacity or not. The study will in

addition, suggest to both teachers and parents, ways through which their children could be well prepared for classroom instructions. It would also help in the area of affective teacher preparation and guidance. It is also envisaged that the study will benefit school managers to organize classroom instructions towards ensuring teacher effectiveness and pupils' achievement.

1.7 Scope and Delimitation of the Study

This study is limited in scope. It is not intended to cover the entire primary schools in Bauchi State. Therefore, because of feasibility, time and financial constraints, the study is only limited to a pupils in Al-amin primary school in Katagum Local Government Area of Bauchi State.

1.8 Operational Definition of Terms

Mnemonics Techniques:- It is a memory techniques to help your brain better encode and recall important information.

Memory Retention:- Is the ability of the mind to store and recall past sensation, thoughts, knowledge etc.

Academic Performance:- The extent to which a student has achieved the educational goals

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The study revolves around the concept of memory and learning; the extent to which one is familiar with the concepts places him in a better position to understand and explain more about them. The reviews of literature therefore highlight the following areas: -

- Conceptual Background
- Theoretical Frame Work
- Meaning of Mnemonics
- Types of Mnemonics
- Mnemonics as Memory Aids
- Memory and Learning
- Learning Process
- Memory
- Types of Memory
- Memory Process
- Mnemonics as Techniques for Improving Memory Retention in Children
- Concept of Academic Performance
- Factor Affecting Academic Performance

- Memory Retention and Academic Performance
- Review of Empirical Research
- Summary and Uniqueness of the Study

2.2 Conceptual Background

2.2.1 Meaning of Mnemonics

The word mnemonic is derived from the Ancient Greek work (Mnemonikos), meaning "of memory, or relating to memory" and is related to Mnemosyne "remembrance". These words are derived from (mneme), "remembrance, memory". It was the device for aiding the memory, enabling the mind to reproduce a relatively unfamiliar idea, and especially a series of dissociated ideas, by connecting it, or them, in some artificial whole, the parts of which are mutually suggestive. (Manalo, 2004)

Wang and Thomas (2000) have defined mnemonic as an imagery-based technique designed to foster a recall of paired association. Mnemonics are systematic procedure for improving memory (Atkinson et al, 2003). When information has little inherent meaning, mnemonic strategies build in meaning by connecting what is to be learned with established words or images.

Delashmutt (2007) defines mnemonics as enhancing instructional strategy that involved teaching students to link new information that is taught to information they already know. Mnemonic is any device for aiding the memory.

The principle is to create in the mind an artificial structure that incorporates unfamiliar ideas or especially, a series of dissociated ideas that by themselves are difficult to remember. Ideally, the structure is designed so that its parts are mutually suggestive.

Jennifer (2010) view "Mnemonics as an art or practice of improving or of aiding the memory and to a system of rules to aid the memory" mnemonic impose organizational and meaning onto to-be learned information, thereby making the material more memorable. Knowledge about mnemonics can be applied to many subjects. As such, teaching students how to use mnemonics can benefit their academic success in a broader sense by improving their learning skills.

2.2.2 Types of Mnemonic Techniques

Mnemonic techniques are divided into two sections:

Section A

(i) Organizational mnemonics and
(ii) Encoding mnemonic

(i) Organizational mnemonics: these mnemonics organize and interrelate new information in memory so that information can be later recalled. It is also an organizational memory scheme that helps you retrieve information from memory (Suleiman, 2011).

(iii) Encoding mnemonics are used to transform low-imagery, abstract material into more memorable forms before an organizational mnemonic is used to store the information in memory.

Delashmitt (2007) cited in American institute for research (2004) opined that learning something new is like adding a thread to a web. For students with memory challenges or processing disorders, a mnemonics technique becomes a tool to build threads from new old ideas. Kiyawa (2012) reiterates, the following are a few simple mnemonics help learners improve assimilation and thus have longer retention.

Section B.

i.) Acronym: This is the commonest mnemonic in use (Robert 2003). It is a form of abbreviation a word formed from the first letter of each word in a phrase. For example, the acronym ECOWAS stands for Economic Community of West African States. A good memory can be developed in children by the use of mnemonics. This could be by using initial letters

making up the word space to fix the names of the important instincts in your mind as in the case of ROYGBIV learnt by many school children represents colour of the visible spectrum,

Where:

R = Red, O = Orange, Y = Yellow
G = Green, B = Blue, I = Indigo,
V = Violet.

Another example of a common acronym in use by primary school pupils in Nigeria is MR. NIGER

M = Movement, R = Respiration, N = Nutrition, I = Irritability, G = Growth, E = Excretion, R = Reproduction.

ii.) Chunking: It involves grouping individual pieces of information in a manner that makes them easier to remember that is relation, hierarchical, importance, function digit and soon. For example the individual digit 1, 9, 6 and 1 may be easier to remember as the year 1961, the digit 6254391 might be more readily recalled as the telephone number 625-4391.

Another example of chunking in use is SPSEDU1100054 and might be written as SPS/EDU/11/00054.

iii.) Rhyming:

Human beings have a natural tendency to remember rhymes and rhythms. A very popular technique being applied on the number of days in each month of a year is

"Thirty days have September April, June and November

All the rest have thirty-one

February has twenty-eight alone

Except in leap year, then the time when February's days are twenty-nine"

In the words of Kiyawa , (2012), it is possible to create rhymes like this, and it will not only aid in improving your memory but in improving your creativity as well. "When a few teachers tried just one of the mnemonic thymes, they were surprised how quickly the kids memorized the concept" (Delashmutt, 2007). Another common rhyme being used in Nigerian primary schools with which children early recall the 12 months of the year in a calendar is

JANUARY, FEBRUARY, MARCH,
APRIL, MAY, JUNE, JULY,
AUGUST, SEPTEMBER, OCTOBER,
NOVEMBER, DECEMBER.

In addition to this, we have another common rhyme on the rivers of Africa Viz:

Nile, Niger, Senegal, Congo, orange, Limpopo, Zambezi.

iv.) The PQ4R: This is a mnemonic technique used for remembering a chapter from a text book; the first thing is to preview the information by quick skimming. The next step is question above the information third is to read carefully, reflect, recite after reading, and the last step is to review.

v.) LOCI: - It involves children develop images of items to be remembered and mentally, store them in familiar location. Rooms of a house and stores on a street are common locations used in this technique. For example, if children need to remember a list of concepts, they can mentally place them in the rooms of their house, such as entry flyer, living room, dining room and kitchen. Then when they need to retrieve the information, they can image the house, mentally go through the rooms, and retrieve the concepts.

vi.) PEGWORD METHOD: Another imagery method useful for serial learning is called the PEGWORD METHOD (Krinsky & Krisky, 1996) in Robert 2006. To use this mnemonic, the student might memorize a list pegwords that rhyme with the numbers 1 to 10. For example, a set of "pegs" that you could use would link numbers with these words.

One is a sun,

Two is a zoo,

Three is me,

Four is a stone,

Five is a dive,

Six are sticks,

Seven is heaven,

Eight is a gate,

Nine is pine.

Ten is a den

By thinking of exotic images using the peg words tied to the number, you can recall specific numbers that you need to memorize. For instance, suppose you had trouble remembering, the value of pi, used to calculate the circumference of a circle, (3.14, in case you don't remember). Translate the number into the relevant peg words – me (three), sun (one), and store (four) - and imagine an image linking the three (Robert 2006, in Ronald 2013).

Mnemonics are often used in education at the initial stage of knowledge acquisition. They may act in this early stage as scaffolding for more permanent schematic knowledge that develops as education advances in Jennifer (2012).

2.3 Theoretical Frame Work

For the sake of understanding the topic of research, literatures about cognitive development are more relevant and become necessary to be reviewed. Among the most well-known theorists in this area was Piaget. His theory of cognitive development is a comprehensive theory about the nature and development of human intelligence. It is primarily known as a developmental stage theory.

Piaget's theory deals with the nature of knowledge itself and how humans come gradually to acquire, construct, and use it. To him, cognitive development was a progressive reorganization of mental processes as a result of biological maturation and environmental experience. Children construct an understanding of the world around them, and then experience discrepancies between what they know and what they discover in their environment. The concept of cognitive development implies those mental processes concerned with knowing things such as perception, memory, imagery. The practical importance of cognitive development is to know how a child thinks or how his thinking changes as he develops.

The relevance of Piagetian concept of cognitive development is clearly shown when critical view is made about the achievement recorded as the child grows (Auwal, 2003), Piaget identified four main stages of cognitive development as follows:-

(i) Sensory Motor Stage: these stages extend from birth to 2 years. Major achievement of the child during this period includes modification of reflexes with a view to helping the child to interact with his environment. Repetitive aspect of behavior as in reproduction of an action which at first was obtained by chance, repetition of an interesting external events such as the ability of the child to remove a piece of cloth covering his face but no idea of removing a

cloth covering an object, coordination of secondary schemes as in the form of seeking for hidden object, engaging in active experimentation by trial and error with the hope of arriving at novelty and development of representation though as in the formation of the concept of object permanence and recognition. This object continues to exist, even when they can no longer be perceived. Piaget believed that throughout the sensory motor stage the child is only concerned with his immediate environment and his preoccupation lies in the achievement of short term goal (Auwal, 2011).

(i) **The Preoperational Stage:** This period lasts from 2 years to 6 years. One of the great features of this stage is symbolic function. Two ways in which children display the symbolic function are through the use of words to represent object and through play, such as imagining that a block is a car or a doll is a real baby. As children practice using symbols, they become increasingly able to represent objects and events mentally with words and images (Samuel 2008). Another great achievement of the preoperational child is the acquisition of the property of classification that is sorting of sticks, toys and object according to some given dimension of properties example length, colour, size and shape.

(ii) **Concrete Operational Stage:** At this stage (age 7 to 11 or 12 years), new scheme allows children to understand that a given quantity of matter remains

the same despite rearrangement or change in appearance, as long as nothing is added or taken away – a concept Piaget called conservation. However, the child thinking at this stage is still limited because he applies this mental operation to real object. The child cannot think about purely hypothetical, mathematical or propositional statement, he cannot divorce himself from the objective and real world. The concrete operational period is characterized by Whys and it is also a period of development of moral feeling and judgment (Auwal 2003).

Formal Operational Stage: The formal operatives stage (age 11 or 12 years and beyond) is Piaget fourth and final stage of cognitive development. At this stage, preadolescents and adolescents can apply logical thought to abstract, verbal and hypothetical situation and to problems in the past, present or future Piaget called hypothetic – deductive thinking (Samuel 2008). Another major achievement of this period is the ability to organize single operation into higher hierarchical operation.

Piagetian theory of cognitive development is relevant to this study because, the concept of cognitive development implies those mental processes concerned with, knowing things such as perception, memory, imagery etc. It also deals with tracing the cause of mental development in children and the ideas shaped from the concept have important implication, in the teaching and learning process. However, looking at the stages of Piagetian concept of cognitive development, it is

believed that the concept stage is relevant to this study; this is because the stage coincides with age level of primary four pupils of the educational institutions. It is a stage that the child solves problems involving objects, substance, and liquid and sees the relationship between them. The child can now arrange objects and materials according to a given dimension and can solve problems forward and backward. The stage at which the child benefits and works well with problems and ideas that is concrete

2.4 Mnemonics as Memory Aids

Mnemonics are systematic procedures for improving memory in Anita (1990). Mnemonics strategies involve imagery and words that enable the child to remember for understanding is preferred over rote memorization.

The idea behind using memories is to encode difficult to remember information in a way that is much easier to remember, without understanding memorization become merely an accumulation of words. When mnemonics are used during encoding of information, they may provide visual imagery that act as clues for recalling information that is low in imagery or in meaningfulness. Visual imagery mnemonics can be ones that learner generate themselves when instructed to form mental picture to make the material presented to them more memorable (Bella, 1996).

Mnemonic enables the learner to recall what has been learned and stored. Similarly, retrieval of information from our memory will be facilitated if information is well organized. The idea behind using mnemonics is to encode difficult to remember information in a way that is much easier to remember. Mnemonics are memory strategies that help meaningfully organize and chunk to – be – learned information as such, they enhance encoding and facilitate relatively (Jennifer 2010).

Ronald (2013) view mnemonic techniques as a psychological boost to the students. Generally students see memory as a passive sponge which rapidly becomes saturated with too much learning. Mnemonics show that students have direct control over the way they learn and remember, and that there are interesting and viable alternatives to simple rote memorization. It helps contribute to the feeling that students are active participant about the meaning and nature of the material to be learned, and teaches them how to organize data efficiently.

The memory principle known as the general effect (Slamecka (1978) in Jennifer (2010)) suggests that self-created materials should be better remembered. As such, an in keeping with the depth of processing principles, mnemonics that are self – generated should be better remembered. Further, the self – relevant (Rogers 1979) in Jennifer (2010) stated that material relevant to the self-schema enjoys encoding and retrieval advantages.

2.5 Memory and Learning

Memory and learning are so closely connected that people often confuse them with each other. Memory depends on learning but learning also depends on memory, because the knowledge stored in your memory provides the framework to which you link new knowledge, by association. Learning depends to a great extent on memory, child's power to remember things; memory is referred to as the power of the mind to hold, to bring back and to recognize past experiences.

Henry, (2006) defines memory as the process by which people and other organizations, encode, store and retrieve information. Encoding refers to the initial perception and registration of information. Storage is the retention of encoded information over time, while retrieval refers to the process involved in using stored information.

Samuel (2008) defines learning as a relatively permanent change in behaviour, knowledge, capability or attitude that is acquired through experience and cannot be attributed to illness, injury or maturation. Scottery (2006) defined learning as a relatively permanent change in behaviour, or behavioral repertoire that occurs as a result of experience. "Memory and learning are closely related and the terms often describe roughly the same processes" Kiyawa,(2012). He added that the term learning is often used to refer to the processes involved in the initial acquisition or encoding of information, whereas the term memory more often

refers to later storage and retrieval of information. Learning is the process by which we acquire new knowledge and memory is the process by which we retain that knowledge overtime. Most of what we know about the world and its civilization is what we have learned so, Denga (2009).

2.5.1 Learning Process

The learning process is grouped into two:

(i) **Associative Learning:-** Associative learning involves learning about relation between two or more stimuli at a time. It is still the philosophy of the Russian physiologists adhering firmly to the dictate of Pavlov, whose brilliant experiments first showed clearly the importance of this type of response (Denga 2009). Pavlov showed that a simple reflex response to a physiological stimulus can be evoked when the stimulus is gradually replaced by a new and quite un-physiological one. For instance, the physiological stimulus for salivation is the presence of food in the mouth. If food is seen and then placed in the mouth, the animal or human learns to associate the sight of the mouth, Samuel (2008).

(ii) **Non – Associative Learning: -** Non – associative learning involves the response of a person to only one type of stimulus. It may be based on two factors.

(a) Habituation: - Means getting used to something to which a person is constantly exposed. When a person is exposed to stimulus repeatedly, he starts ignoring the stimulus slowly. Finally, the person is habituated to the event (stimulus and ignores it), so, habituation where one ignores a stimulus is a classical example of a non-associative learning.

(b) Sensitization: - It is an increase in response to harmless stimulus when that stimulus is applied after another type of stimulus. For example, a woman gets habituated to different sound around her and sleeps. But she suddenly wakes up when her baby cries because she is sensitized to the crying sound of her baby.

2.5.2. Memory

Memory is the process of learning, retaining and recalling or retrieving information previously encountered. It involves storage and retrieval of information previously encountered. When a child who is able to mention what he took for breakfast or write a mathematical formula he learnt in class the previous day is using memory. (Mallum, 2004).

The performance of children on cognitive tasks is affected by memory. All cognition involves some form of memory and memory itself is not an insolate intellectual skill but it is influenced by language skill, knowledge, judgment and

inference as well by various cultural influences (Meadows, 1993), in Mallum (2004).

2.5.3 Types of Memory

As cited in Suleiman (2011), there are three types of memory namely.

(i) Sensory memory (ii) Short term memory (iii) Long term

(i) Sensory memory: - Sensory memory refers to the initial, momentary recording of information in our sensory system. We receive most of information through our senses such as the eyes, ears, nose, mouth, hands and the skin. However, this information couldn't be retained due to their frequency of appearance. Any coming information that is not immediately processed is lost. The memory trace simply fades away or the information is push out by new information in Cansiono, (2004).

(ii) Short term memory: It refers to ability to retain a limited amount of information for a brief time "less than 30 seconds" Samuel (2008).

(iii) Long term: Long term memory provides us with an opportunity to retain information for long period. "The information retained in long term memory may last for minutes or even week. It receives many entries from short time memory and store. It allows these to be retrieved for references and used when the need arises. The capacity of the long term

memory is virtually unlimited and once in place evidence indicate that the information remain forever. (Asheratt, 1989), in Mallum (2004).

Ronald (2013) come up with a view that if the materials presented in a way which fits in or relates meaningfully to what is already known, then it will be retained for relatively long periods of time. Proper organization is very much a major component to effective recall. If material is well organized at the encoding stage of memory processing, then retrieval become quite easy.

2.5.4 Memory Processes

For the passage of information from the sensory through short term memory to the long term memory, it has to go through four processes namely.

(iii) Encoding (ii) /storage (iii) Recognition and (iv) Retrieval

(i) Encoding: It refers to translating incoming information into a mental representation that can be stored in memory. For example, if you witness a car crash, you might try to form a mental picture of it to enable yourself to remember it.

(ii) Storage: It refers to retention of the memorized material over period. For encoded information to be stored, some physiological change must take place in the brain a process called consolidation. Liang, (2010).

(iii) Recognition: This is a process of identifying a specific learning material from a variety learned and stored in the brain. Here, memorized materials are

classified, identified and sorted out before they are picked for usages. A person simply recognizes something as familiar a face, a name, a taste, multiple-choice, matching and true/false questions are examples of test items based on recognition.

(iv) Retrieval: It is a process by which previously encoded and stored information (memories) are brought back for current use.

2.6 Mnemonics as Technique for Improving Memory Retention in Children

Academic study of the use of mnemonics has shown their effectiveness for improving memory retention in children. In one such experiment subject/children of different ages who applied mnemonic techniques outperform students without training on comprehension examination (Delashmutt 2007). Through the use of mnemonic strategies, it is more likely the students will be able to remember factual information, answer questions, and demonstrate comprehension. Students who need help understanding the concept will benefit from instruction in comprehension strategies (Mastropieri, 1985).

Fontana, (2007) observed that mnemonics can be teacher created or students created. She further added, using mnemonic instruction involves no additional cost for purchase of materials or technology. School children can be taught to generate their own mnemonic devices that they can spontaneously use to help them

remember information presented in their classes. Also, mnemonic strategy can be induced by instructing children to use a mnemonic strategy to remember as specific set of information prior to its presentation. This can improve the memory retention in children. Mnemonic techniques enhance the memory work load of students and give confidence to those who might be afraid of omitting essential information under the stress condition that examination create.

Retention can be increased by the use of various mnemonics strategies, rehearsing the to-be-recalled material, forming mental images, grouping and organizing the items for later recall, and soon can improve memory retention in children. Teaching the younger non rehearsals to rehearse does help them to remember more Cansino,(2002).

After studying the children performance in mathematics using mnemonics Squire (2008) observed that mnemonics can be teacher created or students created. She further added, using mnemonic instructions involves no additional cost for purchase of materials or technology.

2.7 Concept of Academic Achievement

Academic achievement is the outcome of education, the extent to which a student, teacher or institution has achieved their educational goals. It is commonly measured by examination or continuous assessment.

Academic achievement refers to the scholastic standing of a student at a given period of time. It is how the individual is able to demonstrate his/her intellectual abilities, which is inferred through the students' performance (Adeyemo, 2007).

Academic achievement means how a student performs in school, something you do or achieve at school, college or university in class, in a Laboratory, Library or fieldwork. It does not include sport or music, an academic achievement, such as graduating 1st in one class.

2.7.1 Factors Influencing Academic Performance

There are various factors that can influence a student in his academic performance whether it is positive or negative and those factors are:

(1) Individual differences influence academic performance. This has been linked to differences in intelligence and personality students with higher mental ability as demonstrated by IQ test (quick learner) and those who are higher in conscientiousness (linked to effort and achievement motivations tend to achieve highly in academic setting.

(2) Socio-economic status, children from low socio-economic status semi-structured home learning environment transition into a more structured learning environment when children start first grade. Early academic achievements enhance later academic achievement.

(3) More so, parent academic socialization is a term describing the way parent influenced student academic achievement by shaping students skills, behaviour and attitudes toward school. Parent influence students through the environment and discussion parent have with their children.

Academic socialization can be influenced by parent socio-economic status. Highly educated parents tend to have more stimulating learning environment.

(4) Another very important enhancer of academic achievement is the presence of physical activity. Exercise specifically increase executive brain function such as attention span and working memory.

(5) Motivation: - Parent motivation should be there to teach their children to appreciate their hard work and guide them as they move along.

(6) Reading Habit: - A student must learn to devote their time and effort and exercise diligence and patience while studying. Students are likely to develop inner discipline to handle such situations mostly if they are supported strongly by their parents or guardian. This will reflect in their studies Adeyemo,(2007).

On the contrary if they are neglected at home they will usually suffer such consequences of low morality and attitude that includes the sense of worthlessness to appreciate school and their studies, children in this time. The time and effort that

parents can give to their child is probably the most important motivating factor especially during their first few years in school. Children subconsciously need them and their attention.

2.7.2 Memory Retention and Academic Achievement

Memory is the ability to encode and retrieve information that one has been exposed to. As a skill, memory retention is inseparable from academic achievement. Memory retention reflect applied cognition; that is memory functioning reflect all the important aspect of learning. A general rule is that the more you know, the more new you can remember. Maybe older children can remember more than younger children and infants because of the amount of preexisting knowledge they have.

2.8 Review of Empirical Research

Menomics are strategies that can enhance learning and memmory of course material. Mnenonic has many varieties that can help in mnenizarion of many information. In another word, mnenonic is a system to develop pupils'memory (Chooyin 2012). A lot of researches have been conducted on mnemonics devices.

In the word of Scrugg (2000), on a study of the role of mnemonmics in learning mathematics, investigated mnemonics effecttiveness in classroom by using two student interviews, a teacher survey, two students survey and student

and teacher journals. The study revealed that mnemonic strategies is that, the strategy increased student ability to recall the factual information needed to answer a topical comprehension question. As a result of this study, she plan to continue to use mnemonics not only in mathematics class, but also in the teaching of other subjects.

In the work of Manalo, (2004), on using mnemonic to facilitate learning of economics. The study was to investigate the effect of using mnemonics device to increase the economic concept understanding and fostering academic performance of undergraduate. A quasi – experimental method was applied. There were 90 students selected ramdomly and divided into two groups (experimental and control group). Two hypotheses had been tested. The result showed that the students in experiemental group significantly out performed the control group in their academic performance mean score. The findings of this study revealed that mnemonics are effective in enhancing students performance. These findings are consistent with prior research which revealed a mnemonic device accelerate the rate at which new information is acquired (Scrugg 2002).

More so, in the work of Jennifer (2013), on psychology students knowledge and use of mnemonics. An online survey examined psychology students metacognitive awareness and self – reported behaviors regarding mnemonics. Result showed that most participants could define mnemonics but only a minority

could describe the cognitive mechanisms involved. Partipant were more familiar with some mnemonics (acronyms and acrostics, compared to other, pegword).

The study revealed that usefulness of mnemonics was rated at a moderate level compared to other common study strategies and the rating for mnemonics were positive and correlated with independent measure of metacognitive as well as psychology course experience.

Results from empirical studies conducted on similar area could not be exhaustively reviewed. Moreover, results of the large number of mnemonic techniques studies that have been undertaken home and abroad over several decades can also be found in the works of New man (1982), Alison (1999) and Ronald (2013) to mention but a few.

2.9 Summary and Uniqueness of the Study

The chapter begins with theoritical frame work followed by conceptual background on mnemonics techniques with regards to its meaning, characteristics, uses and examples among others. Review of empirical researches was done which shows there is a vast body of literature on researches carried out in the same area and that significantly helps to bring about clear understanding of the present study. The review also reveals that there are no empirical evidences that a study was carried out in Bauchi State on effect of mnemonics techniques and academic achievement. Therefore this study aims to fill that gap. This study is therefore

unique in Bauchi State as it seeks to bring into limelight a research work which attempts were not known to have been carried out before.

The study is also unique in that p4 pupils are used as subjects here, unlike previous researches carried out in much higher stages of learning. In addition, this study explores differences between the experimetal and the control group, whereas in most of the preivous researchers, relationships were exploited instead.

CHAPTER THREE
METHODOLOGY

3.1 Introduction

This chapter deals with the research design, determination of population of the study, the sample size and sampling techniques. The research instruments to be used, validation of such instruments, their administration as well as the method of data analysis were described.

3.2 Research Design

The design used in this study is Quasi experimental designs are of four types: the Non-randomized control group, pre-test-post test design, counter-balance design, one group time-series design and control group time-series design with non-randomized control group. This research work adopts the pretest-post test design both groups take a pretest after which the exeprimental group recieves treatment. Both groups were post tested on the dependent varible. The differennces between the pretest and post test score for each subject was found and mean differences for the experimental and control group were computed and compared using an appropriate statistic procedure.

This design is represened schomatically below:

Table 1

GROUP	PRE-TEST	TREATMENT	POST-TEST
E	Y1	X	Y2
C	Y1	-	Y2

Sources Bichi (1997)

Going by wht is explained bove, thus research design a researcher was ble to compare a control group of subject nd experimental group.

3.3 Population and Sample

3.3.1 Population of the Study

In this study the target population comprises all primary four pupils in Al-amin Primary School in the study area. They have primary four pupils (P4) enrolment figure of 100 pupils (50 pupils each in P4 A and B).

3.3.2 Sample Size

The sample size used in this study is all the primary four (P4) pupils of the Al-Amin primary school, Azare, Bauchi State. The school is privetely owned characteristics by a control emotments at all levels. They have 2 streams of P4 (A and B) with each comprising of 50 pupils therefore, all the 100 pupils envolved in to the two P4 classes of Al-Amin primary school were used as the sample size for this research work.

3.3.3 Sampling Techniques:

The population size used in this study is small (100 pupils) and therefore all the subjects were used as sample. They were divided into 2 groups (experimental

and control) with 50 subjects in each group. In deciding members of each group to be used for the purpose of this research, coin was tossed and it is determined probabilistically. In doing so, when tossed, the head of the coin serves as experimental group, while the tail of the coin serves as the control group.

Test scores were used as basis for groupings into both experimental and control groups. The scores are arranged in descending order (from higherst to the lowest) of the higherst score falls into experimental group, automatically the second highest score goes to the control group. The 3rd goes to the control while the 4th goes to the experimental and so on.

3.4 Data Collection Instrument

In this research work, the data collection instrument was constructed by the researcher. It was reflected P4 Social Studies National Curriculum. The instrument was pilot tested to ascertain its validity and reliability indices. The Data collection instrument used in this study was P4 Social Studies Test in form of mnemomics. The pupils were taught with mnemonics device, the type of mnemonics used by the researcher in given the treatment to the experimental group include acronyms and acrostics (i.e first letter mnemonics). Other method of loci, pegword method, keyword method and including song, stories and rhymes were also used. Consequently the test also covered those areas of type of mnemonics (see Appendix II)

3.4.1 Validation of Data Collection and Instrument

A researcher designed paper and pencil tests and used for data collection. The instrument was drawn from social studies p4 curriculum module. After construction, the data collection instrument was assesed for face validity by the supervisor to ascertain whether it will superficially appear to measure the required traits it ought to have covered in the face of it.

3.4.2 Reliability

The instrument used in this study was pilot tested for reliability estimate. The researcher had carried out a test – retest on the instrument with which the reliability of the test has been ascertained. A particular school was chosen, and the interval between the test and the re-test was two weeks. The scores obtained were correlated and the estimate of the coefficient found was 0.84 through pre-test post-test techniques. This showed that items within the test are stable. “The closer the coefficient of r is to 1, the more the reliability” going by this statement the coefficent of r obtained (0.84) is closer to 1, hence, the items included and used in the test are of high quality.

3.5 Procedures for Data Collection

The experimental group received treatement for a period of eleven weeks with a meeting lasting for 60 minutes each week. They were taught by the use of

mnemories for almost a term, with the control group taught the same content of the curriculum for the same time frame, but using the conventional method of teaching. The pupils from both groups were tested at the same time using paper and pencil. The test items were given in form of a booklet.

The data collection involves the administration of the instrument (P4 Social Studies Test) by the researcher. The pre-test was given before teacher taught the topic with mnemonics techniques and post-test was given after the pupils were taught with mnemonics method of teaching. The test booklet was collected and scored manually by the researcher. The testees which include the experimental and control group took the test at the same time under uniform condition with each testee having an identification number.

For administeration of the test, assistance of some teachers, was sought they were briefed by the researcher on how to administer the test before actual test taking. The researcher ensured that, all the seats were well arranged in such a way that cheating will not be possible.

3.6 Procedure for Intervention

The first four weeks used for the training of social studies teachers that participated as research assistants in the teaching. The training was done by the Researcher. The five weeks were used for conducting pre-test on pupils, this was done by the researcher with the assistance of social studies teacher. After making

the test, the score of the pupils were arranged in asceding order, the first high scores goto experimental group and the second high scores to to contrtol group and the third high to experimental group and the forth to control group, and so on.

Twelve weeks were used for treatment on to the experimental group through the use of mnemonic devices/techniques. From first week to the sixth week the mnemonic that have been used was Rhyme, from week seven to week ten acronyms were used and week eleven employed use of pegwords. The teacher for the experimental group were given materials and guidelines relating to mnemonic instructional strategy and identified relevant mnemonics before the commencement of the lesson. The teacher for the control group were not provided any material. They followed the conventional method of instruction.

The thirteen week was used for conducting the post-test for both control experimental groups at the same time under uniform condition.

3.7 Data Analysis

In this research work data analysis involved the use of both descriptive and inferential statistics. The researcher computed the mean, and standard deviations of the students' performance recorded. t-test technique for both dependant and independant sample were used to examine the differences between the experimental and control groups.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS OF RESULT

4.1 Introduction

This chapter deals with the data presentation, analysis and discussion of findings from the study. The data obtained are presented and analyzed to answer the research questions and test the formulated hypotheses in this study.

4.2 Summary of Data

Below is the summary of data obtained from the descriptive statistics.

Table 4.2.1: Experimental and Control Group Descriptive statistics

S/N	VARIABLE		N	$\overline{X}$	SD	SE
1.	Experimental Group		50	14.00	2.76	.390
	Control Group					
			50	9.30	1.690	.269
2.	Experimental	Boys	25	12.92	2.67	.535
		Girls	25	14.16	3.07	.615
3.	Control	Boys	25	9.64	1.912	.382
		Girls	25	9.00	1.979	.395

The above table represents a summary of data used in this research work, it could be seen that gilrs in the experimental group have the highest mean score of 14.16 having outperformed their male counterparts with 12.92.

4.3 Data Analysis

Three hypotheses were formulated to guide this study, and the data analysed according to the hypotheses as below:

Hypothesis one: There is no significant difference in the pupils' performance between the experimental group and the controls group.

Table 4.2: t-test Analysis of Respondents on differeence in Performance between experimental and control groups

Groups	N	$\bar{X}$	SD	SE	df	t-cal	P	Decision
Experimenal	50	14.00	2.76	.391				
					98	9.897	0.000	H_O Rejected
Control	50	9.30	1.91	.269				

From table 4.2 above, the probability value of 0.000 is less than 0.05 indicating that the two groups (experimental and control) are significantly different from each othe. This led to the rejection of the null hypotheis stating that there is no significant difference in pupils performance between the experimental group and control group. This has succeffully answeered research question number one which sought to find out if there is signifant difference in performance btween pupils tought with the mnemonics and those thought with out the use of mnemonics. The experimental group had a mean score of 14.00 while the control group had a mean score of 9.30. This clearly shows the experimental group has out performed the control group in the test, and this may not be unconnected with the

treatment given to the group, hence justifying the effect of mnemonics on memory extention and academic performance.

Hypothesis two: There is no significant sex difference in performance within the experimental group.

Table 4.3: t-test Analysis of Respondents on Differences Between Boys and Girls in the Experimental Group

SEX	N	$\bar{X}$	SD	SE	df	t-cal	p. value	Decision
Boys	25	12.92	2.68	0.535				
					48	1.533	0.138	H_O Accepted
Girls	25	14.16	3.08	.616				

In the above table, the probability, value of 0.138 is greater than 0.05 showing that the performance two of the groupss within the experiement groups (Boys and Girls) are not significantly different from each other. Consequent upon this we accepted the null hypothesis stating that there is no significant sex difference in the pupils performance within the experimental groups. This also helped in answering research question two which sought to find out the extent to which girls performance differs from boys performance in the experimental group.

Hypothesis three: There is no significant sex difference in the pupils' performance within the control group.

Table 4.4: T-Test Analysis of Respondents on Difference in Performance Between Boys and Girls in the Control Group.

SEX	N	$\bar{X}$	SD	SE	DF	t Cal	P	Decision
Boys	25	9.64	1.912	.382				
					48	-1.067	0.296	H_O Accepted
Girls	25	9.00	1.979	.396				

The table 4.4 shows that the probability value of 0.296 is greater than 0.05. therefore the null hypothesis which states that there is no significant sex differences in the pupils performance within the control group is uphold. We now conclude that there is no significant sex difference in the performanc of the pupils in the control group. This has answered research question three seeking to find out the extent to which girls performance differ from boys performance in the control group.

4.4 Summary of Findings

The findings of this study were summarized below according to the formulated and tested hypotheses.

1. The null hypothesis which states that there is no significant difference in the pupils' performance betweeen the experimental group and the control group is rejected. The finding therefore, shows there is a significant difference in performance of the two groups.

2. The finding had also shown that there is no significant sex difference in the pupils' performance within the experimental group.
3. The finding also revealed that there is no significant sex difference in the pupils performance within the control group.

4.5 Discussions

This study was intended to investigate the effect of mnemomic techniques on memory retentation and academic perfomance of primary four pupils Al-Amin primary school in Bauchi State. Based on the finding of the study the test of three hypotheses formulated and the answers given to the research questions showed that mnemomics are good techniques to be relied upon for memory retantion and academic performance of primary school pupils.

The result of this study also showed no significant sex difference in both the experimental and control groups. This may be attributed to the method of teaching used in teaching both the treatment and the control groups. Within each group, a uniform teaching method environment, and procedures were employed by the some teacher for a period of 11 weeks. Equally, they were tested with the same instrument under a uniform testing condition, which poisitively impacted on what content the individual pupils were able to remember during the test.

The result obtained from testing of the first null hypothesis showed that there was a significant differnce in performance between the experimental group

and the control group. This had shown that those taught with the use of mnemomics performed significantly different in a test from those group of pupil's taught without the use of mnemomics. It was clearly seen in the mean scores as the experimental group has 14.00 while the 9.30. this supports the findings of Delashout (2007) who found on a study of the role of mnemomics in learning mathematics that mnemomics strategy increased students ability to recall the factual information needed to answer topical comprehension questions.

In another study, Khoo Yin Yin (2012) applied a quasi-experimental method on 90 students randomly divided into experimental and control groups. A hypotheises tested in his study showed that the students in the experimental group significantly out performed the control group in their academics performance are very effective in enhancing the finding of the study therefore, revealed that mnemomics are very efffective in enhancing the findings of this students' performance. The findings of this study are also consistent with those of Wang and Thomas, 1996 who equally revealed that mnemomic devices accelarate the rate at which new information is acquired.

The second hypothesis tested in the study had shown that there is no significant sex difference in the pupils performance within the experimental group. The result is in disagreement with the work of Loftus et'al (1987) who submitted that in comparison of subjective memory evaluations, the findings revealed few

differences between memories of men and women. In the study, the significant difference observed was that men were more likely than women to include spatial information in their memory descriptions $Z=1.88$, $P < .05$ (one tailed). This agrees with other researchers as seen in the works of Maccoby and Jackllin (1974) who suggested one principle for understanding gender differences in memory. They asserted that males and females do not differ in overall memory ability, although, they added interest, motivation and training could affect the content of what is remembered.

The third hypothesis states that there is no significant sex difference in the pupils performance within the control group. The result of t-test statistic however revealed that the null hypothesis is upheld since there is no significant difference in performance of boys and girls in the control group. This result was consistent with the work of Abdullahi (2012) who submitted on the influence of sex in establishing the effect of child study habit on academic performance of J.S.S III students in Kogi State, That there was no significant difference between boys and girls. This disagree with other researchers as seen in the works of James and Haroun 1989, Garba and Adeyemo (2008). They asserted that the disparity observed in performance between boys and girls in social studies test is as a result of genetic effect favouring the boys especially in the area of spatial ability.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this research work, the researcher constructed a P4 social studies test of Mnemonics to be used for finding the effect of Mnemonics on memory retention and academic performance of P4 pupils in Bauchi State. The difference between experimental and control groups was ascertained. In the same vein, the differences were explored between performance of boys and girls within both the experimantal and control groups. This chapter presents a summery of the research work after which conclusions were drawn. Recommendations were made for further research.

5.2 Summary

The study was carried out with the sole aim of finding the effect of mnemonic techniques on memory retention and academic performance of P4 pupils A case study of Al-Amin primary school Azare Bauchi State . The other three objectives of the study were to find out if there is any difference in performance between pupils taught, with mnemonics and those taught without the use of mnemonics. And also to find out the extent to which girls performance within both the experimental and the control groups differ from that of boys. A constructed P4 objective social studies test of mnemonics was used with which pupils were tested in written form on their knowledge of P4 social studies

curriculum. Relevant literature were consulted and reviewed to promote indepth understanding of the problems under study. The theoritical framework employed in the research was Piagets theory of cognitive delopment. Conceptual background touches concepts of mnemonics, memory and academic performance among others.

The research design used in this study was a case study design. A researcher constructed test of mnemonics was used to collect data along side pupils results obtained.

The subject used in this study consisted of 100 pupils drawn from a private primary school in Katagum Local Government Area Bauchi State. Three different research questions were raised to guide the study. To help answer those research questions three hypotheses were formulated in null form. The first null hypothesis formulated sought to establish the significance of difference in pupils performance between experimental and control groups. In order to test this hypothesis, t-test statistic was employed. The second and third hypothesis sought to establish the significance of the sex difference within both experimental and control groups respectively. In testing those hypothesis, t-test for independent and dependant samples were used. Summarily, the following result were observed:

(i) there is significant difference in pupils' performance between experimental and control groups.

(ii) there is no significant sex difference in the pupils' performance within the experimental group.

(iii) there is no significant sex difference in the pupils performance within the control group.

Based on the findings, recommendations were made among which are,

(i) parent should encourage their children with appropriate guidance to develop their own mnemonics devices for greater memory retentions of learned materials.

(ii) Government through it's Universal Basic Education Program should incorporate the mnemonic devices in to the national curriculumas a method.

(iii) All also, the researcher recommend further research to be carried out in the area involving large samples wider coverage and generalization. This could perharps encompass more varaible such as location, age, ownership of institution and parental socio- economic status.

5.3 Conclusions

The findings of this study have shown that mnemonic instruction was more effective at improving pupils memory retention and performance in social studies tests than traditional method of instruction. The result obtained in the study revealed that the group expose to mnemonics instruction had the higher mean score than the control group subjected to conventional teaching method. The reason is

that mnemonics instruction enable pupils to easily remember factual information, answer questions and demonstrate comprehension. It will also provide visual or verbal prompts for pupils who may have difficulties in retaining informations.

On a general note, mnemonics are vey effective tools for enhancing memory retention and pupils academic performance. Therefore, in line with the argument of Jennifer (2010), It won't be out of place, teaching our primary schools pupils how to create and use their own mnemonics independently. This could go along way strengthening their academic success in a brother sense by way of improving their learning skills. The research revealed that pupils in the control group perfomed relatively lower compared to their counterparts in the experiemental group that was due largely to their expose to conventional method of teaching devoid of mnemonic techniques hence clearly demostrated the effects of mnenomic instructions as a memory aid which also facilitates learning and performance.

5.4 Recommendations

5.4.1 Recommendations from the Study

Based on the findings of the study, the researcher recommends that:

(i) Teachers should facilitate the use of mnemonic instructional strategies in schools to enhence positive attitude of primary school pupils towards social studies and improve their achievement in the subject.

(ii) Teachers should also include variety of mnemonics into their instructional strategies to effectively cater for diverse abilities of their pupils within their classrooms.

(iii) Government and school administrators should organize periodic and regular training, seminaras and workshops for teacher to update their knowledge on current and innovative teaching strategies such as mnemonic devices.

(iv) Teachers should be encouraged to consistantly train students to use learning techniques as they engage in pursing various instructional and learning goal.

5.4.2 Recommendation For Further Studies

In this research work, the researcher hereby recommends further reserach to be carried out in the same area. The new study should be:

i. Generate more data that will allow for proper wider generalization

ii. Involve other states and geo-political zones should be included in the new study.

iii. It is also recommended that sample should be larger than the one used in this study.

iv. More variables, should be included in the new study such as age, location, school type, region e.t.c

REFERENCES

Abdullahi, U.M (2012). *Mnemonic Instruction in Special Education Ph.D*. Thesis, University of Calaber, Cross Rivers State.

Adeyemo, E.O (2007). *Analysis of the Effectiveness of Jamb In Univerisity Admission in Nigeria*, Delson Journal of educational Research and Development. 6(1) pp 94-105.

Adeyemo, E.O and Garba, I.M (2008). *Gender Differences Among College Students as Determinants of Performance in Biology*. African Journal of Educational Research. Vol 8, No. 182 PP 51 – 60.

Aiken, L.R and Groth, M. G. (1979). *Pyschological Testing and Assessment* New York: pearson Education Group , Inc.

Anita, W. (2007). *Educational Psychology tenth Edition*; New York pearson Education, Inc.

Atkinso W. And John, E.M *et al.,* (2003). *Memory, Meaning and Method Second Edition*, New York Heinle and Heinle Publishers.

Auwal, M.L. (2003). *Improving the Quality of Teaching in Pre-primary*, Primary and Post- Primary Institutions Through the Application of Piaget Theory of Cognitive Development. Kano Journal of Educational Studies Vol.2Number 1 pp.70-75.

Auwal, M.L. (2011). *An Introduction to Educational psychology for NCE*, Graduate and Post Graduate Students, First Edition, Zaria Ahmadu Bello University Press Limited.

Bello, F. S. (1996). *Mnemonic devices and Natural Memory*, Bulletin of the Psychonomic society, II, 277 -280.

Bichi, M.Y. (1997). *Students Guide to Reaserch Methods*. Kano; Debisco Publishers.

Cansino, S. (2002). *Brain Activity Underlying Encoding and Retrieval of Source memory*. Oxford Journal: Vol. 12, issue 10, 1048 – 1056.

Delashimutt, K. (2007). *A Study of the Role of Mnemonics in Learning Mathematics* Unpublished M.A Degree Dissetation, University of Nebraska-Lincold.

Denga D.I. and John, E.M et'al (2009). *Human Memory and Learning First Editio*. Rapid Educational Publisher Limited, Calabar – Nigeria.

Fontana, J.L. (2007). *Mnemonics Strategy Instruction in Inclusive Secondary Social Studies Classes.* Remedial and Special Education, 345 – 355.

Henry, L. R. (2006). Microsoft @ Encarta

Jennifer, A.M. (2010). *Integrating Mnemonics into Psychology Instruction*. Instructional Resources Award Recipient.

Jeannifer, L. D. (2012). *Mnemonic Imagery and Forgetting*, Psychonomic Science, 23,161 – 163.

Khoo, Y.Y. (2012). *Using Mnemomic to Facilitate Learning of Economics* International Journal of Academics Research in Business and Social Sciences. Vol. 12 No1pp. 604-614.

Kiyawa, M.S. and Bello, M. (2012) . "*Enhancing Effective Learning Among Adults*: Some Techniques For Improving Memory Retention and Retrieval" Bayero Journal of Education in Africa, Vol.(1) pp.82.

Khoo, Y.Y. (2008). *The Effectiveness of Collaborative Problem SolvingMethod Among Form Six Economic Students*. Penang: University Science Malaysia.

Liang, G. K. (2010). *An Empirical Test of Mnemonic Devices to improve Learning in Elementary Accounting*. Journal of Education for Business, 85: 347 – 358.

Loftus, E.F and Grace, E.W. (1987). Who Rebers What? *Gender Differeces in Memory*, Journal of Abnormal and Social Psychology Volume 26 PP 64 – 85.

Maccoby, F.M. and Jacklin, W.D. (1979). *Gender Issues in Science Education Researchs Remembering where the Difference lies*. Ins Abell & N.

Lederman (eds). Handbook on Science Education. PP 257 -286. Mahwah, NJ Lawrence Elbaum.

Mallum J. and Haggai M. (2004). *Educational Psychology Classroom Practice*: Third Edition, No. 25 Tafawa Balewa Street Jos, Ya – Byangs Publishers.

Manalo, E. (2004). *Using Mnemonics to Facilitate Learning of Japanese*, Script Character. JALT Journal, Vol. 26, No. 1, 55 – 77.

Mojeed, A.M. and Odeyemi, B.O. (2014). *Effect of Mnemonic and Prior Knowledge Instructional Strategies on Students Achievement in Mathematics*. International Journal of Education and Research Volume 2 No. 7 PP 675 – 688.

Nworgu, B.G. (2003). *Educational Psychology and Psychological Testing. Theory and Practical (Revised Edition) Nsukka: University Trust Publishers p.21-25.*

Robert, E.S. (2006). *Educational Psychology Eight Edition*, Boston New York, Pearson Educational Group, Inc.

Robert, J. (2003). *The Effectiveness of four Mnomenics in ordering recall* Journal of Experimental Psychology Human Learning and Memory, 6 (5) 558 -567.

Ronald G. (2013). *Mnemocis in the ESL/EFL Classroom:* The Lanugage Teacher –Issue 21.4; April 1997: Teajon Univerisity, Korea.

Samuel , E.W., and Jonathan, W.G. (2008). *Mastering the World of Psychology*, Third Edition New York, Pearson Education Group, inc.

Seay, S. S. and McAlum, H. G. (2010). *The Use of Application of Mnemonicsas a Pedagogical Tool in Auding*. Academy of Educational Leadership Journal, Vol. 14 No2, 33- 47.

Scottery, T.W. (2006). *Learning and Memory Basic Principles Process and Procedure*, Third Edition, United State of America Pearson Publisher.

Scrugg, T. E. (2000). *The Effectiveness of Mnemonic Instruction for Students with Learning and Behaviour Problem*: an update and Research Synthesis. Journal of Behaviour Education 10,163 – 173.

Squire L. R. (2008). *Declarative and Non-declarative memory: Multiple Brain Systems supporing Learning and Memory*. Journal of Cognitive Neuroscience,4, 232 – 243.

Stalder, D.R. (2005). *Learning and Motivational Benefit of Acronym Use in Introductory Psychology*, Teaching of Psychology. Oxford University Press London.

Suleiman, Y.M. (2007). *Psychology Made Simple*. Dutsinma: Eddy Press.

Suleiman, Y.M. (2011). *Memery From a Broader Perspective* New York McGrawHill, Inc.

Wang, T. (2000). "*Looking for Long Term Mnmemic effects on seriel recall*" The Legacy of Simonidos, The American Journal of Psychology Vol.113 (3) pp. 331-440.

APPENDIX I

EXPERIMNTAL AND CONTROL GROUP SCORES

S/N	EXPERIMENTAL GROUP	CONTROL GROUP
1	17.00	13.00
2	14.00	7.00
3	18.00	7.00
4	13.00	12.00
5	16.00	11.00
6	12.00	12.00
7	15.00	9.00
8	10.00	8.00
9	16.00	11.00
10	11.00	10.00
11	15.00	11.00
12	8.00	9.00
13	15.00	7.00
14	18.00	6.00
15	14.00	10.00
16	10.00	11.00
17	11.00	7.00
18	14.00	8.00
19	13.00	9.00
20	14.00	11.00
21	14.00	10.00
22	15.00	12.00
23	15.00	6.00
24	16.00	8.00
25	17.00	7.00
26	16.00	9.00
27	16.00	10.00
28	17.00	7.00
29	18.00	9.00
30	10.00	7.00
31	18.00	10.00
32	16.00	11.00
33	17.00	12.00
34	17.00	11.00
35	15.00	8.00
36	10.00	10.00
37	14.00	7.00
38	13.00	8.00
39	11.00	11.00
40	10.00	10.00
41	11.00	9.00
42	8.00	12.00
43	9.00	12.00
44	17.00	10.00
45	16.00	9.00
46	15.00	8.00
47	14.00	11.00
48	14.00	7.00
49	14.00	9.00
50	13.00	6.00

EXPERIMENTAL GROUP: GIRLS AND BOYS RAW SCORES

S/N	GIRLS	BOYS
1	17.00	14.00
2	18.00	13.00
3	16.00	12.00
4	15.00	10.00
5	11.00	16.00
6	15.00	8.00
7	14.00	10.00
8	18.00	15.00
9	11.00	14.00
10	13.00	15.00
11	10.00	14.00
12	15.00	10.00
13	8.00	16.00
14	17.00	10.00
15	11.00	10.00
16	18.00	16.00
17	17.00	15.00
18	16.00	17.00
19	18.00	16.00
20	10.00	13.00
21	16.00	14.00
22	14.00	11.00
23	15.00	10.00
24	10.00	15.00
25	11.00	9.00

CONTROL GROUP: GIRLS AND BOYS RAW SCORES

S/N	GIRLS	BOYS
1	13.00	7.00
2	7.00	12.00
3	11.00	12.00
4	9.00	8.00
5	10.00	11.00
6	9.00	7.00
7	6.00	10.00
8	7.00	11.00
9	8.00	9.00
10	11.00	10.00
11	12.00	6.00
12	7.00	8.00
13	9.00	10.00
14	7.00	9.00
15	10.00	11.00
16	11.00	12.00
17	8.00	10.00
18	7.00	14.00
19	9.00	10.00
20	12.00	10.00
21	8.00	11.00
22	6.00	8.00
23	9.00	7.00
24	11.00	9.00
25	8.00	9.00

APPENDIX II

SPSS OUTPUT

Group Statistics

	expt and control	N	Mean	Std. Deviation	Std. Error Mean
score	experimental	50	14.0000	2.76273	.39071
	Control	50	9.3000	1.90863	.26992

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
score	Equal variances assumed	4.457	.037	9.897	98	.000	4.70000	.47488	3.75762	5.64238
	Equal variances not assumed			9.897	87.095	.000	4.70000	.47488	3.75614	5.64386

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	experimental girls scores	14.1600	25	3.07788	.61558
	experimental boys scores	12.9200	25	2.67582	.53516

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	experimental girls scores & experimental boys scores	25	.017	.936

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 girls scores - experimental boys scores	1.24000	4.04434	.80887	-.42942-	2.90942	1.533	24	.138

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	control girls scores	9.0000	25	1.97906	.39581
	control boys scores	9.6400	25	1.91224	.38245

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	control girls scores & control boys scores	25	-.187-	.370

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	control girls scores - control boys scores	-.64000-	2.99833	.59967	-1.87765-	.59765	-1.067-	24	.296

APPENDIX III

The type of mnemonics used in this research work and the specific topic tough with use of mnemonic.

(1) Topic: Our common food

- Type: Rhyme – Human beings have a tendency to remember rhymes and rhythms. Create a poem using the to –be – learned information.
- Example: Igbo = Gari, Yoruba = Amala, Hausa = Tuwo, Bare – Bare = Burabisko.

(2) Topic: NATIONAL PLEADGE

- Type: Rhyme (create a poem using the to – be – learned information)
- Example: I pledge to Nigeria my country to be faithful loyal and honest. To served Nigeria

(3) TOPIC: MONTH OF THE CALENDER

- Type: Rhyme
- Example: = January, February, March!!!
  April, May, June, July!!!
  August, September, October!!!
  November, December

(4) Topic: Days for every month of the year.
The months of the year having 31 days are/is
Type: Rhyme/song

- Example: "Thirty days have September, April, June and November, all the rest have thirty – one February has twenty-eight alone except in leap year, ……

(5) TOPIC: UNITY

- **TYPE:** Rhyme
- Example: Ojukwu wanted to separate Nigeria, but Gawon Said Nigeria must be one.

(6) TOPIC: NATIONAL INDEPENDENCE DATE

- TYPE: Rhyme
- Example: "Show! Show! Show the light and later see the way independence of Nigeria October 1st.

(7) TOPIC: Major Rivers in Africa

- TYPE: Rhyme
- Example: Nile, Niger, Senegal, Congo, Orange, Limpopo, Zambezi

(8) TOPIC: National Pledge

- TYPE: Rhyme
- Example: I pledge to Nigeria my country to be faithfully loyal……..

(9) TOPIC: STATE AND CAPITAL

- TYPE: Rhyme
- Example: Abia – Ummuahia, Bauchi-Bauchi, Borno – Maiduguri

(10) TOPIC: ORGANISATION

- TYPE: Acronym – It is a form of abbreviation a word formed from the first letter of each word in a phase.
- Example: ECOWAS, Stand for Economic Community of West African States.

(11) TOPIC: THE DAYS OF THE WEEK

- TYPE: Peg Word – The original word is linked to the peg word through an interactive mental image.
- Example

Day	Peg list	Image that you form
Sunday	One – bun	Train on a hot dog bun
Monday	Two – shoes	Pair of shoes one missing
Tuesday	Three – tree	Three trees blocking the sun

APPENDIX IV

SOCIAL STUDIES TEST FOR PRIMARY FOUR PUPILS

INSTRUCTION: ANSWER ALL QUESTIONS

SEX: ……

ID No: …….

TIME ALLOWED:30 MINS:

CHOOSE THE CORRECT ANSWER FROM THE OPTIONS LETTERED A – C

1. Igbo = Gari, Yaruba= Amala, Hausa = Tuwo, Bare-bari =
   A. Eba
   B. Agbu
   C. Burabisko

2. A family consisting of father, mother and their children is called.....
   A. Small family
   B. Nuclear family
   C. Extended family

3. The three major tribes in nigeria are:
   A. Husa, Igbo, Fulani
   B. Yoruba, Igbo, Kanuri
   C. Hausa, Igbo, Yoruba

4. UNO Stand for
   A. Union Organization
   B. United National Organization
   C. United Nation Organization

5. WHO means

A. Wise Health Organization
B. Whole Health Opportunity
C. World Heal Organization

6. ECOWAS represents

A. Economic Community of West African States
B. Economic of Western Arab State
C. Employment Community of West African States

7. Which of these 'rhyme' is found in the National Pledge

A. To be faithful, loyal and honest
B. Arise O' compatriots
C. The labour of our heroes past, shall never be in vain

8. The months of the year having 31 days are/is

A. February
B. January, March, May
C. April, June and November

9. 'January, February, March!!!
April, May, June, July!!!
August, September, October!!!
.....,.....!!!

A. February, April
B. September, August
C. November, December

10. "Ojukwu wanted to separate Nigeria, but.....said Nigeria must be one"

A. Gowon
B. Babangida
C. Shagari

11. In the 2nd Republic the President emerged under

A. NPN

B. PRP
C. GNPP

12. Show! Show! Show! The light on later see the way independence of Nigeria
    A. January 1st
    B. March 1st
    C. October 1st

13. The major African Rivers are:
    A. Niger, Benue, Congo Senegal, Orange, Limpopo
    B. Nile, Niger, Senegal, Congo, Orange, Limpopo, Zambesi
    C. Chad, Kainji, Volta, Akosombo, Nasser, Aswan

14. GWG stand for
    A. Green white Green
    B. Grass with Grasshoper
    C, Greese with Ground

15. The last 'stanza' of our National pledge is
    A. peace and unity
    B. so help me God
    C. Direct our noble course

16. Under the court of arm of the Nation, green grasses stand for our quarter line land for Agriculture while the two horses stand for
    A. Strong nation
    B. Dignity
    C. Land for Agriculture

17. The major political parties of the second republic are N.P.N, P.R.P., UNPP and GNPP. N.P.N means
    A. Nigerian Party National
    B. National Party of Nigeria
    C. National People of Nigeria

18. Which of the following traditional rulers is associated with the Yoruba culture?

A. Obi
B. Waziri
C. Oba

19.

Day	**Peg List**	**Image that you form**
Sunday	One – bun	Train on a hot dog bun
Monday	Two – shoe	Pair of shoes one missing
Tuesday	Three – tree	Three trees blocking the sun
And Friday	Position is?	

A. Seven
B. Six
C. Four

20. State and Capital, Abia - Umnabia, Bauchi – Bauchi, Borno – Maiduguri, ... – Kaduna-

A. Kebbi
B. Katsina
C. Kaduna