ASSESSMENT OF THE EFFECT OF METACOGNITIVE SCAFFOLDING ON ACADEMIC ANXIETY OF SENIOR SECONDARY SCHOOL STUDENTS IN ZARIA METROPOLIS, NIGERIA

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY ZARIA, NIGERIA IN PARTIAL FULFULLMENT OF THE REQUIREMMENTS FOR THE AWARD OF MASTER DEGREE IN EDUCATIONAL PSYCHOLOGY

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ZARIA

MAY, 2018

DECLARATION

The researcher declare that this dissertation entitled **"Assessment of the Effect of Metacognitive Scaffolding on Academic Anxiety of Senior Secondary Schools Students in Zaria Metropolis Kaduna State, Nigeria"** is the result of my research effort and to the best of my knowledge and ability has not been produced or presented for the award of any degree or diploma at this or any other Institution of learning. All citations and quotations made in this research work are duly and fully acknowledged in the references.

AYUBA IDRIS _____ _____

Signature Date

CERTIFICATION

This dissertation entitled: **"Assessment of the Effect of Metacognitive Scaffolding on Academic Anxiety of Senior Secondary Schools Students in Zaria Metropolis, Kaduna State Nigeria",** by Idris Ayuba (P15EDPC8004) meet the requirements and regulations governing the award of the degree of Master of Educational Psychology of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

DR A. I. Mohammed Chairman, Supervisory Committee	**Date**
DR U. Yunusa Member, Supervisory Committee	**Date**
DR A. I. Mohammed Head of Department	**Date**
Prof. S. Z. Abubakar Dean, School of Postgraduate Studies	**Date**

DEDICATION

This dissertation is dedicated to my Late Mother, Hajiya Halima Aliyu and my Father, Alhaji Ayuba Sambo for the sympathetic and sound upbringing of the researcher.

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ABSTRACT

This study assessed the effect of metacognitive scaffolding on academic anxiety of senior secondary school students in Zaria Metropolis, Nigeria. A Quasi-experimental design, involving pretest-posttest without a control group was adapted for the study. two co-educational schools were randomly selected that served as the treatment groups, Purposive sampling technique was used in selecting the sample population of twenty (20) students with high rate of academic anxiety out of a total population of 194 senior Secondary School students within the metropolis. The treatment groups were exposed to metacognitive scaffolding strategies of planning, monitoring and evaluation for the period of eight weeks. The instrument used for data collection was Academic Anxiety Rating Scale (AARS). Hypotheses one, two and three were tested using paired t-test, while hypothesis four was tested using analysis of covariance (ANCOVA). The findings of the study revealed that; Significant difference existed in the effect of metacognitive scaffolding on worry problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis ($t = 11.650$; $P = 0.002$), Significant difference existed in the effect of metacognitive scaffolding on Concentration problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis ($t = 7.401$; $P = 0.011$), Significant difference existed in the effect of metacognitive scaffolding on memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis ($t = 9.012$; $P = 0.021$), Significant differences existed in the differential effect of metacognitive scaffolding on worry problem, concentration problems and memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis and ($F = 4.241$; $P = 0.016$). It was recommended that School Psychologists, school Counsellors and Teachers should be encouraged to use metacognitive scaffolding strategies in handling Worry, concentration and memory problems so as to reduce academic anxiety among senior Secondary School students. Also Seminars, conferences and workshops should be organized by Government and Educational stakeholders the new strategy in order to address problems of academic anxiety among Senior Secondary School Students.

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LISTS OF ABBREVIATIONS

1. **AARS –** Academic Anxiety Rating Scale
2. **ANCOVA –** Analysis Of Covariance
3. **CBT –** Cognitive Behaviour Therapy
4. **REBT –** Rational Emotive Behaviour Therapy
5. **SSCE –** Secondary School Certificate Examination
6. **ZPD –** Zone of Proximal Development

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OPERATIONAL DEFINITION OF TERMS

The key variables of the study were operationally defined as follows:

- **Academic Anxiety:** refers to students with worry problem, Concentration and Memory problem, experiences by senior secondary school students within their academic endeavour.
    - **Worry Problem:** refers to an internal feeling of uneasiness and distraction in task performance within the academic settings.
    - **Concentration Problem:** refers to low attention ability due to academic tasks.
    - **Memory Problem:** refers to low retention ability due to anxiety caused by academic task.
- **Metacognitive scaffolding:** refers to higher thinking ability, using processes of; planning, monitoring and evaluation strategies through social interactions, support and guidance to address academic anxiety problem.
    - **Planning:** refers to the appropriate selection, arrangement and allocation of thought in task performance.
    - **Monitoring:** refers to application of one's awareness and comprehension in dealing with difficult task performance.
    - **Evaluation:** refers to appraising and reflecting on the final product and the efficiency at which the task was performed.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Academic Anxiety is a psychological state that is characterized by cognitive, behavioral and emotional components. Under the cognitive component of academic anxiety which is the basic concern of this study, there are indices of worry, low concentration, low memory, Oversensitivity, difficulty solving problem, cognitive dysfunction and poor attributional style. No two human beings, even identical twins can respond in the same way to the same situation or stimulus, this uniqueness make individuals differ from one another. The differences among individuals may be with respect to their cognitive, behavioral, physical, psychological, sensory and many more areas of characteristics. Sometimes these differences are to such an extent that people may deviate from the status considered as normal. However, being different is not always negative but sometimes individuals are different from other individuals of the same life age due to functional loses in one or more areas in different proportions; this may lead them to impairment which may result into disability, severe academic anxiety which is a disability in itself (McCarty, 2012). Academic anxiety is a kind of anxiety which relates to impending danger from the environments of the academic institutions including teacher and certain subjects.

Evidence revealed that, there is an increase on student's academic anxiety that leads to poor performance and achievement especially in subjects that requires higher mental functioning. Most students in public senior secondary schools in Zaria Metropolis experiences academic anxiety considering its prevalence among school aged children and

adolescence worldwide. Academic Anxiety had a negative effect on the information processing system, such as weakness of concentration and attention.

Academic anxiety is not a bad thing. It is true that high level of anxiety interfere with concentration and memory which are critical from academic success. However, without any anxiety, most individuals would lack motivation to study and do daily assignments. Emad, (2016) pointed out as a student's academic performance suffers, the anxiety level related to certain academic tasks increases" (p.79). Emmanuel (2013), stated that academic anxiety could be a response to some yet unrecognized factors either in the learning environment or in an individual's self. The key indices of academic anxiety under the cognitive components of academic anxiety are as follows; Concentration problem, Memory problem, Worry problem, oversensitivity, difficulty solving problems. Cognitive dysfunctions and poor attributional style (Huberty, 2009) in line with that, Cole, Martin, Peek, Seroczynski and Fier, (2011), articulated that; those who suffer from severe academic anxiety tend to avoid academic settings.

For a learning to take place, student should be anxiety free in order to learn without threats and difficulties. Even though anxiety within academic circle is not totally bad to the students, a moderate level of anxiety is motivational to a student, it can only be considered bad if it exceed to the harming level which interrupts with concentration, retention, and completing academic tasks.

Metacognitive scaffolding is a technique that concentrates on monitoring student's current level of thinking, reasoning and understanding and decides when it is not adequate. It supports students to manage their thinking, recognize when they have problem with a situation or do not understand something, and adjusts their thinking accordingly, not just

guides them to master a specific subject or a topic procedures (Choi, Land & Turjeon, 2016). Findings of studies into the effects of metacognitive scaffolding have shown a positive effect on the learning outcomes (Azevedo & Hadwin 2014; Azevedo, Moos, Greene, Winters, & Cromley, 2008; Bannert 2015; Bannert, Hildebrand, & Mengelkamp, 2009; Lin & Lehman 1999; Veenman, Kok, & Blote, 2016).

Research shows that metacognitive scaffolding supports metacognitive activities and facilitates problem-solving processes. For example, Ge and Land (2011) found that students who received metacognitive question prompts performed significantly better than those who did not receive question prompts in all four problem-solving processes, including problem representation, generating solutions, making justification, and monitoring and evaluation. Specifically, students who closely followed the question prompts demonstrated significantly better problem solving skills in metacognitive activities, such as planning for the problem solving process, monitoring the problem solving progress, evaluating the effectiveness of the solutions, and justifying the viability of the proposed solution against alternatives. Bulu and Pedersen (2010) investigated the effects of domain general and domain-specific scaffolds on learning and problem-solving outcomes during ill-structured problem solving. Their findings revealed that domain-general scaffolds facilitated monitoring and evaluation better than domain specific ones and helped students transfer problem-solving skills when they were faded, while domain-specific scaffolds facilitated learning of the scientific content and problem representation better than domain-general scaffolds. In the domain-general conditions, students evaluated their solutions more effectively and provided alternative solutions to the problem. These results suggest that domain-general scaffolds are effective for fostering students'

monitoring and evaluation skills. Chen and Chan (2011) reported that process prompts facilitate students' problem-solving efforts and support self-monitoring and metacognitive thinking. These research findings indicate that metacognitive scaffolds are effective in supporting students' metacognitive processes, including planning, monitoring, and evaluation.

Despite the increasing research efforts, there is still a lack of understanding of how metacognitive scaffolding affects students' academic anxiety, problem solving processes and outcomes and their metacognitive skills, particularly in Worry problem, concentration and Memory problem indices of academic anxiety.

1.2 Statement of the Problem

Academic anxiety is one of the most common Psychological disorders in school aged children and adolescents worldwide, its characterized by physical, emotional, cognitive and behavioural components, which interfere with students' information processing system, academic performance and achievement. Students with high academic anxiety achieve low academic performance and the level of academic anxiety can become more harmful over time of care is not taking. Furthermore, Nelson and Harwood, as cited in Emad (2016), suggested that "the student with high academic anxiety have difficulty in memorization comprehension, storage, concentration, problem solving and retrieving of information which affects student's academic performance and achievement. In line with the above statements and prevalence of academic anxiety worldwide, students in Zaria Metropolis are not likely to be exempted from the existing problem looking at the high rate of failure in SSCE, high number of young adults drop out from schools and lacking of

intrinsic motivation among senior secondary school students may greatly resulted of academic anxiety. Since evidence have shown academic anxiety interrupts with information processing system of an individual and to Cole, Martin, Peek, Seroczynski and Fier, (2011), articulated that; those who suffer from severe academic anxiety tend to avoid academic settings. The intent of the study is to bring out a way forward in addressing academic anxiety problem of senior secondary school students in Zaria Metropolis, Nigeria.

1.3 Objectives of the Study

The objectives of the study are to asses:

1. The effect of metacognitive scaffolding on worry problem of Senior Secondary School Students in Zaria Metropolis.
2. The effect of metacognitive scaffolding on concentration problem of Senior Secondary School Students in Zaria Metropolis.
3. The effect of Metacognitive scaffolding on memory problem of Senior Secondary School Students in Zaria Metropolis.
4. The differential effect of metacognitive scaffolding on worry problem, concentration and memory problem of Senior Secondary School Students in Zaria Metropolis.

1.4 Research Questions

The followings research questions were raised to guide the study:

1. What is the effect of metacognitive scaffolding on worry problem of Senior Secondary School Students in Zaria Metropolis?
2. What is the effect of metacognitive scaffolding on concentration problem of Senior Secondary School Students in Zaria Metropolis?
3. What is the effect of Metacognitive scaffolding on memory problem of Senior Secondary School Students in Zaria Metropolis?
4. What is the differential effect of my problem of Senior Secondary School Students in Zaria Metropolis?

1.5 Research Hypotheses

The following hypotheses are raised to guide the study:

H_{o2}. There is no significant effect of metacognitive scaffolding on worry problem of Senior Secondary School Students in Zaria Metropolis.

H_{02}. There is no significant effect of metacognitive scaffolding on concentration problem of Senior Secondary School Students in Zaria Metropolis.

H_{03}. There is no significant effect of metacognitive scaffolding on memory problem of Senior Secondary School Students in Zaria Metropolis.

$H0_4$. There is no significant differential effect of metacognitive scaffolding on worry problem, concentration problems and memory problem of Senior Secondary School Students in Zaria Metropolis.

1.6 Basic Assumptions

The study assumed:

1. That metacognitive scaffolding may have effect on worry problem of Senior Secondary School Students in Zaria Metropolis.
2. That metacognitive scaffolding may have effect on concentration problem of Senior Secondary School Students in Zaria Metropolis.
3. That metacognitive scaffolding may have effect on memory problem of Senior Secondary School Students in Zaria Metropolis.
4. That differential effect of metacognitive scaffolding may exists on worry problem, concentration problems and memory problem of Senior Secondary School Students in Zaria Metropolis.

1.7 Significance of the Study

The findings of this study add value to theory building on cognitive and metacognitive development most especially the effects of metacognitive scaffolding on academic anxiety.

Students with academic anxiety exposed to instructions on metacognitive scaffolding will have a new way in handling academic anxiety, thereby enabling them to become independent, active and improve academically in their thinking.

The findings of the study serves as an intervention package and models for psychologists and counselors in addressing a client with the problem of academic anxiety looking in to the review and findings of this work.

The findings of the study also benefits educators and educational agencies with a comprehensive data, theoretical and conceptual frameworks of Metacognitive scaffolding psychological techniques and skills in addressing academic anxiety which stressed the importance role of expert adults in assisting the incapable learners in completing difficult tasks that requires higher thinking and learning or goal, techniques that can be used to help students who are experiencing academic anxiety, so as to prevent academic nervousness, fear and inability which lead to massive failure within the academic circle.

The findings of this study provides and assists teachers with more information on how to improve on the effective use of teaching methodologies and application of techniques that enable learners and the teachers themselves to engage in higher thinking and cognitive abilities to enhance proper teaching and learning processes. It is hoped that the study re-awake teachers mind on how to identify students with anxiety and utilize viable methods that assists with views for better understanding to avoid school drop-out. The study also provides teachers with the basis for proper insight in planning school activities and programme that addresses academic anxiety.

The findings of the study is beneficial to society by creating awareness to the general public most especially parents in assisting their ward/students who lack the ability to alter their learning on how to learn (Metacognition) towards achieving their academic goals and to address, reduce and cope with academic anxiety by acquiring the Metacognitive scaffolding skills, techniques and strategies. It shall also help students on how to plan, monitor, regulate and evaluate their learning strategies in dealing with their academic tasks, conditions and reading style as well as problem solving ability.

The findings of this study also serves as a bridge to future researchers to explore, experiment using instruction in Metacognitive scaffolding in order to re-address academic anxiety among senior secondary schools students.

1.8 Scope and Delimitation of the Study

The study covers all government public senior secondary schools within Zaria metropolis of Kaduna state Nigeria, SS2 students male and female who showed the symptoms of academic anxiety were used in the study. The study is delimited to assessment of the effect of metacognitive scaffolding on academic anxiety among senior secondary school students in the study area with respect to Worry problem, concentration and Memory problem as the indices of academic anxiety, using metacognitive scaffolding strategies of planning, monitoring and evaluation strategies. The study does not look at oversensitivity, difficulty solving problems, cognitive dysfunction and poor attributional style, due the nature, duration and the cost of quasi-experimental research.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

This section presents a review of written related materials on the key variables covering the following sub-headings:

2.1 Concept of Academic Anxiety

2.2 Concept of Metacognitive scaffolding

2.3 Relationship between Metacognitive scaffolding and Academic Anxiety

2.4 Theoretical Framework

2.5 Review of Empirical Studies

2.6 Summary

2.1 Concept of Academic Anxiety

For one to understand the concept of academic anxiety, a few constructs must first be identified. Anxiety is defined by Putnam (2010) as "a complex psychological condition that affects various cognitive, behavioral, and psychological states" (p. 60). Anxiety can then be separated into three classifications: state, an emotional condition that is temporary and initiated by a certain experience, trait, a stable aspect of one's personality and situation-specific (Tohill & Holyoak, 2011). Colman, (2003) defined anxiety as "a state of uneasiness, accompanied by dysphasia and somatic signs and symptoms of tension, focused on apprehension of possible failure, misfortune, or danger. Lazarus and Averill (2016) view anxiety as "an emotion based on the appraisal of threat, an appraisal which entails symbolic, anticipatory, and uncertain elements. Anxiety results when cognitive systems no longer enable a person to relate meaningfully to the world". Anxiety may explain student

feelings of helplessness following failure. Sarason (2017) view anxiety as a conditioned response to a perceived threatening stimulus which could be learned or inherited. In a similar way, May cited in Bouras & Holt, (2007) viewed anxiety as a maladjusted behavior. Benjamin (2015, p.78) noted that anxiety can interface with attention, learning.

Academic Anxiety is a common phenomenon prevalent among all the students studying at different levels of educational institutions. Moderate/mild level of Anxiety is essential for success in academics. However, severe academic anxiety proves to be destructive for students, because it is negatively correlated with academic performance. There are many factors which are responsible in provoking academic anxiety like personal, familial, social and institutional. Personal factors include emotional disorders, health disorders, maladjustment, low self concept, low aspiration level, intelligence levels. (Joshi; Abid & Atieq, 2014).

Family factors problems and Social factors include irrational norms imposed on someone, unequal distribution of resources, illiterate locality (Deb, Chatterjee and Walsh 2013). Institutional Factors may be related to the school type, school environment, curricular and co-curricular aspects, teacher taught relationship etc. include low socio economic status, lack of guidance, indifferent attitude of parents.

Academic anxiety can serve constructive purposive, acting as a spur to creativity and problem solving. However, strong anxiety may be emotionally crippling, evoking a deep sense of helplessness and inadequacy, rendering the person ineffectual and desperate. Anxiety research has also led to a distinction between trait anxiety and state anxiety. Trait anxiety is a relatively enduring personality trait, a disposition to be anxious in many different situations, whereas state anxiety is the anxiety an individual experiences in a

specific situation at a specific time. The concept of trait and state anxiety has a great deal of significance for the academic learning situation. There are individual differences in their frequency and intensity of their becoming anxious on different teaching –learning situation under state anxiety , attempts are made to measure academic anxiety too, which is a kind of state anxiety which relates to the impending danger from the environments of the academic institutions including teacher, certain subjects like Mathematics, English and so forth.

Academic anxiety is a common issue that students cannot ignore if they want to succeed in school. It often leads to problems of concentrating while studying and remembering information, while completing tests, which makes the student, feel helpless and like a failure. Academic anxiety is a kind of state anxiety which relates to the impending danger from environments of academic institutions including teacher, certain subjects. If academic anxiety is not properly addressed, it can have many serious and lasting consequences, such as causing a student to have Memory problem, Concentration problems study-skills deficits, task-generated interference, Worry probleming, procrastinate perform poorly on school work, fail classes and withdraw from socializing with pears or pursuing activities that interest him (Nelson & Harwood, 2011).

Anxiety means trouble; either in presence or absence of some psychological stress, anxiety can create a feeling of fear, Worry problem, uneasiness, or dread (Bouras & Holt, 2007). It is considered to be a normal response to stress, it may help an individual to cope with the demands of life but in excess it may be considered as anxiety disorder (National Institute of Mental Health, 2008). Robin (2009), reported that anxiety is a global problem affecting mainly children and adolescents. In America, anxiety is the most common illness and approximately 40 million adults have anxiety disorders (APA, 2000). Bouras & Holt,

(2007) Observed that an optimal level of arousal and mindset is necessary to best complete a task such as an examination, perform an act or compete in an event. However, when the anxiety or level of arousal exceeds that optimal level, the result is decline in performance. Hence the individual fails to fulfill the required obligation (Heather & April, 2009). Anxiety is an intrinsic part of human nature, if we investigate why something happen it usually becomes less frightening (Jones, 2000).

According to the National Institute of Mental Health, "Anxiety is a normal reaction to stress. It helps one deal with a tense situation in the office, study harder for an exam, or keep focused on an important speech. In general, it helps one cope. But when anxiety becomes an excessive, irrational dread of everyday situations, it has become a disabling disorder". Symptoms of anxiety include (Andrews & Jenkins, 1999): nervousness or restlessness, trembling, sweating, poor concentration, palpitations, frequent urination and Shortness of breath.

Anxiety means apprehension, tension, or uneasiness characterized by fear, dread, or uncertainty about something the source of which is largely unknown or unrecognized by the individual; it may consist in persistent apprehensions of future events as well as in generalized emotional reactions to any choice point or decision (Good, 1973). Breuer, (1999) mentioned that all anxiety disorders are defined by the dual characteristics of excessive emotional fear and physiologic hyper arousals. Anxiety is one of the most widely experienced emotion and one of the most essential constructs of all human behavior. It is a displeasing feeling of uneasiness, nervousness, apprehension, fear, concern or Worry problem (Barlow, 2002). Anxiety is defined by Putnam (2010), and (APA, 2000) as "a complex psychological condition that affects various cognitive, behavioral, and

psychological states" (p. 60). Anxiety can then be separated into three classifications: state, an emotional condition that is temporary and initiated by a certain experience, trait, a stable aspect of one's personality, and situation-specific (Tohill & Holyoak, 2000). Anxiety is an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure. People with anxiety disorders usually have recurring intrusive thoughts or concerns. They may avoid certain situations out of Worry problem. They may also have physical symptoms such as sweating, trembling, dizziness or a rapid heartbeat. (Encyclopedia of Psychology, 2007)

Academic anxiety is a common problem at all educational level including primary, secondary, colleges up to university. With some studies showing 80% of students experiencing daily a kind of anxiety related to stress which interfere with their academic progress. Every human being has some certain characteristics, abilities, potentialities and challenges that differentiates him with one another, may be inherited or through the consequence of learning and development. It is the feeling of being distressed, fearful, or stressed out as a result of school pressures, also a disruptive thought patterns and physiological responses and behaviors that follow from concern about the possibility of an unacceptably poor performance on an academic test or anything academically based. It's a kind of state anxiety which relates to the impending danger from the environment of the academic institutions including teachers, certain school subjects. (Rohen & Meetei, 2012).

Alex, (2003) defined Academic Anxiety as the feeling of being distressed, fearful, or stressed out as a result of school pressures. There are disruptive thought patterns and physiological responses and behaviors that follow from concern about the possibility of an unacceptably poor performance on an academic test or anything academically based.

Academic anxiety thus, just as it sounds, is a form of anxiety consisting of cognitive, physical, and behavioral states related to educational contexts and events (Cassady, 2010). For instance, academic anxiety can manifest as concern regarding the potential negative consequences associated with failure within evaluative situations (e.g., test anxiety) or certain education subjects (math, science, reading & foreign language anxieties). Research has suggested – and repeatedly demonstrated – that the experience of academic anxiety is a substantial barrier to optimal academic performance (Hembree; Putman, 2010) and as such, it is vital that steps be taken to assist students suffering from all forms of academic anxiety.

According to Banga (2014), Academic anxiety can be associated with almost all the tasks associated with academics i.e. starting from attendance to classes to the biggest cause of academic anxiety- exams! It doesn't stop there, though. Furthermore, Academic anxiety arises out of the apprehension of rebuke from teachers, parents and peers regarding the failures of performing the responsibilities of an academic properly. Academic anxiety is a kind of anxiety which is related to the impending danger from the environment of the academic institutions including teacher in certain subjects like Mathematics, English, etc. It is a mental feeling of uneasiness or distress in reaction to a school situation that is perceived negatively Shakir, (2014).

Mahato and Sunil (2012), view academic anxiety as a kind of anxiety which relates to the imminent danger from the environment of the educational institutions together with teacher and certain subjects like Chemistry, Physics for numerical, Mathematics and Academic anxiety. It is a mental sensitivity of uneasiness or distress in response to school or college circumstances that is perceived negatively. To Kumar and Neelam, (2013) Academic anxiety is a kind of anxiety which relates to the impending danger from the

environments of the academic institutions including teacher and certain subjects like mathematics, science, English etc. it is a mental feeling of uneasiness or distress in reaction to a school situation that is perceived negatively. Academic anxiety is not a bad thing. It is true that a high level of anxiety interferes with concentration and memory which are critical for academic success, however, without any anxiety, most of us would lack the motivation to study for exams, write papers or do daily homework.

A moderate amount of anxiety actually helps academic performance by creating motivation. If academic anxiety is not properly addressed, it can have many serious and long lasting consequences such as causing a student to procrastinate, perform poorly on school work, fail classes and withdraw from socializing with peers or pursuing activities that interest him. Academic anxiety can become more detrimental over time. As a students' academic performance suffers, the anxiety level related to certain academic tasks increases (Huberty, 2012, p12).

Academic anxiety is totally not a bad thing. However it is true that a high level of anxiety interferes with concentration and memory which are critical for day to day academic performance and success. However it is also true without any anxiety, majority of us would lack the enthusiasm and motivation to study for exams, do everyday homework or write any research papers (Abid & Atieq, 2014). A modest amount of anxiety actually helps academic performance by creating morale and motivation. Students experiencing academic anxiety feel apprehensive over academic tasks. Students can feel anxiety related to every academic task. Some may only feel anxiety related to test taking or other specific tasks. Anxiety is not always negative. Some students can be motivated by anxiety. Academic Anxiety is a common phenomenon prevalent among all the students studying at different

levels of education. Moderate level of Anxiety is essential for success in academics. However, severe academic anxiety proves to be destructive for students, because it is negatively correlated with academic performance (Abid & Atie, 2014).

Seroczynski and Jonathan (1999) those who suffer from severe academic anxiety tend to avoid academic settings. Feelings of anxiety are not inherently abnormal, but can become severe enough to impair functioning in some individuals. When functioning is significantly impaired, one or more anxiety disorders may be diagnosed (American Psychiatric Association, 2000). Academic anxiety is a common issue that students cannot ignore if they want to achieve academic success in school. If academic anxiety is not properly addressed, it can have many serious, severe and long lasting consequences such as causing a student to start hating a subject or a teacher, procrastinate, tell lies to parents, perform poorly on school work, absent classes to pursue activities that interest him and withdraw from socializing with peers or friends and may recoil into his own cocoon and drop school.

2.1.1 Components of Academic Anxiety

Academic Anxiety could be defined as "the response to some yet unrecognized factors, either in the learning environment or in an individual self" (Emanuel, 2013, p. 6). Academic anxiety is a factor that is different from all the temporary sensations that may affect performance on learning. The term generally "refers to the set of phenomenological, physiological, and behavioral responses that accompany concern about possible negative consequences or failure on exam or similar evaluative situation" (Zeidner, cited in Sideeg, 2015). In this sense, academic anxiety has typically the relatively permanent features of

anxiety with cognitive, behavioral, and physiological signs and symptoms which can be classified as shown in the table below:

Cognitive	Behavioral	Physiological
Concentration problems	Motor restlessness	Tics
Memory problems	Fidgets	Recurrent, localized pain
Attention problems	Task avoidance	Rapid heart rate
Oversensitivity	Rapid speech	Flushing of the skin
Difficulty solving problems	Erratic behavior	Perspiration
Worry	Irritability	Headaches
Cognitive dysfunctions —Distortions —Deficiencies	Withdrawal	Muscle tension
Attributional style problems	Perfectionism	Sleeping problems
	Lack of participation	Nausea
	Failure to complete tasks	Vomiting
	Seeking easy tasks	Enuresis

Figure: 5, the components and characteristics of academic anxiety.

Source: (Huberty, 2009:12).

On the other hand, Liebert and Morris cited in McCarthy, (2012) proposed that academic anxiety consists of different major components which include the followings: worry, emotionality, tension, poor concentration,.

I. Worry problem- This has to do with the fear or nervousness about possible failure, inability or expected outcomes of academic tasks associated with certain subjects, test/examination or parental factors related to academics, in similar way, feeling of concern about the possibility of performing poorly in the school subjects and the consequences of the failure that bring about excessive Worry problem to the students.

II. Emotionality- It is the automatic arousal experienced as a result of the motivational or unable situation which causes bodily tension.

III. Tension- This refers to the feelings of nervousness before, during and after academic task that require high concentration, reflection and mental connections.

In respect to that, Driscoll cited in Emad (2016), also proposed his dimensionality of academic anxiety that associated with poor cognition and emotionality, are as follows:

I. Poor cognition: This is the difficulty or inability of students to comprehend the subject content the study especially when they are preparing for test/ examination.

II. Emotionality- This is the physical instability of students who express the symptoms of academic anxiety especially when classroom instructions and test/examination preparation

These symptoms and signs can result in interference with the basic thinking processes and lead to poor performance in class room. As one form of anxiety, academic anxiety may lead to short-term or long term impairment of learning and result in low academic performance, for as Field (2004) observes, "general anxiety is one of several affective factors which can influence concentration/attention and hence lead to deterioration in … performance" (p. 15). According to Spielberger and Vagg cited in Sideeg, (2015) "academic performance and achievement, are increasingly used in evaluating applicants for jobs and admission into educational programs. Consequently, academic stress and anxiety have become pervasive problems in modern society".

2.1.2 Symptoms of Academic Anxiety

The cognitive components and its symptoms is the main concern for this study, in respect to what literature reveals and stress is that, generally academic anxiety and its components has effects and influences over learning performance and achievement. By creating sorts of impairments associated with students attention problem during learning and lesson period, Memory problem of storing and retrieval of learned materials, Concentration problems, oversensitivity, difficulty in solving academic problems, cognitive dysfunction both (Distortions and Deficiencies) and lastly attributional style problems.

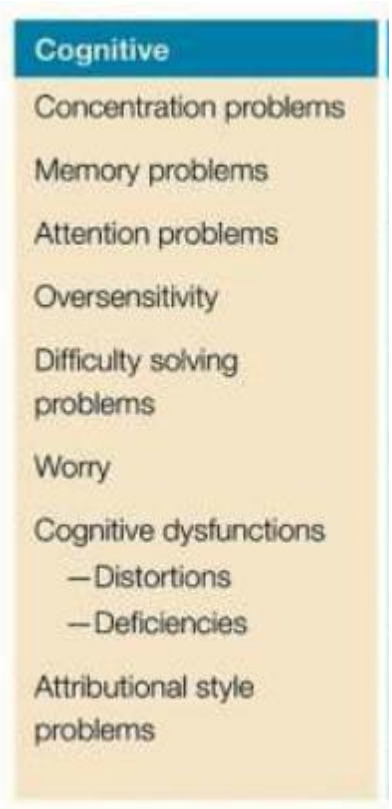


Figure: 6 Cognitive indices of academic anxiety.

Source: Huberty, (2009:12).

The three key indices (Worry problem, Concentration problems and Memory problems) under the cognitive components selected to work on in respect to academic anxiety.

2.1.2.1 Worry problem

Worry problem refers to the thoughts, images, and emotions of a negative nature in a repetitive, uncontrollable manner that results from a proactive cognitive risk analysis made to avoid or solve anticipated potential threats and their potential consequences (Borkovec, 2002).Worry problem is described as a response to a moderate challenge for when the subject has inadequate skills. Csikszentmihalyi (1997), explains that, psychologically, Worry problem is part of Preservative Cognition (a collective term for continuous thinking about negative events in the past or in the future). Brosschot, Pieper and Thayer, (2005)"Worry problem" as an emotion is experienced from anxiety or concern about a real or imagined issue, often personal issues such as academic tasks, health, finances, or external broader issues such as environmental pollution, social structure or technological change. It's a natural response to anticipated future problems. Excessive Worry problem is a primary diagnostic feature of generalized anxiety disorder. Most people experience short-lived periods of Worry problem in their lives without incident; indeed, a mild amount of Worry probleming have positive effects, if it prompts people to take precautions or avoid risky behaviors but with excessive worrisome people they overestimate future dangers in their assessments and in its extremities tend to magnify the situation as a dead end which results stress. Overestimation happens because analysis resources are a combination of external locus of control, personal experience and belief fallacies. Chronically worried individuals are also more likely to lack confidence in their

problem solving ability, Concentration problems perceive problems as threats, become easily frustrated when dealing with a problem, and are pessimistic about the outcome of problem-solving efforts.

Bredemeier, Berenbaum and Howard (2008), seriously anxious learners find it difficult to control their Worry problem and typically experience these symptoms: Restlessness during home-work, Fatigue about learning activities, Difficulty concentrating, Irritability and Sleep disturbance. Worry problem is a verbal linguistic, thought based activity, which arises as an attempt to inhibit vivid mental imagery and associated somatic and emotional activation (Borkovec, Alcaine and Beha, 2004). This inhibition precludes the emotional processing of fear that is theoretically necessary for successful habituation and extinction of feared stimuli (Gillihan, Seth & Foa, Edna, 2014). Worry problem is reinforced as a coping technique due to the fact that most worries never actually occur, leaving the worrier with a feeling of having successfully controlled the feared situation, without the unpleasant sensations associated with exposure (Behar, Evelyn; DiMarco, Ilyse, Hekler, Eric, Mohlman, Staples, Alison, 2009).

According to psychological model of Worry problem, is an interaction between involuntary (bottom-up) processes, such as habitual biases in attention and interpretation favoring threat content, and voluntary (top-down) processes, such as attentional control. Emotional processing biases influence the probability of threat representations into the awareness as intruding negative or positive thoughts. At a pre-conscious level, these processes influence the competition among mental representations in which some correspond to the assertive power of Worry problem with impaired cognitive process and others to the preventive power of Worry problem with attentional control or exhaustive

vigilance. The biases determine threatening degree and nature of Worry problem content the worrier attempts to resolve the perceived threat and the redirection of anticipations, responses and coping in such situations (Colette; Mathews & Andrew, 2012).

There are some who respond to mental representations in an uncertain or ambiguous state in regard to the stressful or upsetting event (Koerner, Naomi; Dugas & Michel, 2006). In this state the worrier is held in a perpetual state of Worry problem. This is because availability of an overwhelming number (maybe 2 or 3, depending upon the Worry problem-prone individual) of possibilities of outcomes which can be generated, it puts the worrier in a threatening crisis and they focus their attentional control voluntarily on the potential negative outcomes, whereas others engage in a constructive problem solving manner and in a benign approach rather than to engage with heightened anticipation on the possible negative outcome Robichaud, Melisa, (2013).

2.1.2.2 Concentration problem:

Concentration problem is another cognitive symptom of academic anxiety, that interfere with students' concentration and attention during learning and other academic tasks that requires thinking and cognitive process. Anxiety is the most common Psychological conditions that can interfere with concentration; it is characterized by problems paying attention, or difficulty controlling behavior of concentration deficit (National Institute of Mental Health. March 2016.)

In academic circle, problems paying attention/concentration may result in poor school performance (National Institute of Mental Health. March 2016.) Although it causes impairment, particularly in modern society, many learners with Concentration problem as a

result of anxiety may have a good attention span for tasks they find interesting (Walitza, Drechsler, Ball, 2012).

Concentration problem and other anxious behaviors, are common in leading to academic difficulties are frequent as are problems with relationships (Dobie, 2012) The symptoms can be difficult to define as it is hard to draw a line at where normal levels of concentration, Worry problem, and attributional style deficit end and significant levels requiring interventions begin (Ramsay,2007).

A student with Concentration problem and inattentive type has most or all of following symptoms, excluding situations where these symptoms are better explained by school psychologist or other therapist (American Psychiatric Association (2013).

- Be easily distracted, miss details, forget things, and frequently switch from one activity to another
- Have difficulty maintaining focus on one task
- Become bored with a task after only a few minutes, unless doing something enjoyable
- Have difficulty focusing attention on organizing and completing a task or learning something new
- Have trouble completing or turning in homework, assignments, or concentration during lesson delivery often losing things (e.g., pencils, toys, assignments) needed to complete tasks or activities
- Seem to not be listening when spoken to
- Daydream, become easily confused, and move slowly
- Have difficulty processing information as quickly and accurately as others

- Struggle to follow instructions
- Have trouble understanding minute or conversation details.

It has been found to occur in about 20–30% of school aged children and adolescents with Concentration problem/ Learning disabilities can include academic skills disorders (Steinau 2013) However, is not considered a learning disability, but it very frequently causes academic difficulties. The symptoms of Concentration problem arise from a deficiency in certain executive functions (e.g., attentional control, inhibitory control, and working memory) causes by anxiety in respect to an important task which can have a sort of consequences (Malenka, Nestler, Hyman, 2009).

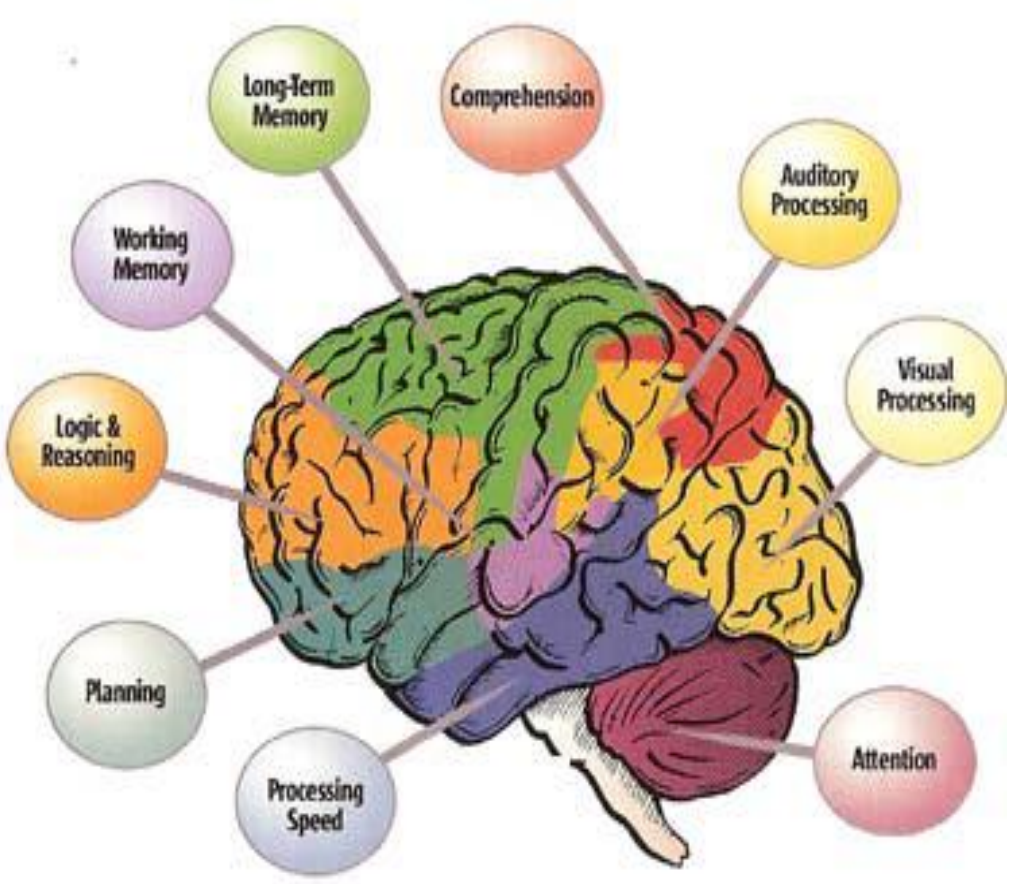


Figure: 7, Executive functioning/ information processing system.

Executive functions are a set of cognitive processes that are required to successfully select and monitor behaviors that facilitate the attainment of one's chosen goals and successful learning (Brown, 2008). The executive function impairments that occur in an individual with anxiety Concentration problem, result in problems with staying organized, time keeping, excessive procrastination, maintaining concentration, paying attention, ignoring distractions, regulating emotions, and remembering details.

2.1.2.3 Memory problem

Anxiety within the academic causes Memory problem, especially to an individual with high level of anxiety in one of the academic subject, condition or environment, high level of academic anxiety negatively affects working memory (Owens, Stevenson, Hadwin & Norgate, 2012). It's the inability to store and retrieve learnt materials or information in regards to paying attention and concentration during and after classes by the learner. Most students lose interest and unable to capture and comprehend and retain information in a subject they have fear or nervousness on it.

Academic anxiety causes the body to produce the stress response (also known as the fight or flight response). The stress response stresses the body, which can have an adverse effect on brain functioning. Research has found that stress can impair the short-term learning and concentration areas of the brain (Barlow, 2014). Difficulty concentrating is a normal and periodic occurrence for most people. Tiredness and emotional stress can cause Concentration problems in most people. Hormonal changes, such as those experienced during tension or anxiety towards learning situation, can also affect how we think and effectively stored and retrieved information when learning or reference. Memory problems

include Poor concentration, Forgetfulness and slow thinking during learning is Symptoms of cognitive component of academic anxiety (Trivedi, 2013). Anxiety can cause forgetfulness, confusion, difficulty concentrating and other problems that disrupt daily school activities which can seriously impair mental abilities.

Individual with high anxiety in academic arena appear to have unimpaired long-term memory, and deficits in long-term recall appear to be attributed to impairments in working memory (Skodzik, Holling, Pedersen, 2013). The criteria for an executive function deficit are met in 30–50% of children and adolescents with academic anxiety (Walitza, Drechsler, Ball, 2012),One study found that 80% of individuals with retention problem as a result of anxiety were impaired in at least one executive function task, compared to 50% for individuals without retention/ Memory problems (Nigg, Willcutt, Doyle, Sonuga-Barke, 2005).

Due to the rates of brain maturation and the increasing demands for executive control as a person gets older, anxiety impairments may not fully manifest themselves until adolescence or even early adulthood (Brown, 2008). Individual with memory inability due to anxiety, find it difficult to focus on long-term over short-term rewards, and exhibit impulsive behavior for short-term rewards (Modesto-Lowe, Chaplin, Soovajian, Meyer, 2013).

Jim and Marilyn, (2017), have itemized Memory problem associated or causes by anxiety symptom description as follows:

- Difficulty learning, remembering, and recalling new information.
- Struggle with learning new things.
- Block on information that seems known.

- Difficulty remembering things are placed or what is thinking about.
- Things that you would normally not forget, you now forget.
- Difficult to learn and grasp new concepts.
- Taking much longer to learn, remember, and recall new things.
- Seem more forgetful than usual.
- Become concerned ones' memory is not as good as one think it should be.
- Difficulty in thinking, concentrating, and/or forming thoughts.
- Finding self easily distracted.
- It also might seem as though your thoughts are illusive and things that you once knew seem hard to comprehend or recall.
- It might also feel like normal intellectual tasks seem much more difficult.
- Find it hard to focus and concentrate, that you are more forgetful (forget things that you normally wouldn't), or that you have difficulty focusing on and carrying on conversations.
- It also may seem like you can maintain your focus and that you have a million thoughts going on at the same time all demanding your attention.

Memory problem anxiety symptoms can come and go rarely, occur frequently, or persist indefinitely. For example, you may struggle with memory loss once and a while and not that often, feel it off and on, or feel it all the time. Memory problem anxiety symptoms may precede, accompany, or follow an escalation of other anxiety sensations and symptoms, or occur. It can precede, accompany, or follow an episode of nervousness, anxiety, fear, and elevated stress, or occur 'out of the blue' and for no apparent reason. Memory problem anxiety symptoms can range in intensity from slight, to moderate, to

severe. It can also come in waves, where it's strong one moment and eases off the next (Jim Folk & Marilyn, 2017).

2.1.3 Characteristics of Academic Anxious Individual

Anxiety is said to be a state of emotional condition or feeling of being anxious, nervous caused by excessive uneasiness. Looking at that, academic anxiety is an emotional state or feeling of anxious causes by things relating to academic tasks, situation or condition which resulting to uneasiness condition of stress and hatred towards any form of academic task, which may end of losing hope and personal withdrawal of learner from school. In regards to that, students development center (.lsus.edu.,2015) have identified some kind of characteristics or feelings in which if one's experiences them regards to academic situation, he/ she is experiencing academic anxiety. These are as follows:

- When one takes certain classes and avoids others because they make him nervous.
- When one is excessively worried about home work, assignment or taking a test.
- When one experiences physical symptoms (dizziness, nausea, shortness of breath or heart beats) when thinking about school or wring an exams.
- When one procrastinate on assignments, and feels overwhelmed about certain course like mathematics, English, chemistry, physics and Mathematics.
- When one experiences rapid heartbeats when is about to take a test / examination or dealing with studies.

- When one regularly experiences a feeling of boring to school environment.
- When one is anxious to actively participate in class activities, like asking or answering question.
- When one is worried about what his/her parents expects from his/her academic outcomes.

2.1.4 Factors Influencing Academic Anxiety

Cassady (2010), Academic Anxiety Resource Center, (2010) and Emad, (2016) have itemized the following factors influencing academic anxiety among children and adolescents in school as:

Reading/Study Factor: Study/Reading anxiety can be thought of as a type of specific phobia or having an anxiety producing reaction towards reading. Not as much research has been conducted regarding anxiety towards reading compared to other subjects such as math. However, Everson et al (1994) found that anxiety is related to some reading comprehension detriments. Similarly, Putman (2010) believes that anxiety may contribute to factors involved in one's orientation towards reading such as self-efficacy and motivation. For instance, motivation is positively correlated with time spent reading (Pavonetti, Brimmer, & Cipielewski, 2002), which then subsequently impacts one's comprehension of text (Guthrie et al., 1999). In other words, a student who suffers from reading anxiety will be less motivated to spend time reading (in order to avoid anxiousness), which will consequently impact their text comprehension in a negative fashion. Reading anxiety is a construct one must consider in the presence of below-proficient reading achievement scores.

Teachers' Factor: The most disturbing cause of academic anxiety, to many students, was directly related to the teachers; that "the teacher was trying to make learner feel stupid," and this indicated a lack of respect on the part of the teacher. A judgmental teaching attitude (Samimy, 1994) and a harsh manner of teaching (Aida, 1994) are linked to students' fear in the classroom. Palacios (1998) found the following characteristics of the teacher to be associated with anxiety: absence of teacher support, unsympathetic personalities, lack of time for personal attention, favoritism, a sense that the class does not provide students with the tools necessary to match up with the teacher's expectations and the sense of being judged by the teacher or wanting to impress the teacher. Young and Ferdous (2012) noted that teaching too much grammar as well as speaking activities, put the learner "on the spot" in front of the peers without allowing prior preparation are also sources of anxiety for many students.

Some teachers feel that they cannot have students do pair work or group work in the fear of losing control of the class. Teachers' role as a dominant speaker in the class may arouse anxiety on the part of students. Teachers who believe their role is to correct students constantly when they make any error, who feel that they cannot have students working in pairs because the class may get out of control, who believe that the teacher should be doing most of the talking and teaching, and who think their role is more like a drill sergeants' than a facilitator's may be contributing to learner language anxiety. The social context that the teacher sets up in the classroom can have tremendous ramifications for the learners (Young, 1991, p. 428). When these ideas are applied to reading instruction, one can imagine that if group discussion is allowed and teacher assistance is available during reading practice in class, students might feel less anxious in reading. Also, speaking "on the spot" and "in front

of the class" produced the most anxiety from the students' perspectives. Students reported decreased anxiety in speaking foreign languages during pair work or small-group work. Instructor characteristics such as friendliness, good sense of humor, patience and relaxation can help students reduce their anxiety in class. Young's study showed that teachers' characteristics and practices play a major role in reducing students' anxiety (Zhao, 2008, p. 45).

Parental Factor: The term parental expectations According to Seginer (1983) pointed that it typically referred to parents' desires or wishes regarding their children's future attainments in schooling. In other words, children's future achievements are defined as reflected in course grades, college attendances or highest level of schooling attained (Goldenberg, 2001).Parents and academic expectation is defined as a strong predictor of students' achievement at all age levels, beginning in elementary school, continuing to middle school, to high school till University (Catsambis, 2001, p149). A fear comes as results of parental highly expectations on the child academic performance and achievement, the child will be having a anxious feeling of low performance or failure.

Social Factor is the fear of interaction with other people, feelings of being negatively judged and evaluated, and, as a result, leads to avoidance. Physical symptoms associated with this anxiety include heart palpitations, faintness, blushing and profuse sweating, it's also a social concern that interfere with learners' ability to organize his/her thoughts and successfully attend to evaluative tasks (Lowe et al., 2007). For instance, research has suggested – and demonstrated that academic anxious learners often experience task-irrelevant thoughts focusing on the perceived potential negative reactions from important others (e.g., parents, peers, teachers) that would follow poor performance during

an academic tasks (Lowe et al., 2007).Recent investigations into the prevalence of academic anxiety within traditional academic settings have estimated that approximately 10% to 40% of students experience some form of academic anxiety. Perhaps most concerning is the evidence suggesting a higher prevalence of test anxiety among certain social groups – including racial minorities and females (Carter, Williams, & Silverman; 2008; Ergene, 2003; McDonald, 2001; Putwain, 2007). Given the high prevalence of academic anxiety within educational contexts, it is vital that anxious students are identified and directed to resources that can help them overcome barriers to optimal performance imposed by the physiological, cognitive, and social dimensions of test anxiety.

Emotional Factor: is associated with Students emotions, mood and feelings. It is a heightened fear of what other students/peers/instructor think of the student. It is also a Fear of making mistakes, Emotionality on the other hands, academic anxiety – refers to the multitude manifestations of anxiety with the potential to interfere with learning and planning operations (Cassady, 2010). Examples of common cognitive responses experienced by academic anxious learners include: self-deprecating thoughts, impaired study behaviors, impaired organizational skills, and excessive concern regarding the consequences of poor performance

(Sarason, 1986; Naveh-Benjamin, 1991).

2.2 Concept of Metacognitive scaffolding

The ‘meta’ refers to higher-order cognition about cognition, or ‘thinking about one’s thinking’. It is often considered to have two dimensions: metacognitive knowledge and metacognitive regulation (Janciewicz, 2011). The study of metacognition emerged in the area of developmental psychology and subsequently in the psychology of memory, ageing, and neuropsychology (Brown, Flavell; Metcalfe & Shimamura, 2017). Scaffolding refers to a temporary support provided by the therapist, teacher, more capable peers or computer tutor to help student solve a problem or carry out a task that they cannot accomplish it independently (Vygotsky, Wood; Ge & Land 2011).

Only recently has metacognititive scaffolding been examined as a fundamental basis for most or all psychological disturbances (Wells & Matthews, 2011). Everyone has negative thoughts and everyone believes their negative thoughts sometimes. But not everyone develops sustained anxiety, depression, or emotional suffering. An important question is: What is it that controls thoughts and determines whether one can dismiss them or whether one sinks into prolonged and deeper distress?, an answer to this question. It proposes that metacognition are responsible for healthy and unhealthy control of the mind. Furthermore, it is based on the principle that it is not merely what a person thinks but how he or she thinks that determines emotions and the control one has over them. Thinking can be likened to the activity of a large orchestra involving many players and instruments. To produce an acceptable overture there must be a music score and a conductor. Metacognition is the score and the conductor behind thinking. Metacognition is cognition applied to cognition. It monitors, controls, and appraises the products and process of awareness. For most of us, emotional discomfort is transitory because we learn ways of flexibly dealing

with the negative ideas (thoughts and beliefs) that our minds construct. The metacognitive approach is based on the idea that people become trapped in emotional disturbance because their metacognition cause a particular pattern of responding to inner experiences that maintains emotion and strengthens negative ideas. The pattern in question is called the cognitive attentional syndrome (CAS) which consists of Worry problem, rumination, fixated attention, and unhelpful self-regulatory strategies or coping behaviors (Wells, 2015).

"Metacognitive knowledge" refers to the beliefs and theories that people have about their own thinking. For example, this knowledge consists of the beliefs that are held about particular types of thoughts as well as beliefs about the efficiency of one's memory or powers of concentration. An individual may believe that some thoughts are harmful. Metacognitive experiences are the situational appraisals and feelings that individuals have of their mental status. For example, the negative interpretations that obsessional patients make of their intrusive thoughts are metacognitive experiences. The Worry problem about Worry problem that is a feature of generalized anxiety is an example of a metacognitive experience. The misinterpretations of cognitive events made by an individual with disorder when they believe they are about to lose control of their behavior or lose their mind is a further example.

Metacognitive scaffolding is based on the principle that Metacognition is vitally important in understanding how cognition operates and how it generates the conscious experiences that we have of ourselves and the world around us. Metacognition shapes what we pay attention to and the factors that enter consciousness. It also shapes appraisals and influences the types of strategies that we use to regulate thoughts and feelings. The

argument developed and illustrated throughout this book proposes metacognition as a crucial influence on what we believe and think and as the basis of normal and abnormal emotional and conscious experiences. A basic premise of traditional cognitive-behavioral therapy (CBT), such as Beck's schema theory and Ellis's rational- emotive behavior therapy (REBT) is that disturbances or biases in thinking cause psychological disorder. Both of these approaches give a central role to dysfunctional beliefs. Metacognitive scaffolding is in agreement with this view as a general principle, making it a type of cognitive therapy. Where it differs from previous approaches is in identifying a particular style of thinking and types of beliefs not emphasized by these other theories as the cause of disorder (Wells, 2014).

Metacognitive scaffolding is "cognition about cognition", "thinking about thinking", "knowing about knowing", becoming "aware of one's awareness" and higher order thinking skills. The term comes from the root word meta, meaning "beyond" (Metcalfe & Shamamura, 2009). According to Semerari (2003), Metacognitive scaffolding serves to correct the wandering mind, suppressing spontaneous thoughts and bringing attention back to more "worthwhile" tasks.

Thoughts and beliefs can be considered actual, direct experiences of the self and the world, perceived via an "object mode" (Wells, 2009). However, Wells (2009) posits that there is also a "metacognitive scaffolding mode," wherein thoughts are experienced as separate from the self and the world, as if observed from a detached perspective. As such, metacognitive scaffolding is designed to act on the process of thinking and how thoughts are experienced, rather than on challenging the content or accuracy of thoughts as CBT might (Wells, 2009).

Metacognitive scaffolding supports development of cognition to a higher level (i.e. Metacognition) of thinking or reasoning order, thought, learning with a support (scaffolding) given temporarily by an expert coaching to a certain strategies to poster independent learning ability and self-regulation when a task is given or faced with a problem to solve. Further Hannafin, Hill, & Land; An and Cao (2014). Metacognitive scaffolding foster and facilitate thinking and supports Metacognition processes, including how learner are able to plan, monitor and evaluate the strategies given to them in support of their cognition when a strategy coaching in attempt to problem/task encountering the future.

The term Metacognitive scaffolding is introduced in the educational context by Wood, Bruner and Ross, Metacognitive scaffolding indicates the "social interaction with an adult or more expert, providing the learner with the necessary assistance to evolve"(Wood, Bruner and Ross, 1976). Currently, this concept refers to the possibilities of supporting a learner who finds it difficult to use strategies and skills when learning. The role of Metacognitive scaffolding is to cause the activation of Metacognitive strategies which the learner has but can't implement them (Thilmann, Kunsting, Wirth and Leutners, 2009). Scaffolding means providing support to students to bridge the gap between what they can do on their own and what they can do with guidance or assistance from others (Hartman, 2001). Scaffolding may take the format of models, cues, prompts, hints, partial solutions, etc. The main characteristic of scaffolds is that they have to be regulated according to the amount of help the learner needs, and eventually the help should be not necessary anymore.

Metacognitive scaffolding to (Vygotsky, Wood; Santrock, 2011), is a temporary assistance by which an adult capable peers supports and helps a learner know how to do

something so as to be able to complete a similar task in future". The expert/ teacher are the more knowledgeable other who cues, prompts some strategies and techniques for correct responses, guides learners thinking leading to the understanding of the subject matter. It is also seen as the temporary supports provided by expert/teacher strategies, techniques by more capable peers, or computer tutors to help learners solve problem or carry out a task that they cannot accomplish independently. Revived interest of Vygotsky's (1987) approach, Metacognitive scaffolding has been interpreted in a wide sense as "a form of support for the development and learning of children and young adult" (Rasmussen, 2001). The term can be used as an umbrella metaphor to describe the way that "teacher, expert or capable peers supply learners with the tools they need that will supports their thinking in order to solve problem deeply (Jacobs, 2001).

Complex problems require more cognitive operations than do simpler ones, and they impose more cognitive load on the problem solver. Many students have difficulties in learning arrangements, which in turn may have an impact on their performance and achievement (Azevedo & Cromley, 2004; Azevedo & Hadwin, 2005; Bannert & Mengelkamp, 2008; Hannafin & Land, 1997; Land & Greene, 2000). Students often work collaboratively in small groups to provides peer interaction with their fellow individual students to have a means of peers scaffolding and self-regulating on their learning arrangements (Hadwin & Oshige, 2007; liskala, Vauras, & Lehtinen, 2004; O'Donnell, 2006). As a consequence, Metacognitive scaffolding directed at the group members to regulate their collective learning activities to improve the performance and achievement of small groups. The potential of Metacognitive scaffolding for students‟ performance and achievement and it makes a unique contribution in most of the learning problems.

Metacognitive scaffolding promotes higher reasoning in learners and plays prominent roles of dialogue between expert/teacher and student. The purpose of the dialogue guidance and communication is to provide the learner with just enough supports and guidance to achieve a goal that would be impossible without assistance (Wood, Bruner and Ross, 1976 cited in Ge & Land, 2004). In support of the above statement regarding scaffolding learners cognition to Metacognitive level, Vygotsky (1978), stated that:

> "Any higher mental function which has emerged in the process of human historical development appears on the scene twice. It first appears as a form of interaction and cooperation among people, as an inter-psychological category. Then it appears as a form of individual adaption, as a part of an individual psychology, as an intra-psychological category. (P: 9)

Metacognitive scaffolds support the underlying processes associated with individual thought and learning management, providing guidance in how to think during problem solving and learning. It might remind learner's to reflect on the goal(s) or prompt them to relate the use of a given resource or tool to the completion of a task at hand. The scaffolding is intended to serve as an external model of knowledge monitoring behavior until it is internalized, therefore, the goal of Metacognitive scaffoldings for students to become independent, self-regulating thinkers who are more self-sufficient and less teacher-dependent. It is an especially effective teaching approach for developing higher level cognitive strategies (Hartman, 2001a).

There are two forms of Metacognitive scaffolding: it can be either domain-specific or more generic. When the problem context is known, scaffolding can emphasize specific ways to think about the problem. In contrast, generic scaffolding focuses on the processes of creating models. This includes finding ways to link models with prior knowledge and experience, linking representational models to current understanding, and enabling learners to manipulate ideas through modeling tools (Hartman, 2001a). Puntambekar and Hubscher (2005) highlighted the importance of providing multiple means of scaffolding in problem-solving situations. When they are integrated and multiplied, the probability that the learner benefits from these means increases. There are several ways to incorporate Metacognitive scaffolding in a learning activity (Margarida, 2005). In the following we present the two chosen means to model our learning activity.

Metacognitive scaffolding assists learners to figure out "what they know and what to do as they learn" (p.45). Metacognitive scaffolds may take the form of either computer or teacher support. For instance, Lin, Hmelo, Kinzer, and Secules (1999) use technology-based process prompts that emphasize "specific aspects of processes while learning is in action". Similarly, teacher-based probing questions can encourage students to elaborate on and explain their thinking, thus leading students to think more deeply about their learning process (Krupa, Selman, & Jaquette, 1985). Using these scaffolds continuously may help learners to rectify their misunderstandings of concepts and procedures (Sharma & Hannafin, 2007). These studies demonstrate that Metacognitive scaffolding has the potential to reduce students' cognitive loads (Hill & Hannafin, 2001) and may thus help them experience productive learning that prepares them for future tasks (Reiser, 2004).

However, some debate exists among researchers as to the best point during the learning process at which to introduce Metacognitive scaffolds. As opposed to Sharma and Hannafin's recommendation that these scaffolds be provided continuously, some researchers suggest that Metacognitive support should be given to students only after they are familiar with the learning procedure and have more knowledge about the content. One reason for providing Metacognitive support late in the process is the possibility that introducing them earlier will only add to the difficulty student's face in attempting already overly-complex learning tasks (Ertmer & Simons, 2006). Ge and Land (2004) also suggest that Metacognitive scaffolds should be introduced later in the process and should gradually replace procedural supports. Conversely, Greening (1998) argues that educators should not use a high initial cognitive load as an excuse to delay support. According to Greening, students invariably begin the learning process with misconceptions about science learning, and such misconceptions, if allowed to persist, will lead to learning that lacks meaning.

Determining the optimal point during the learning process at which Metacognitive scaffolds should be introduced is an important step toward maximizing the effectiveness of instruction. Are Metacognitive scaffolds best used later in the learning process, when students have grown accustomed to the learning material and can focus more attention on reflection? Or should these scaffolds be applied earlier in the process, helping students to develop inquiry skills that can better enable them to carry out complex tasks? These questions are especially important for those teachers offering instruction in complex learning environments, but who are unsure as to the best way address their students' needs. Although educators should integrate Metacognitive scaffolds more closely into their instruction (Bannert, Hilebrand, & Mengelkamp, 2009), few studies attempt to determine

when teacher questioning strategies should be used (Chin, 2007). Future research should therefore create guidelines for implementing Metacognitive scaffolding, and offer empirical evidence to demonstrate their effectiveness.

As suggested by Tabak's (2004) distributed scaffolding theory, no single tool can provide effective scaffolding for all purposes; different kinds of scaffolding should be applied in different situations. Studies should integrate multiple sources of scaffolding from teachers, peers, and technology, and ensure the maximized learning effectiveness of each tool in a complementary way. Although researchers recognize the importance of teacher scaffolding (Greene & Land, 2000; Kovalainen, Kumpulainen, & Vasama, 2001), few studies examine teacher intervention in computer-enhanced classrooms. Discussions of teacher supports tend to be overly general (Roth, 1993), and produce no explanations as to how various instructor supports may influence learning outcomes (Lizotte, McNeill, & Krajcik, 2004).

According to Flavell (1976), Metacognitive scaffolding means a support and guidance addressing cognition, though, reasoning. When learner's cognition is scaffold effectively, they could be able to regulate their thinking and reasoning on when and how to appropriately deal with ill-problem and easily construct meanings and representations of the main ideas in the learning task, the students should ask themselves why? How? When? And with whom they will learn these skills, respond to this their assumption/question, the answer depend on their motivational beliefs and the Metacognitive scaffolding strategy they acquire (Eccles and Wigfield, 2002, Louca, 2003 and Pintrich 2004). Research has shown that learner can regulate and monitor their thinking using various Metacognitive strategies to overcome learning problems (Walter,Yu&Pintrich, 2003).

Metacognitive scaffolding inculcates and promotes independent and reflection in learning a task, where as an interaction, guidance and assistance renders and occurs between teacher and student on how to achieve a learning goal. Social interaction variables used to explain the positive effect of Metacognitive scaffolding in helping and guiding learners towards learning strategies and task completion. As students give and receive help, they learn about strategies that can support their Metacognition and motivate them to become independent learners and master how to plan, monitor, evaluate and regulate their thinking/ learning style and improve their strategies.

According to Keith (2006), Metacognitive scaffolding is a learning process designed to promote a deeper level of learning. It's the support given to students' cognition during the learning process which is tailored to the needs of the students with the intention of helping them achieve Metacognition in learning goals,(Kyle, 2010). Metacognitive scaffolding helps students extend the application of their knowledge to new situations, by assisting and guiding them to reflect upon the process they use in approaching a problem. This process allows students to generalize and prompts them to think analogously. It also facilitates learning moments that give students the motivation they need to stay engaged under the teachers' supports it provides sufficient support to promote deep and reflective learning when concepts and skills are being first introduced to students. These supports may include: resources, a compelling task, templates and guidance on the development of cognitive and social skills, modeling a task, giving advice and providing coaching.

According to Stone (1998) cited in Donovan and Smolkin (2002), Metacognitive scaffolding is a process through which a teacher adds supports for students cognition in order to enhance learning and aid in the mastering of tasks. The expert /teacher do this

systematically building student on experiences and knowledge as they learn new skills to mastering a subject or for the purpose of freeing from academic problem. The support given to the learner master the assigned task, the supports are gradually removed. The scaffolding assigned to learners to become Metacognitive learner is a temporary entity that is used to reach learner's potentials and then is removed when learners demonstrate their independent ability to learning activity and able for applying that their cognition in higher order of thinking in solving a problem supports is calibrated for the learner and task and alters as a learner appropriates control and encounter new challenges.

Metacognitive scaffolding can take variety form of strategy which can improve students cognition to Metacognition, memory to meta memory, perception to meta perception, include expert modeling, expert advice, prompts, learning guides and tools (Collins et al 1989) he also articulated the transitory nature of scaffolding when proposing a cognitive apprenticeship in learning and teaching task completion enrolment these strategies forms can be appropriately to support learners thinking to Metacognitive level.

Metacognition Scaffolding widespread enthusiasm for students' independent learning, it is a mirror on one's knowledge and thinking and the reflection can come through the interaction with expert/capable adult to support learner thinking and knowledge by appreciation of selected strategies, technologies or tools. The supports and guidance given through the use of selected strategies, learners become independent learners able to regulate, plan, monitor and evaluate their higher thinking, through learning style and knowledge and be able to regulate thought and thinking when choosing and applying strategy in solving problem or dealing with task. Research has shown that learner who did

not train the use of Metacognitive scaffolding; the strategy use is task (A) can also be applied to task (B) and (C) (Paris and Winograd; Eisenberg, 2010).

2.2.1 Metacognitive scaffolding Strategies

There are several strategies for improving learning; Metacognitive strategies refer to the conscious monitoring of one's cognitive techniques to achieve specific goals. (Flavell, 1987) cited in Hartman, (2001).It is also viewed as the decision learners make before, during and after the process of the learning. Palintcher and brown (1984) developed a reciprocal teaching approach is a co-operative learning method to improve reading skills: questioning, clarifying, summarizing, and predicting. Hartman (2001) sees 'teaching metacognitively' as teaching with, and for Metacognition. Teaching with Metacognition means that teachers will think about their own thinking regarding instructional goals, teaching strategies, sequence material, students' characteristics and needs, and other issues related to curriculum, instruction and assessment, before, during and after lessons in order to maximize their instructional effectiveness. On the other hand, teaching for Metacognition means that the teachers will think about how their instruction will activate and develop their students' Metacognition (Hartman, 2001).

Research has also proposed a range of various strategies aiming to develop learner's Metacognition through an expert's/teachers supports (scaffolding) and lead them to learn how to learn, deeply and become independent self-reflected in learning (Blakey & spencer, 1990; Hartman, 2001 Louca, 2003; Toit & Kotze, 2009). It includes the followings; planning; organizing strategy, questions Generating strategy, monitoring strategy choosing conscious strategy, setting and pursuing goals strategy, evaluating strategy, difficulty

identification strategy, paraphrasing strategy, problem solving strategy, labeling behavior strategy, elaboration strategy, briefing thinking process strategy, research activities strategy, reflection strategy, role play strategy, thinking-aloud strategy, interactive multimedia learning strategy, thinking journal strategy, cooperative earning strategy and modeling strategy.

The main idea, Metacognitive scaffolding with these three phases of higher thinking ability, Based on the conceptual framework above, the model of a learning activity that can serve as a framework for the study is propose for academic anxiety.

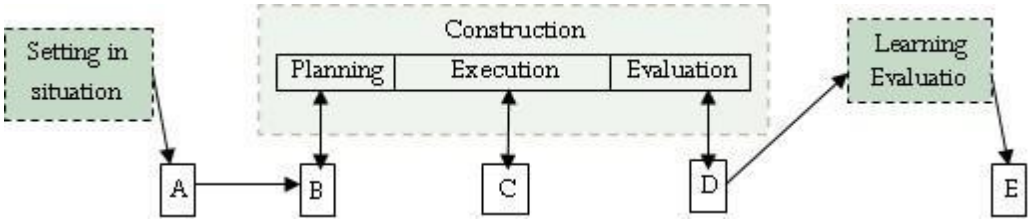


Figure: 1

The articulation of Metacognitive scaffolding techniques with phases of learning activity

Source: Mohtadi, Allali and Hajami (2013: 7).

Metacognitive model of Scaffolding (Adopted for the Study) from Flavell model of metacognition (1979), Kauchak and Eggen (1998) found that the following Metacognitive scaffolding strategies contribute to the necessary for developing learning mastery and higher order thinking skills.

The means of Metacognitive scaffoldings used are the following: Planning; Monitoring, evaluation. These are strategies provided functionally to keep trace of the process adopted for the learner to solve the mathematics and Academic anxiety problems.

Description of the different components of the model:

Means Scaffolding	Phases	Description
Verbalization of feelings	Introduction	Express feelings verbally and emotional judgments on the kind of proposed situation. Express verbally the estimation of the degree's difficulty of the situation.
Planning (i): What is the problem? What are we trying to do? What do we know about the problem? What are the ways? How these data can help us? Are there other ways to do this? What would happen if ….? What is needed to do next?	Preparation	Analyzing the task Planning how to go about Selecting strategies Defining objectives
Monitoring (ii): Is the chosen strategy used? Is the proposed plan followed? Do we need to change the plan? What is our goal now? Are we on the track? Are we closer to our goal?	Performance	Implementing the strategies chosen in the preparatory phase. Monitoring the strategies implemented and assessing their effectiveness. Regulating the thought and feelings strategies or replacing them if necessary.

Evaluation (iii): What does work? What does not work? What should we do differently next time?	Evaluation	Evaluating the result of the of the thinking type Feedback.
Revision: Revision of sessions, and reflection when dealing with a similar task.	Feedback	Analyzing metacognitive strategies Externalizing and internalizing feelings with regards to the outcome of strategies revealed.

Figure: 2

Source: Adapted by Mohtadi, Allali and Hajami (2013).

To Schraw (1998), the Metacognitive scaffolding skills are proposed are as follows:

Planning:

- **a.** What is the nature of the task?
- **b.** What is my goal?
- **c.** What kind of information and strategies do I need?
- **d.** How much time and resources will I need?

Monitoring:

- **a.** Do I have a clear understanding of what I am doing?
- **b.** Does the task make sense?
- **c.** Am I reaching my goal?
- **d.** Do I need to make change?

Evaluation:

a. Have I reached my goal?

b. What work?

c. What did not work?

d. Would I do different next time?

Anderson (2002) came up with model of Metacognitive scaffolding strategy training as follows:

Planning:

1. Pay attention appropriately while learning
2. Take note of the meanings of concepts rather than just listening and cramming

Monitoring:

1. Check consistently whether or not you are making progress

Evaluation:

1. Ask yourself questions about that you have learned

Metacognitive scaffolding skills are also important because they are required for effective computer-based inquiry learning (Blumenfeld, Soloway, Marx, Krajcik, Guzdial, & Palincsar, 1991).Recognizing the utility of Metacognition; researchers have developed a type of scaffolding that serves to develop high order thinking skills. According to Hill and Hannafin (2001) the functions of monitoring and control are central to the working of Metacognition (Efklides, 2006). There are several models which are used to comprehend

the articulation of these functions: the Flavell model (1987) has categorized the components of Metacognition as:

Metacognitive knowledge: The structure of monitoring cognition provides constantly metacognitive knowledge. When an automatic cognitive processing fails, conscious control of cognition is required in order to select the appropriate information for the fixed aim.

Metacognitive experiences: They are the monitoring of cognition, revealing the judgments, estimates and feelings caused by the treatment of the current task. When they are aware, these Metacognitive experiences provide internal feedback that could trigger Metacognitive skills which control the action.

Metacognitive skills: conscious and deliberate activities for: selecting and using the strategies to allocate efforts and time, determining the orientation according to the requirements of the task, Planning, verifying and regulating/ reflecting cognitive processes and evaluating outcomes. These skills / strategies are:

Metacognitive scaffolding was developed from two theoretical streams of developmental and cognitive psychology using socio-constructive approach theoretical model of Flavell (1976)

Proactive Movement of Metacognitive scaffolding Strategies

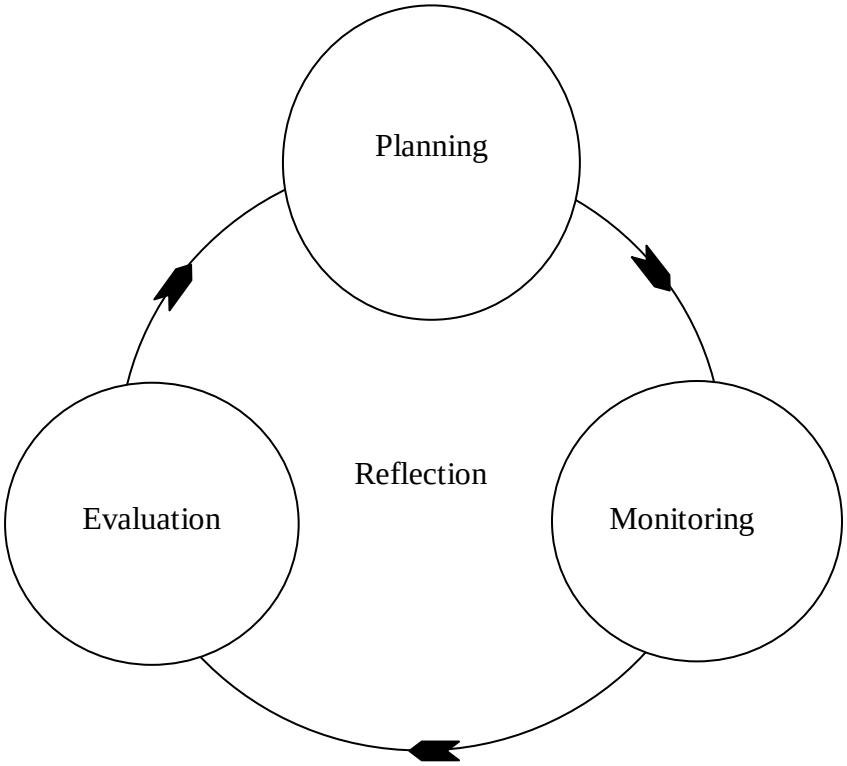


Figure: 3

1. **Planning:** when a learner is placed in contact with a problem situation which should put him/her in cognitive imbalance when he discovers that his representations are insufficient to solve the problem. Examples of planning Use scaffolding at the following times (Kauchak & Eggen, 1998):

1. Align learning goals, objectives, content ideas and skills, learning tasks, assessment activities, and materials and aids.

2. Establish organized activities and routines.

a. Prepare a task analysis of the thinking skill to be learned: identify the particular thinking skill to be learned, the prerequisite knowledge and skills, the sequence of related sub skills, and the readiness of students to learn (diagnosis of prerequisite knowledge and skills).

b. Prepare sample problems, examples, and explanations.

c. Prepare questions that go beyond simple recall of factual information to focus on advanced levels of comprehension, such as How? Why? and How well?

d. Plan strategies for diagnosis, guidance, practice, and remediation.

e. Explain and follow established routines, such as starting on time and following the planned sequence of activities.

f. Convey enthusiasm, genuine interest in a topic, warmth, and a businesslike approach with thorough preparation and organization, minimal transition time between activities, clear expectations, and a comfortable, nonthreatening atmosphere.

g. During initial learning, use scaffolding along with a variety of examples to describe the thinking processes involved.

h. Use scaffolding only when needed, by first checking for understanding and, if necessary, providing additional examples and explanations.

i. Use scaffolding to build on student strengths and accommodate weaknesses.

2. **Monitoring**: It's a moment when a result of changes in mental structures is established in the action of the learner and in his attempt to explain and solve the problem. This is a moment when the learner is self-regulating the metacognitive level to adapt his/her learning strategies. Provide structured representations and discussions of thinking tasks.

a. Visually represent and organize problems in concrete examples such as drawings, graphs, tables, hierarchies, or tables (Clarke, 1990; Crowl et al., 1997; Kauchak & Eggen, 1998).

b. Demonstrate how to break up a thought problem into convenient steps, using a number of examples and encouraging students to suggest additional examples (Glaser, 1941).

c. Discuss examples of problems and solutions, explaining the nature of problems in detail and relating the worked-out solutions to the problems. This practice reduces the student's need for additional teacher assistance.

3. **Evaluation:** It's the moment when the learner is situated in a new problem belonging to the same kind as that used in the Setting phase. This phase is necessary to control the learning quality and to design, if significant errors are identified, a new remedial system. Provide opportunities for practice in solving problems (Kauchak & Eggen, 1998; Howe & Warren, 1989).

a. Provide teacher-directed practice before independent practice, spot-checking progress on practice and providing short responses of less than 30 seconds to any single request for assistance (Fisher et al.; McGreal; both cited in Kauchak & Eggen, 1998).

b. Assign frequent, short homework assignments that are logical extensions of classroom work (not more than 20 minutes for elementary students; 10 problems a night works better than 50 a week) (Kauchak & Eggen, 1998).

c. Link practice in the content area to complex, real-life situations (Kauchak & Eggen, 1998).

The basic premises of Metacognitive scaffolding is that students can learn how to learn independently and acquire different skills, strategies and techniques for learning and problem solving abilities through adult's, expert or capable peer's guidance, coaching, modeling or assistance that can serve as an intermediate interactive steps between the

learners and expert interventions that can alter the and influence the learner's academic anxiety pertaining subjects mastery.

2.2.2 General Metacognitive scaffolding Skills

Following are some of the effective ways that teachers can guide students to develop strategies for helping themselves to use strategies (Pressley, 1983, 2007; Pressley & McCormick, 2007, cited in Santrock 2011), are as follows:

1). Recognize that strategies are a key aspect of solving problems: Monitor students' knowledge and awareness of strategies for effective learning outcomes. Many students do not use good strategies and are unaware that strategies can help them learn. And after students learn a strategy, they tend to shorten and reduce it, in the process losing important components. Thus, be sure to monitor students who modify strategies in ways that make the strategies less effective.

2). Model effective strategies for students: Modeling occur when teachers demonstrate the processes involved in performing a difficult task, or when a teachers tell learners about their thinking and the motivation for selecting certain strategies when solving problems, modeling and discussion enhance learners' thinking and talking about their own building of thinking (Muijs & Reynolds, 2005)

3). Give students many opportunities to practice the strategies*:* As students practice the strategies, provide guidance and support to the students. Give them feedback until they can use the strategies independently. As part of your feedback, inform them about where and when the strategies they used are most useful.

4). Encourage students to monitor the effectiveness of their new strategy in comparison to the effectiveness of old strategies. Students are much more likely to continue to use new strategies if they perceive them to be more effective than their old strategies. Help them to see the efficacy of their new strategies if they are unable to monitor the effectiveness themselves.

5). Remember that it takes students a considerable amount of time to learn how to use an effective strategy: Be patient and give students continued support during this tedious learning experience. Keep encouraging students to use the strategy over and over again until they can use it automatically.

6). Understand that students need to be motivated to use the strategies*:* Students are not always going to be motivated to use the strategies you want them to use. Especially important to students' motivation is their expectations that the strategies will lead to successful learning outcomes. Explicitly point out their successes in relation to strategy use. It can also help if students set goals for learning effective strategies. And when students attribute their learning outcomes to the effort they put forth, their learning benefits. A teacher guide students to become more motivated, which he can link to helping students become motivated to use strategies.

7). Encourage learners to use multiple strategies: Most children benefit from experimenting with multiple strategies, finding out what works well, when, and where.

8). Read more about strategy instruction. Two good resources are Best Practices in Literacy Instruction (Gambrell, Morrow, & Pressley, 2007) and a chapter by Michael Pressley and Karen Harris (2006) titled "Cognitive strategies instruction: From basic research to

classroom instruction," both of which include numerous helpful ideas about how to improve children's use of strategies.

9). Ask questions that help to guide students' thinking in various content areas: These might include, "How can proofreading help me in writing a paper?" "Why is it important periodically to stop when I'm reading and try to understand what is being said so far?" and, "What is the purpose of learning this phrase, diagram or formula?"

10). Recognize that low-achieving students and students with disabilities often need more support and time to become effective in independently using strategies: learned, students usually need more time before they can use it efficiently (Schneider, 2004). Further, it is important for teachers to be aware that students may drop an effective strategy or continue to use a strategy that does not help them (Miller, 2000). Do children use one strategy or multiple strategies in memory and problem solving? They often use more than one strategy (Bjorklund, 2011). Most children benefit from generating a variety of alternative strategies and experimenting with different approaches to a problem and discovering what works well, when, and where (Schneider & Bjorklund, 1998 in Santrock, 2011). This is especially true for children from the middle elementary school grades on, although some cognitive psychologists argue that even young children should be encouraged to practice varying strategies (Siegler, 2009). Pressley and his colleagues (Pressley et al, 2001, 2003, and 2004) have spent considerable time in recent years observing the use of strategy instruction by teachers and strategy use by students in elementary and secondary school classrooms. They conclude that teachers' use of strategy instruction is far less complete and intense than what is needed for students to learn how to use strategies effectively. They argue that education

needs to be restructured so that students are provided with more opportunities to become competent strategic learners.

Recall from earlier in the chapter in our discussion of memory that teachers vary considerably in how frequently they make suggestions for strategy use as well as how oft en they use meta-cognitive questions (Ornstein, Coffman, & Grammer, 2009; Ornstein & others, 2007, 2010). A final point about strategies is that many strategies depend on prior knowledge. For example, students can't apply organizational strategies to a list of items unless they know the correct categories into which the items fall. The point about the importance of prior knowledge in strategy use coincides with the emphasis in our discussion earlier in the chapter of how experts use more effective strategies than novices.

In the view of Pressley and his colleagues (Pressley & Harris, 2006; Pressley & Hilden, 2006), the key to education is helping students learn a rich repertoire of strategies that results in solutions of problems. Good thinkers routinely use strategies and effective planning to solve problems. Good thinkers also know when and where to use strategies (meta-cognitive knowledge about strategies). Understanding when and where to use strategies often results from the learner's Monitoring of the learning situation. Pressley and his colleagues argue that when students are given instruction about effective strategies, they oft en can apply strategies that they previously have not used on their own. They emphasize that students benefit when the teacher models the appropriate strategy and overtly verbalizes its steps.

Then students should practice the strategy, guided and supported by the teacher's feedback until they can use it autonomously. When instructing students about employing a strategy, it also is a good idea to explain to them how using the strategy will benefit them.

However, there are some developmental limitations to this approach. For instance, young children often cannot use mental imagery competently. Just having students practice the new strategy is usually not enough for them to continue to use the strategy and transfer it to new situations. For effective maintenance and transfer, teachers should encourage students to monitor the effectiveness of the new strategy relative to their use of old strategies by comparing their performance on tests and other assessments (Harris et al, 2008). Pressley says that it is not enough to say, "Try it, you will like it"; you need to say, "Try it and compare."

An important aspect of Metacognition is monitoring how well one is performing on a task (Graham & Olinghouse, 2009). This might involve becoming aware that one has not studied enough for a test or needs to reread a particular section of a chapter to understand it better. Mismonitoring is common. For example, elementary school students often think they are better prepared for a test than they actually are and think they understand text material better than they do. One strategy is to encourage students who mismonitor to create practice tests and questions to assess how complete their understanding is. Learning how to use strategies effectively oft en takes time (Bjorklund, 2011). Initially, it takes time to learn to execute the strategies, and it requires guidance and support from the teacher. With practice, students learn to execute strategies faster and more competently. Practice means that students use the effective strategy over and over again until they perform it automatically. To execute the strategies effectively, they need to have the strategies in long-term memory, and extensive practice makes this possible. Learners also need to be motivated to use the strategies. Thus, an important implication for helping students develop strategies such as organization is that once a strategy is.

2.3 Relationship between Metacognitive scaffolding and academic anxiety

Anxiety is one of the major predictors of academic performance and achievement. Students with academic anxiety display a passive attitude in their studies such as lack of interest in learning, poor performance and achievement in exams and on assignments (Tomb & Hunter, 2004). On the other hands, Metacognitive scaffolding is the psychological technique that involves providing students with the supports needed to complete a task or facilitate their learning of new concepts. Students with academic anxiety need more scaffolding than others, but those who don't need the supports do not need to use them. As the students develop and their abilities in a particular area improve, the supports related to that area can be gradually removed. Tasks and activities can be broken down into achievable chunks for the students so they are able to gain confidence in their abilities without feeling too much stress or anxiety within the academic circle (Spada & Wells, 2010).

Metacognitive scaffolding positively related when paired with academic anxiety based on the study finding of (Sayyadi & Yunusa, 2015), conducted among low achieving secondary school students in Mathematics in Katsina metropolis, Nigeria positive outcome revealed significant difference exist in the effect of Metacognitive evaluation strategy in reducing test anxiety among male and female low achieving secondary school students in mathematics. In another study, by Jbeili, (2012) investigated the effect of Metacognitive scaffolding and cooperative learning on fifth-graders' on mathematics conceptual understanding and procedural fluency. The results showed that students in group CLMS significantly outperformed students in groups CL and T in mathematics conceptual understanding and procedural fluency.

In a study conducted on the effect of Metacognitive scaffolding on children's reading speed, reading anxiety and reading proficiency by Magno (2010), the result indicated a significant increased in the children's reading speed, reading proficiency and significant decrease in the reading anxiety from pre to post test. James and Okpala (2011), study the effect of Metacognitive scaffolding on college student academic anxiety of poor examination performance. The result of their study revealed that shows an improvement as 80% of substantial improvement in student's literacy performance on the examination.

Siegler,(2009) Metacognitive scaffolding is positively related with academic anxiety in the sense that it provides an ideal opportunity to students' prior knowledge of the area of difficulties which improve learning, cognitive regulations and advances the students comprehensions and independence of being free form academic anxiety and depression. This prior knowledge should be used to support for the new learning to deals with inability, fear or poor achievement. Ideally the new information should be placed at a level just above the knowledge the students already possess, as proposed in Vygotsky's Zone of Proximal Development. And Metacognitive scaffolding promotes student success when relates with most of academic problems.

2.4 Theoretical Framework

This sub-heading contained a review on theories related to the key variable of the study and each theory reviewed is linked appropriately as follows:

2.4.1 Flavell's Theory of Metacognition (1976)

John Flavell is regarded as a foundation researcher in Metacognition, from Stanford University. He was influenced by the work of Jean Piaget. One of Flavell's significant accomplishments was the publication of his book, The Developmental Psychology of Jean Piaget (Flavell, 1963**)**. In (1971), Flavell used the term metamemory in regard to an individual's ability to manage and monitor the input, storage, search and retrieval of the contents of his own memory. Flavell invited the academic community to come forth with additional metamemory research, and this theme of Metacognitive research has continued more than thirty years later. Flavell implied with his statements that Metacognition is intentional, conscious, foresighted, purposeful, and directed at accomplishing a goal or outcome. These implications have all been carefully scrutinized in subsequent research, and in some cases have been the subjects of controversy among researchers in Metacognition. He defined Metacognition as follows: "In any kind of cognitive transaction with the human or non-human environment, a variety of information processing activities may go on.

Flavell, (1976) also identified three "metas" that children gradually acquire in the context of an information storage and retrieval. These are: (a) The child learns to identify situations in which intentional, conscious storage of certain information may be useful at some time in the future; (b) the child learns to keep current any information which may be related to active problem-solving, and have it ready to retrieve as needed; and (c) the child

learns how to make deliberate systematic searches for information which may be helpful in solving a problem, even when the need for it has not been foreseen.

Metacognitive processes can operate consciously or unconsciously and they can be accurate or inaccurate. They can also fail to be activated when needed, and can fail to have adaptive or beneficial effect. Metacognition can lead to selection, evaluation, revision or deletion of cognitive tasks, goals, and strategies. They can also help the individual make meaning and discover behavioral implications of Metacognitive experiences.

Flavell, (1979) proposed a formal model of Metacognitive monitoring which included four classes of phenomena and their relationships. The four classes were (a) Metacognitive knowledge, (b) Metacognitive experiences, (c) tasks and goals, and (d) strategies or actions. Each of these will be discussed in detail.

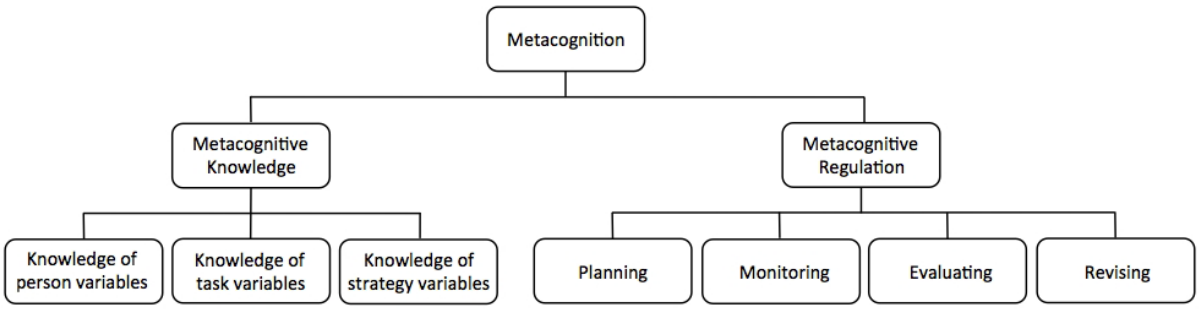


Figure: 8 *Flavel'sl model of metacognition,*

Source, MERLOT Journal of Online and Teaching, 2014

The first of Flavell's (1979) classes was **Metacognitive\ knowledge**, which he defined as one's knowledge or beliefs about the factors that affect cognitive activities. The distinction between cognitive and Metacognitive knowledge may lie in how the information is used, more than a fundamental difference in processes. Metacognitive activity usually

precedes and follows cognitive activity. They are closely interrelated and mutually dependent. Metacognitive knowledge can lead the individual to engage in or abandon a particular cognitive enterprise based on its relationship to his interests, abilities and goals. Flavell described three categories of these knowledge factors: 1) Person variables 2) task variables, and 3) strategy variables. These are the three categories in which Flavell proposed that individuals have Metacognitive knowledge.

1. The person category of knowledge: includes the individual's knowledge and beliefs about himself as a thinker or learner, and what he believes about other people's thinking processes. Flavell gave examples of knowledge such as a person believing that he can learn better by listening than by reading, or that a person perceives her friend to be more socially aware than she is. One's beliefs about himself as a learner may facilitate or impede performance in learning situations.

2. The task category of Metacognitive knowledge encompassed all the information about a proposed task that is available to a person (Flavell, 1979). This knowledge guides the individual in the management of a task, and provides information about the degree of success that he is likely to produce. Task information can be plentiful or scarce, familiar or unfamiliar, reliable or unreliable, interesting or not, organized in a useable or unusable fashion. Task knowledge informs the person of the range of possible acceptable outcomes of the cognitive enterprise and the goals related to its completion. Knowledge about task difficulty and mental or tangible resources necessary for its completion also belong to this category.

3. The strategy category of Metacognitive knowledge involved identifying goals and sub-goals and selection of cognitive processes to use in their achievement (Flavell, 1979).

Flavell also emphasized that these types of variables overlap and the individual actually works with combinations and interactions of the Metacognitive knowledge that is available at that particular time. He also stated that Metacognitive knowledge is not fundamentally different than other knowledge, but its object is different. He also mentioned that Metacognitive knowledge may be activated consciously or unconsciously by the individual. This question of consciousness later became a subject of controversy among researchers in Metacognition.

The second class of Flavell's (1979), **Metacognitive regulation** experiences phenomena included the subjective internal responses of an individual to his own Metacognitive knowledge, goals, or strategies. These may be fleeting or lengthy, and can occur before, during, or after a cognitive enterprise. As monitoring phenomena, these experiences can provide internal feedback about current progress, future expectations of progress or completion, degree of comprehension, connecting new information to old, and many other events. New or difficult tasks, or tasks performed under stress tend to provoke more experiential interaction, while familiar tasks may tend to provoke less Metacognitive experience.

According to Flavell (1979), Metacognitive regulation/experience can also be a "stream of consciousness" process in which other information, memories, or earlier experiences may be recalled as resources in the process of solving a current-moment cognitive problem. Metacognitive experience also encompasses the affective response to tasks. Success or failure, frustration or satisfaction, and many other responses effect the moment-to-moment unfolding of a task for an individual, and may in fact determine his

interest or willingness to pursue similar tasks in the future. Flavell underscored the overlapping nature of Metacognitive knowledge and Metacognitive experience.

Metacognitive goals and tasks are the desired outcomes or objectives of a cognitive venture. This was Flavell's third major category. Goals and tasks include comprehension, committing facts to memory, or producing something, such as a written document or an answer to a math problem, or of simply improving one's knowledge about something. Achievement of a goal draws heavily on both Metacognitive knowledge and Metacognitive experience for its successful completion (Flavell, 1979). Metacognitive strategies are designed to monitor cognitive progress. Metacognitive strategies are ordered processes used to control one's own cognitive activities and to ensure that cognitive goals, (for example, solving a math problem, writing an effective sentence, and understanding reading material) have been met. A person with good Metacognitive skills and awareness uses these processes to oversee his own learning process, plan, monitor, evaluating and revising the ongoing cognitive activities, and to compare cognitive outcomes with internal or external standards. Flavell (1979) indicated that a single strategy can be invoked for either cognitive or Metacognitive purposes and to move toward goals in the cognitive or Metacognitive domains. He gave the example of asking oneself questions at the end of a learning unit with the aim of improving knowledge of the content, or to monitor comprehension and assessment of the new knowledge.

The cross-link of Flavell’s theory to this study is that, he emphasizes that Metacognition enhances students thinking, learning, and positive thought using metacognitive strategies of planning, monitoring and evaluation, which is the clear link to

this study. It indicated that when students are guided with planning, monitoring and evaluation strategies can to improve in learning and overcome academic anxiety.

2.4.2 Vygotsky' Theory of Scaffolding (1978)

Vygotsky's (1978) socio-cultural theory, describes learning as a social process and the origination of human intelligence in society or culture. The major theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition. Vygotsky believed everything is learned on two levels. First, through interaction with others, and then integrated into the individual's mental structure. Second through given support during the task/problem solving under adult guidance or in collaboration with more capable peers.

The theory explains how intellectual capabilities are developed and how the relationship between specific subject-matter instruction and its consequences for psychological development is also needed. This last problem was the main tension against which Vygotsky developed his well-known concept of zone of proximal development, where the zone was meant to focus attention on the relation between instruction and development, while being relevant to many of these other problems. Vygots ky's theory is the idea that the potential for cognitive development is limited to a "**zone of proximal development**" (ZPD). This "zone" is the area of exploration for which the student is cognitively prepared, but requires help and social interaction to fully develop (Bruner, 1999). A teacher or more experienced peer is able to provide the "scaffolding" to support the student's evolving understanding of knowledge domains or development of complex skills. Collaborative learning, discourse, modeling, and scaffolding are strategies for

supporting the intellectual knowledge and skills of learners and facilitating intentional learning, the “potential development" is defined as that which a child can achieve if given the benefit of support during the task. It is the ability to solve problems "under adult guidance or in collaboration with more capable peers.” The model of (ZPD) is as follows:

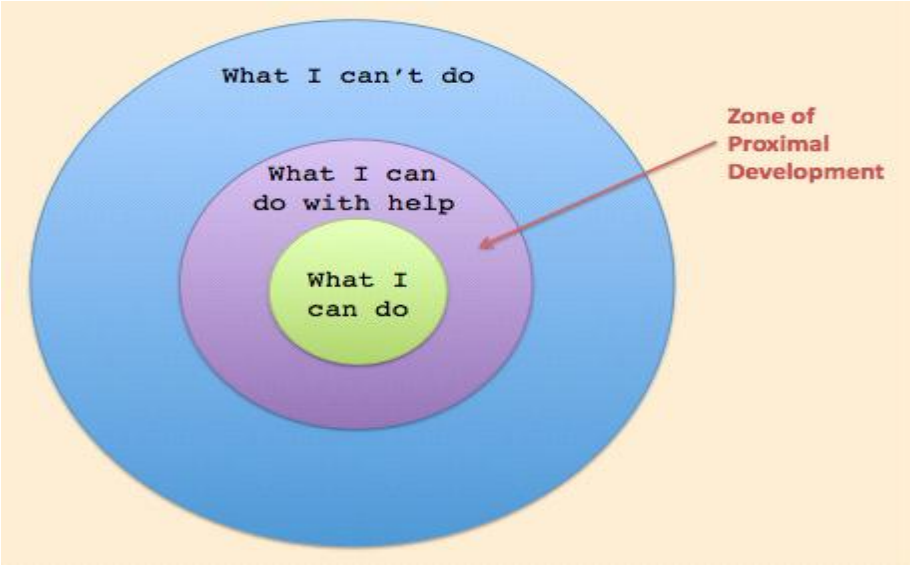


Figure: 9 A Model of the Zone of Proximal Development.

Source: (InnovativeLearning.com; www.gjournals.org, 2012).

• The yellow color is the zone of achieved development (ZAD). The ZAD indicates that the child has mastered the mathematical concepts and can independently perform them without assistance.

• The purple area is referred to as the ZPD where learning can proceed with the assistance of an expert. This is an active learning zone.

• The blue color denotes the area in which even with the assistance of an expert, the child will not learn.

The (ZPD) is defined as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as

determined through problem solving under adult guidance, or in collaboration with more capable peers. (Vygotsky, 1978, p. 86, emphasis in the original) or "what the child is able to do in collaboration today he will be able to do independently tomorrow" (Vygotsky, 1934/1987, p.211, see also, 1934/1998b, p. 202). The Zone of Proximal Development (ZPD) indicates the functions that have not yet matured but are in the process of maturation.

Vygotsky (1978) (as cited in O'Neil, 2011) claims that the secret of effective learning lies in the nature of the social interaction between two or more people with different levels of skills and knowledge. This involves helping the learner to move into and through the next layer of knowledge or understanding. Vygotsky also regards tools as mediators and one of the important tools are language. The use of language to help learners move into and through their ZPD is of great significance to socio-cultural theory

Scaffolding is inspired by Lev Vygotsky's concept of an expert assisting a novice, or an apprentice. Scaffolding is changing the level of support to suit the cognitive potential of the child. Over the course of a teaching session, one can adjust the amount of guidance to fit the child's potential level of performance. More support is offered when a child is having difficulty with a particular task and, over time, less support is provided as the child makes gains on the task. Ideally, scaffolding works to maintain the child's potential level of development in the ZPD. An essential element to the ZPD and scaffolding is the acquisition of language. According to Vygotsky, language (and in particular, speech) is fundamental to children's cognitive growth because language provides purpose and intention so that behaviors can be better understood. Through the use of speech, children are able to communicate to and learn from others through dialogue, which is an important tool in the

ZPD. In a dialogue, a child's unsystematic, disorganized, and spontaneous concepts are met with the more systematic, logical and rational concepts of the skilled helper.

Wood, Bruner and Ross's (1976) idea of scaffolding, they described scaffolding as the support given to a younger learner by an older, more experienced adult. This concept has been further developed by Jesper Hoffmeyer as 'semiotic scaffolding'. Though the term was never used by Vygotsky, interactional support and the process by which adults mediate a child's attempts to take on new learning has come to be termed "scaffolding." Scaffolding represents the helpful interactions between adult and child that enable the child to do something beyond his or her independent efforts. A scaffold is a temporary framework that is put up for support and access to meaning and taken away as needed when the child secures control of success with a task.

According to Chaiklin (2003), the common conception of the zone of proximal development presupposes an interaction between a more competent person and a less competent person on a task, such that the less competent person becomes independently proficient at what was initially a jointly-accomplished task. That is to say when developing at a certain stage, one is in need of a support (scaffolding) which can be temporarily until when the child is able to do on his own then the support is removed gradually, by then a child if independently able to deal effectively with a task in a short future. And also learners/ child can be supported (scaffold) among these psychological functions (e.g., perception, memory, speech, and thinking). The zone of proximal development presupposes an interaction between a more competent person and a less competent person on a task, such that the less competent person becomes independently proficient at what

was initially a jointly-accomplished task. Within this general conception, three main aspects are often highlighted or emphasized:

- The first aspect focuses on the idea that a person is able to perform a certain number of tasks alone, while in collaboration, it is possible to perform a greater number of tasks. The "range of tasks" performed in collaboration is sometimes presented as the definition of zone of proximal development.
- The second aspect emphasizes how an adult/teacher/more competent person should interact with a child. Sometimes this aspect is presented as the defining characteristic. "Arguably, the notion of the zone of proximal development is little more meaningful than that of a learning situation presented to a child, where adults and/or more advanced children directly or indirectly have a positive influence on the child"(Gillen, 2000, pp. 193-194).
- The third aspect focuses on "properties of the learner", including notions of a learner's potential and/or readiness to learn. This aspect often seems to inspire the idea or expectation that it will be possible to greatly accelerate or facilitate a child's learning, if the zone can be identified properly. Here are two illustrations discussions: "It is within this zone that a person's potential for new learning is strongest" (Fabes & Martin, 2001, p. 42) or "Vygotsky's phrase for the individual's current potential for further intellectual development, a capacity not ordinarily measured by conventional intelligence tests." (LeFrancois, 2001, p. 587).

Sometimes this aspect is interpreted to mean that teaching in the zone of proximal development should result in the easiest or most effortless form of learning for the child example, "a student's zone of proximal development is the range of book readability levels

that will challenge a student without causing frustration or loss of motivation" (Eric, 1998, chaiklin, 2003). The zone of proximal development is used for two different purposes in the analysis of psychological development (i.e., transition from one age period to another). One purpose is to identify the kinds of maturing psychological functions (and the social interactions associated with them) needed for transition from one age period to the next. The other is to identify the child's current state in relation to developing these functions needed for that transition.

For each age period, there are a group of psychological functions that are maturing in relation to the central new-formation, and which will lead to the restructuring of the existing functions to the formation of a new structure. This new-formation results in a transition to the next age period. For clarity of reference, I will designate this tripartite constellation of 'present age', 'maturing functions', and 'next age' as the objective zone of proximal development. This zone is 'objective' in the sense that it does not refer to any individual child, but reflects the psychological functions that need to be formed during a given age period, in order for the next age period to be formed. The 'objective' zone is not defined a priori, but reflects the structural relationships that are historically-constructed and objectively constituted in the historical period in which the child lives. One can say that the zone for a given age period is normative, in that it reflects the institutionalized demands and expectations that developed historically in a particular societal tradition of practice. For example, school-age children are expected to develop capabilities to reason with academic (i.e., scientific) concepts. Individuals who do not develop this capability can be said to have a different intellectual structure than most school-age children. Reasoning with concepts is a specific manifestation of the new-formations for this age, which Vygotsky suggests are;

conscious, awareness and volition. For a given objective zone of proximal development, it is possible to (attempt to) assess the current state of an individual child's development (in relation to the objective zone).

The link of this theory to this research is that, the Vygotsky's ZPD, is stressing on Scaffoldings the learners abilities and inabilities in task performance when teaching and learning, in which an assistance or a support is give through training coaching for them to have a skill in dealing with academic task and problem solving or learning new thing in their future learning. The training is gradually terminated when learner are able to independently perform an ill task deeply and independently. Finally, for learning to take place effectively in learners, a support (Scaffolding) must be provided and given to, in order facilitate learning independently and enhances actual Metacognition in learners.

The link of the theory to this study is that, Vygotsky emphasizes on the importance of adult or capable peer interaction as a key support that helps students within the academic circle when they are faced with a problem that they cannot be able to overcome it alone within their academic endeavour, students improves in learning and thinking ability when they are scaffolds.

2.4.3 Beck's Theory of Anxiety (1967)

Aaron T. Beck was the youngest of five children, born on July 18, 1921, in Rhode Island. He graduated from Brown University in 1942 and was an exemplary student, achieving magna cum laude and earning the William Gaston Prize for Excellence in Oratory and the Francis Wayland Scholarship. He continued his studies at Yale Medical School, where he earned his medical degree in 1946. His daughter, Judith Beck, is a

cognitive therapy researcher and president of the Beck Institute for Cognitive Behavioral Therapy.

He studied people suffering from depression and found that they appraised events in a negative way.

Beck (1967) identified three mechanisms that he thought were responsible for depression:

1. The cognitive triad (of negative automatic thinking)
2. Negative self schemas
3. Errors in Logic (i.e. faulty information processing)

The **cognitive triad** is in three forms of negative (i.e. helpless and critical) thinking that are typical of individuals with depression: namely negative thoughts about the self, the world and the future. These thoughts tended to be automatic in depressed people as they occurred spontaneously.

For example, depressed individuals tend to view themselves as helpless, worthless, and inadequate. They interpret events in the world in a unrealistically negative and defeatist way, and they see the world as posing obstacles that can't be handled. Finally, they see the future as totally hopeless because their worthlessness will prevent their situation improving.

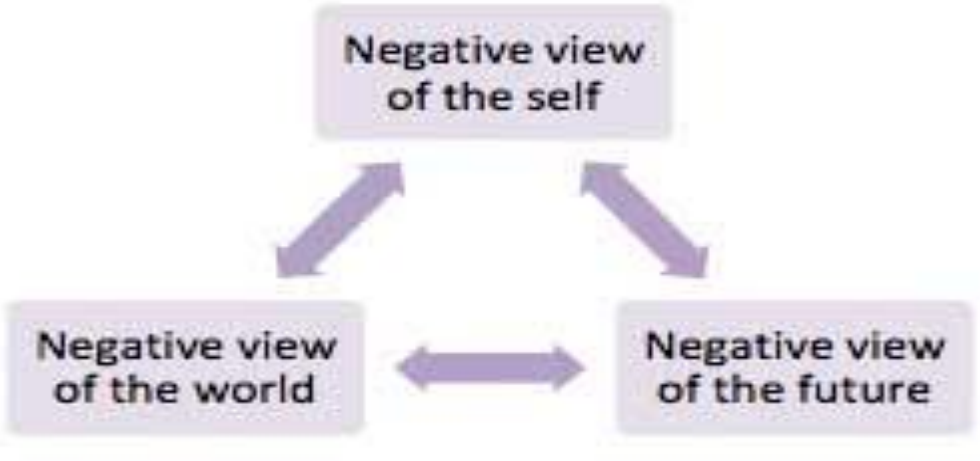


Figure: 10

Source: Beck's (1967) Theory

http://www.simplypsychology.org/depression.html

As these three components interact, they interfere with normal cognitive processing, leading to impairments in perception, memory and problem solving with the person becoming obsessed with negative thoughts.

Beck believed that depression prone individuals develop a **negative self-schema**. They possess a set of beliefs and expectations about themselves that are essentially negative and pessimistic. Beck claimed that negative schemas may be acquired in childhood as a result of a traumatic event. Experiences that might contribute to negative schemas include:

- Death of a parent or sibling.
- Parental rejection, criticism, overprotection, neglect or abuse.
- Bullying at school or exclusion from peer group.

However, a negative self-schema predisposes the individual to depression, and therefore someone who has acquired a cognitive triad will not necessarily develop depression. Some kind of stressful life event is required to activate this negative schema

later in life. Once the negative schema are activated a number of illogical thoughts or cognitive biases seem to dominate thinking. People with negative self schemas become prone to making **logical errors** in their thinking and they tend to focus selectively on certain aspects of a situation while ignoring equally relevant information.

Beck (1967) identified a number of systematic negative bias' in information processing known as logical errors or faulty thinking. These illogical thought patterns are self-defeating, and can cause great anxiety or depression for the individual. For example:

1. **Arbitrary Inference**. Drawing a negative conclusion in the absence of supporting data.
2. **Selective Abstraction**. Focusing on the worst aspects of any situation.
3. **Magnification and Minimization**. If they have a problem they make it appear bigger than it is. If they have a solution they make it smaller.
4. **Personalization**. Negative events are interpreted as their fault.
5. **Dichotomous Thinking**. Everything is seen as black and white. There is no in between.

Such thoughts exacerbate, and are exacerbated by the cognitive triad. Beck believed these thoughts or this way of thinking become automatic. When a person's stream of automatic thoughts is very negative you would expect a person to become depressed. Quite often these negative thoughts will persist even in the face of contrary evidence.

The link of this theory to the current study is that, Beck outlined negative view of self, negative view of the future bad experience and negative view of the world at large leads an individual to severely negative thoughts as a result of experience he/she have due

to death of parents, parent rejection, unwanted school condition put an individual in to a depressed situation.

In line with Beck's explanation, the link of the theory to this study is that, as academic activities requires higher memory concentration and attention. Negative experience from school factors which includes teacher's factor, parents factor, social factor and the nature of ill-complex from subjects from school especially sciences may interfere with one's cognitive processing as a result of anticipation of failure or stressful experience in respect to academic pressures results to academic anxiety. In addition to that, all the variables mentioned by Beck in his theory, any of the experience happen to an individual in, as academic arena can automatically put one in a state of academic anxiety.

2.4.3 Freud' Theory of Anxiety 1917

Psychoanalytic theories of anxiety began with Freud and have not developed a great deal since his time However; they remain influential, particularly in applied, clinical settings. Freud had two theories of anxiety (1917, 1926 respectively), in both of which he saw anxiety as an everyday phenomenon and as way of explaining neuroses. Everyday anxiety is realistic anxiety which refers to real objects; this has often been referred to as fear rather than anxiety. Neurotic anxiety can take the form of being free-floating, phobic, or involved in a panic attack. In the first formulation, Freud regarded anxiety as being a transformed libido, the transformation coining about through repression. So, If a person is prevented or thwarted from carrying out some instinctive (sexually driven) act through repression, then anxiety is the result. The anxiety generated then acts to produce whatever symptoms that, in their turn, will stop more anxiety from developing.

In his second formulation, Freud reversed the anxiety-repression linkage and viewed repression as occurring because of the experience of anxiety. In this theory, anxiety is a signal from the ego about real (existing) or potential danger. The unpleasantness of a threat causes anxiety which in turn leads to repression as a way of getting the person out of danger. In both of these theories, a central role is given to the avoidance of overstimulation, but in the earlier theory there is greater concern with 'automatic' anxiety which results from the trauma of birth and the infant's experiences immediately after birth. These points are reflected in later theories.

With both the earlier and the later Freudian theory however, there seem to be three aspects to anxiety - an unpleasant feeling, some sort of discharge process, and the perception of the phenomena involved with this discharge. The sort of events that Freud believed to be significant in the development of what he termed primary (ie from birth) anxiety are: the birth trauma, the possible loss of or withdrawal of the 'mother', uncontrollable impulses or threats that might occur at about this time, and fears of castration (presumably only in males, although this might be a moot point). Because of all this the mental apparatus is flooded and overwhelmed, the person is helpless and passive and the emotional experiences of anxiety follow automatically. So, in Freud's conceptualization, anxiety is either inherited or learned at birth, but with later additions being possible. Other types of anxiety, such as fear (this is Freud's way of looking at it) differ from primary anxiety only in what gives rise to them.

In the psychoanalytic context then anxiety is a significant aspect of handling a threatening environment, and is also necessary for the development of neurotic behavior. Later psychoanalysts such as Sullivan (1953) emphasize the social environment rather than

early separation, but otherwise the theory is similar. Sullivan makes anxiety into a social, interpersonal phenomenon rather than an intrapsychic one. However, theorists such as Bowlby (1973), compromise aid put the emphasis on the significance of the relationship with the mother, arguing that this is based on the apprehension that the mother not be there. Although Freud's theory of anxiety is clearly in the same psychoanalytic tradition as the remainder of his theoretical work, it can be conceptualized a little differently. For example, Izard (1977) suggests that it can be characterized as based on the adaptive functions of anxiety and as being dependent on the cognitive processes that are a part of individual learning and appraisal. It is perhaps important to view Freud's theory in this light since, as will be seen, in recent times, cognitive theories tempered by neurophysiologic research have begun to dominate our understanding of anxiety, and yet it is hard to gainsay the strength of some of Freud's views.

The link of this theory to this study is that, Freud believed that, anxiety is a significant aspect of handling a threatening environment, and is also necessary for the development of neurotic behavior. This is to say academic anxiety develops in students as a result of anticipation of danger or negative thoughts from the academic environment.

2.5 Review of Empirical Studies

Sayyadi and Yunusa, (2015) study the influence of Metacognitive Evaluation Strategy in reducing test anxiety among low achieving secondary school students in mathematics in Katsina metropolis, Nigeria. They used quasi-experimental design which involves pretest and posttest control group in six weeks treatment duration, using simple random sampling techniques in selecting the two subject schools out of ten and the

population of their study comprised (20) with ten in each of the two groups, using west side academic anxiety scale. They also used independent t-test statistical method in testing the hypothesis and the finding of the study revealed that significance difference exists between treatment that received Metacognitive evaluation strategy training and the control group received no treatment, also significant difference exist in the effect of Metacognitive evaluation strategy in reducing test anxiety among male and female low achieving secondary school students in mathematics.

The study findings conducted by Castillo (2013) investigated the relationship between Metacognitive scaffolding strategies identified through dialogue journals and second graders' Reading Comprehension, Science Achievement and Metacognition using Expository Text. She used quasi-experimental research design pretest/posttest. Her statistical population comprised second graders student of Miami, Florida. Her sample population consisted of 39 students. Identified using dialogue journals, their text books, Broad dialogue inventory, instruction in reading metacomprehension strategy index and Scott foreman end of chapter text, using co-teaching and dialogue journals intervention Metacognitive scaffolding strategies were instructed to the subjects during the 38 week sessions. The data were analyzed using paired sample t-test, ANOVA and ANCOVA. The result of the study revealed that the experimental group performed significantly better on reading comprehension, science achievement and Metacognitive function than the control group.

In another study, Jbeili, (2012) investigated the effect of Metacognitive scaffolding and cooperative learning on fifth-graders' on mathematics conceptual understanding and procedural fluency. He used quasi- experimental research design method

along with pre-test/post-test and control groups, three instructional methods were compared using a quasi-experimental design. The methods were (a) cooperative learning with Metacognitive scaffolding (CLMS), (b) cooperative learning with no Metacognitive scaffolding (CL), and (c) traditional instructional method (T). A pre-test that measures pre-conceptual understanding and pre-procedural fluency was conducted before the beginning of the study. the statistical population comprised all the male students enrolled in Ibid educational district in Jordan. His sample population consisted of 240students Six fifth-grade classrooms were randomly selected from three different male primary schools i.e., two classes from each school. The results showed that students in group CLMS significantly outperformed students in groups CL and T in mathematics conceptual understanding and procedural fluency

Roll, Holmes, Day & Bonn (2011) evaluated Metacognitive scaffolding in Guide Invention activities. They identified key Metacognitive scaffolding strategies of: exploration analysis, peer interaction, self-explanation and evaluation. They used a classroom study with 134 students evaluated the effect of supporting these skills on the quality and outcomes of the Invention Activities. The result of the study revealed that benefits of Invention Activities and gain at both domain and inquiry level using the strategies.

Molenaar, Van Boxtel and Sleegers (2011) investigated Metacognitive scaffolding in an innovative learning arrangement on learning outcomes. They used quasi-experimental with pretest and post-test. The triads were supported by computerized scaffolds, which were dynamically integrated into the learning process and took a structuring or problematizing form. The two experimental groups receiving scaffolds were compared with

a control group (n=48). The experimental groups differed in the form of scaffolding used: structuring scaffolds (n=51) vs. problematizing (n=57) scaffolds. The results showed a no effect of scaffolding on group performance or on the acquired individual domain knowledge and a small significant effect on acquired individual Metacognitive knowledge. Problematizing scaffolds gained better learning results then structuring scaffolds.

An and Cao, (2014) investigated the effects of Metacognitive scaffolding on students' complex problem solving processes and outcomes in the domain of instructional design as well as on their Metacognitive skills in an online environment. They used mixed-methods research, qualitative and quantitative data were collected from multiple sources, including online surveys, planning sheets, technology enhanced lessons, and reflection papers. The results of the study revealed that Metacognitive scaffolding had positive effects on students' design problem solving processes but did not have a significant effect on design outcomes. Regarding Metacognitive skills, the experimental group showed significant improvement in the planning subscale.

In a study conducted on the effect of Metacognitive scaffolding on children's reading speed, reading anxiety and reading proficiency by Magno (2010), used quasi-experimental research design. With a sample size of 60 males and females first graders pupils were selected as a sample. Reading speed was measured by the rate of reading by second while reading anxiety was assessed by asking the pupils to respond in the child reading anxiety scale. The data were analyzed using descriptive statistics. The result indicated a significant increased in the children's reading speed, reading proficiency and significant decrease in the reading anxiety from pre to post test. The study provides implications for reading instruction in the form of scaffolding.

James and Okpala (2011) study the effect of Metacognitive scaffolding on college student academic success. They analyze the impact of Metacognitive scaffolding used to enhance the literacy skills of 35 college students, measured in their test scores in Praxis 1 examination. Focuses on learning strategies and literacy challenges encounter by the college students in North Carolina, USA the result from the data on the praxis 1 examination shows an improvement as 80% of substantial improvement in students literacy performance on Praxis 1examination

Ginsberg (2016) conducted a research on Academic Worry problem as a Predictor of Sleep Disturbance in College Students. He used a correlational survey research strategy and the sample of the study was Participants were 55 undergraduate college students at Emory University in Atlanta, Georgia. The sample was composed of 20 (36.4%) males and 35 (63.6%) females. Twenty-three (41.8%) Juniors and 15 (27.3%). The purpose of this study is to address this gap by focusing on academic worries and its effect on length of sleep. It was proposed that students who have more academic worries would report less sleep than those who have less academic worries. It was also proposed that an increase in sleep disturbances attributed to Worry problem would predict less sleep. To examine these hypotheses, college students were assessed on habitual sleep length, the Sleep Disturbance Ascribed to worry problem Scale, and the Academic Stress Scale. Fifty-five students completed the measures. Support was found for both predictions. The results indicated that academic Worry problem and sleep disturbance ascribed to Worry problem was negatively correlated with sleep length. Regression analyses further indicated that academic Worry problem does not predict sleep length above and beyond sleep disturbance ascribed to

Worry problem, and that academic Worry problem was significantly negatively related to sleep length regardless of sleep disturbance ascribed to Worry problem.

Carr and Szabo (2015) conducted a study on academic Worry problem in children and adults. Worry problem in adults has been conceptualized as a thinking process involving problem-solving attempts about anticipated negative outcomes. This process is related to, though distinct from, fear. Previous research suggested that compared to adults, children's experience of Worry problem is less strongly associated with thinking and more closely related to fear. The present study further explored children's Worry probleming. Ninety-three 7- to 12-year-olds rated how much they Worry problem, fear and think about the same list of negative outcomes, and reported on their positive beliefs about Worry probleming. Children associated Worry probleming more strongly with fear than with thinking. However, this relationship was moderated by age. Older children reported that Worry problem was more closely related to thinking and less closely related to fear. Furthermore, children who reported more thinking, rather than fear, about negative outcomes were also more likely to report that Worry probleming had beneficial effects. Results suggest important changes in the nature of Worry probleming during late childhood.

Ryum, Edward, Odim, Hagan, Joar and solem (2017), conducted a research on Worry problem and Metacognition as predictors of anxiety symptoms. The aim of their prospective study was to examine whether worry problem, Metacognitive beliefs or the interaction between Worry problem and Metacognitive beliefs, were the best predictor of anxiety over time, utilizing a longitudinal, prospective study design. An undergraduate student sample (190) was assessed on measures of Worry problem (PSWQ), Metacognitive

beliefs (MCQ-30) and anxiety (BAI) at three points in time over a 7-month period. A mixed-model analysis revealed that both Worry problem and Metacognitive beliefs predicted development of anxiety, independently of each other, with no indication of an interaction-effect (PSWQ and MCQ-30). Further, analyses of the MCQ-30 subscales indicated that negative Metacognitive beliefs may be particularly important in the development of anxiety. While gender was correlated with Worry problem, gender predicted anxiety beyond the effect of Worry problem. Taken together, the results imply that both Worry problem and Metacognitive beliefs play a prominent role for the development of anxiety.

Barahmand (2010), researched on Worry problem and Problem Solving Skills in University Students. The purpose of his study was to determine the predominant worries of college students and their problem solving abilities. A stratified random sample of 200 students responded to Worry problem, Worry problem and anxiety and problem solving questionnaires. Findings revealed that issues related to the future, job, education and marriage were the major issues of concern among the youth. Men and women differed in their problem solving orientation and style. Men reported greater positive beliefs about Worry problem while women reported greater negative problem orientation and a careless/impulsive style. Furthermore, in men, rational problem solving was associated with Worry problem regarding, marriage, while in women, it was associated with Worry problem regarding education. Worry problem seems to be exerting its impact in the form of difficulties in concentrating, fatigue and sleep problems. Overall, despite holding a pessimistic attitude, students appear to be engaging in problem analysis and goal specification. Regression analysis revealed that generation of alternative solutions and

decision making account for a significant proportion of the variance in total Worry problem in men, while in women, negative problem orientation and avoidant style predict total Worry problem.

Richard, Mark, Mindy, Mike and Thomas (2013), investigate on Worry problem changes decision making: The effect of negative thoughts on cognitive processing, the present studies demonstrate that daily Worry problem level is predictive of cognitive processing differences and that these differences are an effect of negative thoughts. In Study 1, worriers (those who reported 50% or greater daily Worry problem) and non-worriers performed a categorization task. The groups did not differ when the stimulus was a clear member or non-member of the category. Worriers showed a significant disruption in processing as the ambiguity of the category membership increased. Study 2 demonstrated that the disruption arose as a result of increased levels of negative thoughts. Worriers and non-worriers were assigned to two conditions, either O-Worry problem ("Relax and let your mind wander for 15 minutes") or 15-Worry problem ("Worry problem as you typically would for 15 minutes"). Non-worriers evidenced the same disruptive effects in the 15-Worry problem condition as worriers in that condition and worriers in Study 1. Similarly, worriers in the O-Worry problem condition showed a reduction in disruptive effects. The findings are taken as indicating that Worry problem is accompanied by changes in cognitive processing and that these changes are similar for worriers and non-worriers.

Stober and Joormann (2011), study on Worry problem and Perfectionism: Differentiating Amount of Worry problem, Anxiety, and Depression**.** This study investigates features that differentiate Worry problem from somatic anxiety and depression.

Theoretical models of the Worry problem process suggest that Worry problem is closely related to poor performance and procrastination. In addition, research on Worry problem and elevated evidence requirements proposes a relationship between Worry problem and perfectionism. Perfectionism, however, is multidimensional in nature. Moreover, previous research has linked procrastination and perfectionism mainly to anxiety and depression. Therefore, the relationship among Worry problem, procrastination, and dimensions of perfectionism was investigated in a sample of 180 students, controlling for anxiety and depression. Results show that Worry problem had substantial correlations with procrastination and perfectionism, particularly with perfectionist concern over mistakes and doubts. Moreover, Worry problem was related to parental criticism and expectations, but unrelated to excessively high personal standards. Instead, high-worriers reported to lower standards under stress. Partial correlations indicated that these correlations were specific for amount of Worry problem, thus differentiating amount of Worry problem, pathological Worry problem, anxiety, and depression.

Chen (2016) conducted an Empirical Study on Chinese University Students' Concentration in the Classroom research. The researcher proposed an integrated model to examine the influence from chrono-types on the concentration in the classroom. In addition, the mediation test of excessive daytime sleepiness and the moderation test of study load were also included. The convenience sampling was used of which the participants were students from four universities in Guizhou province in south western China (455). The goodness-of-fit test showed that the proposed model fit the empirical data. Afterward, the results are as the following: (1) more severe excessive daytime sleepiness comes along with poorer concentration in the classroom, (2) the level of excessive daytime sleepiness is lower

for morning chrono-type, (3) the morning chrono-type has positive indirect influences on concentration in the classroom and (4) study load would moderate the influence of chrono-types on excessive academic anxiety.

Castillo and Caurcel (2015), research on academic anxiety, selective attention and concentration in university students. The principal aim of their study was to assess the level of selective attention and mental concentration before exams in a sample of university students and to determine a possible relationship between anxiety and reduction of levels of attention in this circumstance. A total of 403 university students, 176 men and 227 women, aged from 18 to 46 years, participated in the study. Of them, 169 were first-year undergraduates, 118 were second to fourth-year undergraduates and 116 were postgraduate Master's degree students. All of them completed the Spanish version of the Spielberger State-Anxiety Inventory and the D2 Attention Test just before taking an exam. Our results showed that participants with lower levels of anxiety had higher levels of selective attention and mental concentration before the exam. These results specifically indicate that when anxiety levels are very high, this could over-activate the orientating and alerting functions and to reduce the capacity of attentional control. These processes could have a negative impact on specific attentional processes and become a negative influence on performance in exams.

Rebok, Hawkins Krener, Mayer and Kellam (2016), researched on Effect of Concentration problems on the Malleability of Children's Aggressive and Shy Behaviors in school. The present study investigated the moderating effect of Concentration problems on the impact of a classroom-based preventive intervention directed at aggressive and shy

behaviors in an epidemiologically defined sample of 1,084 urban first-grade children. The result of their study reveals that Children with high ratings on Concentration problems in the fall had higher levels of teacher-rated aggressive and shy behavior in the spring than did children without such problems. The intervention reduced aggressive and shy behavior in children regardless of fall concentration level. Boys, but not girls, in the intervention condition with high Concentration problems had higher levels of spring aggression than those without such problems, but they also showed the greatest reductions in aggressive behavior from fall to spring.

In a study conducted by Johnson, Sbrocco and Winston (2014) on the influence of concentration and Memory problems on emotional distress among University students, they examined concentration and Memory problems in first year undergraduate students as they related to emotional distress and interference with daily academic activity. Three hundred and sixty-three (63) first year undergraduate students were divided into two groups based on how much they expressed difficulty in concentrating and remembering things taught or read. Each participant was given an examination and completed a Worry problem questionnaire and ratings of the participants Worry problem, depression and anxiety were also obtained. The results showed that problems in concentration and memory were related to emotional distress, fear in one or more school subject/lesson, poor family support, and interference with daily activities. It is suggested that techniques to improve concentration and memory should be incorporated as part of a multidisciplinary Worry problem program.

Pilar and Acosta (2015) examine the concentration/attention and anxiety: different attentional function under anxiety. Anxiety modulates the concentration functioning of

attention. Although the existence of this relationship is clear, its nature is still poorly defined. Added are the facts that different types of anxiety—state or trait—may influence attention differently and that attention is not a unitary system. They studied the influence of such types of anxiety by means of a task that, using emotionally neutral information, assesses the efficiency of three attentional networks: orienting, alerting, and executive control. Results showed a double dissociation. Trait anxiety was related to deficiencies in the executive control network, but state anxiety was associated with an over functioning of the alerting and orienting networks.

Brown, John, Langfitt, Hamid, Shinnar, Devinsky, Barr,… and Spencer (2015). Study on the Influence of academic anxiety on memory performance in temporal lobe epilepsy. The examined the degree to which anxiety contributed to inconsistent material-specific memory difficulties among 243 temporal lobe epilepsy patients from the Multisite Epilepsy Study. Visual memory performance on the Rey Complex Figure Test (RCFT) was lower for those with high versus low level of anxiety, but was not found to be related to side of TLE. Verbal memory on the California Verbal Learning Test (CVLT) was significantly lower for left than right TLE patients with low anxiety, but equally impaired for those with high anxiety. These results suggest that we can place more confidence in the ability of verbal memory tests like the CVLT to lateralize to left TLE for those with low anxiety, but that verbal memory will be less likely to produce lateralizing information for those with high anxiety. This suggests that more caution is needed when interpreting verbal memory tests for those with high anxiety. These results indicated that RCFT performance was significantly affected by anxiety and did not lateralize to either side, regardless of

anxiety level. This study adds to the existing literature which suggests that drawing-based visual memory tests do not lateralize among TLE patients, regardless of anxiety level.

Moran, (2016) conducted a research on Memory problem and Anxiety: A Meta-Analysis and Narrative Review. Cognitive deficits are now widely recognized to be an important component of anxiety. In particular, anxiety is thought to restrict the capacity of working memory by competing with task-relevant processes. The evidence for this claim, however, has been mixed. Although some studies have found restricted working memory in anxiety, others have not. Within studies that have found impairments, there is little agreement regarding the boundary conditions of the anxiety/WMC association. The aim of this review is to critically evaluate the evidence for anxiety-related deficits in working memory capacity. First, a meta-analysis of 177 samples (22,061 individuals) demonstrated that self-reported measures of anxiety are reliably related to poorer performance on measures of working memory capacity. This finding was consistent across complex span, simple span and dynamic span tasks. Second, a narrative review of the literature revealed that anxiety, whether self-reported or experimentally induced, is related to poorer performance across a wide variety of tasks.

Ali, Rodney and Glenn (2012), investigated on the effects of depression and anxiety on memory performance. The effects of depression and anxiety, as assessed by MMPI D and Pt scales, on memory performance was examined in 3999 veterans who completed the California Verbal Learning Test (CVLT). Depressive symptoms (without anxiety) had an adverse effect on immediate recall of new information and the total amount (but not rate) of acquisition; however, retrieval and retention were unaffected. On the other hand, high

levels of anxiety did not have significant detrimental effects on any aspect of memory functioning assessed including immediate recall, total amount acquired, retention, and retrieval of novel information. However, when depression was compounded by anxiety, there was not only an adverse effect on immediate recall and amount (but not rate) of acquisition, but also on the retrieval of newly learned information. We conclude that the presence of comorbid anxiety may, in part, account for the variability in previous research findings regarding the effects of depression on memory functioning.

Owems, Stevenson, Hadwin and Norgate (2012), investigated on Anxiety and depression in academic performance: An exploration of the mediating factors of Worry problem and working memory. Anxiety and depression are linked to lower academic performance. It is proposed that academic performance is reduced in young people with high levels of academic anxiety or depression as a function of increased test-specific Worry problem that impinges on working memory central executive processes. Participants were typically developing children (12 to 13-years-old) from two UK schools. The study investigated the relationship between negative effect, Worry problem, working memory, and academic performance using self-report questionnaires, school administered academic test data, and a battery of computerized working memory tasks. Higher levels of anxiety and depression were associated with lower academic performance. There was support for a mediation hypothesis, where Worry problem and central executive processes mediated the link between negative affect and academic performance. Further studies should test these hypotheses in larger longitudinal samples. Implications for school psychology practice and interventions in schools are discussed.

Ferris (2014) studied the Influence of Anxiety on Attention and Short-Term Memory, Previous research has shown that anxious individuals have impaired performance on memory/cognitive tasks. However, other research has demonstrated that an attentional bias can improve anxious individuals' performance if task requires attention to be directed toward threat-related stimuli. The present study examines the effects of anxiety level on attention and short term memory. Forty (40) participants, of either high or low anxiety received either a threat-related word list or a neutral word list to remember. Following a distraction task, participants recalled as many words from the list as they could. It was found that there was a significant main effect for term type partial, as well as a significant term by anxiety interaction effect partial.

The uniqueness and gap between the above reviewed and current study is as follows:

In the study conducted by Castillo (2013), Relationship between Metacognitive scaffolding strategies identified through dialogue journals and second graders Reading comprehension, science achievement and Metacognition using expository text. The gap between her study and current study is, her dependent variables i.e. Reading comprehension, science achievement and Metacognition, which is different from the current study's dependent variable i.e. Academic Anxiety. Additional Uniqueness is that, the Metacognitive scaffolding strategies she used in her study are: co-teaching and dialogue journals. While the current study's strategies are: planning, monitoring and evaluation strategy the location where her study was conducted is Miami, Florida (USA), while the current study would be conducted in Zaria metropolis, Nigeria.

Magno (2010) studied the effects of Metacognitive scaffolding on children's Reading speed, Reading Anxiety and Reading proficiency. The gap here is that Magno did not specifically mentioned which of the Metacognitive scaffolding strategies he used in his study, while the current study clearly stated three Metacognitive scaffolding strategies of planning. Monitoring and evaluation would be used to determine the effect of Metacognitive scaffolding on academic anxiety among senior secondary school students. Another gaf between Magno's studies (2010) with the current study is that, his study dependent variables are Reading speed, Reading anxiety Reading proficiency while the current study's dependent variable is academic anxiety, focusing on the three cognitive components: Worry problem, Concentration problems and Memory problems in respect to Academic anxiety.

In another study by James and Okpala (2010), they studied the effect of Metacognitive scaffolding on college student's academic success, while the current study is looking forward to find out the effect of Metacognitive scaffolding on academic anxiety of senior secondary school students in Academic anxiety, not college students.

Furthermore, An and Cao (2014) investigated the effect of Metacognitive scaffolding on students complex problem solving process and outcomes domain of instructional design environment. The gap here is that, the current study is looking forward to find out the effectiveness of Metacognitive scaffolding on academic anxiety, the same gap with dependent variables and that of Roll et al (2011) and Molaanar et al (2011).

Based on the above review of related empirical studies, the purpose of the present study is to find out whether planning, monitoring and evaluation Metacognitive scaffolding strategies would affect the level of academic anxiety on senior secondary school student.

This is because there is no such study from the above review that has dealt with such Metacognitive scaffolding strategies on academic anxiety, focusing on indices of anxiety on Worry problem, Concentration problem and Memory problem.

2.6 Summary

This chapter reviewed existing research works that are related and relevant to this study. the Concept of Metacognitive scaffolding is reviewed under it others important variables and subheadings were also been reviewed which include the following; Metacognitive scaffolding strategies of planning, monitoring and evaluation, general Metacognitive scaffolding strategies were also reviewed. Furthermore, the second key variable: Academic Anxiety were reviewed extensively, under it the following important sub variables were discussed; the components and characteristics of academic anxiety, symptoms, were reviewed respectively.

Theoretical framework is another important segment of this chapter, where related theories in supports of the key terms of(Metacognition, Scaffolding and anxiety) were reviewed and linked to the study respectively, theories such as John Flavell's theory of Metacognition, Vygotsky's theory of scaffolding under his theory of socio-cultural development, Beck's theory of anxiety were reviewed and linked respectively.

Review of empirical related studies is the last component before the summary, which contained works done by other researchers that are also relate to the key variables to this current study in one way or the other. Various studies on Metacognitive scaffolding were reviewed along the studies done on academic anxiety.

The gap in which the current study filled are; none of the related empirical studies reviewed, directly addresses the effect of metacognitive scaffolding on academic anxiety among senior secondary schools students. In fact, most of the studies were conducted on different variables and are conducted outside Nigeria. Only one study found on the effect of Metacognition on low achieving student, conducted in Nigeria. While the current study researched on the effect of metacognitive scaffolding concentrating on the key indices of academic anxiety of Worry problem Concentration problem and Memory problem because most of the research conducted revealed that academic anxiety negatively with concentration and memory and generally with the central processing system of an individual.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the following subheadings: research design, population of the study, sample and sampling techniques, instrumentation, validity and reliability of the instrument, procedure for data collection and data analysis.

3.1 Research Design

The research design for the study is quasi-experimental involving pretest/posttest without control group design. The design was useful as it enables the researcher to purposively select sample with the condition of interest for the study. Another reason for using this type of design was because it ensures participants are measured on an outcome variable both before and after the treatment, hoping that if the treatment is effective, the outcome scores should be improved compared to the pretest, while the scores may hold steady if the treatment has no effect (Mark & Gamble, 2009).

The design can be presented as follows:

O_1 - Pretest

X - Treatment

O_2 - posttest

3.2 Population of the Study

The population of the study constituted of 194 SS II senior secondary school students in the metropolis identified with high rate of academic anxiety using academic anxiety rating scale. The choice of senior secondary class two (SS2) students is guided by the assumption that the students at that level have attained the formal operational stage of cognitive development. And at this stage students can be taught new kinds of thinking, which are abstract, formal and logical. Thinking logically at this stage is necessary if one should be able to deal with academic problems at their level of education.

3.3 Sample and Sampling Techniques

The sample of the study consisted of twenty (20) identified students with high academic anxiety from Senior Secondary School class two (SS2), the sample was purposively selected and used for the study, based on their high scores from Academic Anxiety Rating Scale constructed by the researcher under extensive literature review by the researcher. It was suggested by De Winter (2013) that, depending on the nature, risk, cost and prevalence of the research condition, a sample size of 3 to 40 can be used in an experiment. Also better results are achieved in a smaller group and there would be effective concentration and understanding of the treatment procedure by the participants.

3.4 Instrumentation

The instrument used in the study was Academic Anxiety Rating Scale (AARS) constructed by the researcher based on the three indices of academic anxiety, sourced from Horwitz, Horwitz and Cope (1986), Penn State Worry problem Questionnaire, (2015), California State University Concentration questionnaire (2014) and Azouv (2012) memory questionnaire . The instrument consists of 30 items. It has a five-point scale ranges from (5) - Strongly Agreed (SA), (4) - Agreed (A), (3) –Not Sure (NS), (2) –Disagreed (DA) and (1) –Strongly Disagreed (SDA).

Scoring of the Instrument

The minimum score was 1 x 30 = 30, while the maximum score was 5 x 30 = 150. The instrument has five columns of 1,2,3,4 and 5. Marks are allocated respectively. To obtain respondents' scores, tick on each column, is first counted and summed up as total scores.

The Academic Anxiety Rating Scale (AARS) was designed with three sub-divisional indices of academic anxiety, 1-10 indicates Worry problem, 11-20 indicates Concentration problems and from 21-30 indicates Memory problem cause of academic anxiety.

According to the scoring of the instrument, when it is found that students who scored from 1-50 are classified as students with minor academic anxiety while students who scored from 51- 75 are classified as students with moderate academic anxiety. Student who scored from 76 and above on the scale are considered as students with high academic

anxiety, Students with high score on the scale were benefited from academic anxiety reduction training, such as the one the researcher used for the treatment.

The Pilot Testing

Pilot testing was embarked upon in order to obtain reliability coefficient of the instrument for this study, which is Academic Anxiety Checklist (AAC).The testing was conducted at Government Secondary School Magajiya; where (30) Academic Anxiety Rating Scale was administered to thirty students, Crombach alpha was employed to establish the internal consistency of the instrument.

3.4.1 Validity of the Instrument

The Academic Anxiety Rating Scale was face validated by specialist from Department of Educational Psychology and Counselling Ahmadu Bello University Zaria, their input of modifying and improving the instrument makes it appropriate for use in this study.

3.4.2 Reliability of the Instrument

The data obtained from the pilot study were statistically analyzed for the purpose of reliability. Crombach alpha reliability coefficient method was used to test the instrument. The result was 0.856. This coefficient index meets the recommendation of Creswell, (2002), that an instrument is considered reliable if it's reliability coefficient lies between 0 and 1, and that the closer the calculated reliability coefficient is to zero, the less reliable is the instrument, and the closer the calculated reliability co-efficient is to 1, the more reliable is the instrument.

3.5 Procedures for Data Collection

Pretest Phase

The researcher collected an introductory letter from the Department of Educational Psychology and Counselling, Ahmadu Bello University, Zaria to the directors of the educational zones for approval to conduct a research in the schools under their authority, because Zaria Metropolis comprises two educational zones; Giwa and Zaria. After obtaining the permission from the two directorates, the researcher move to the Principals of the schools where data was collected. The researcher briefed researcher assistants who happen to be the teachers in the experimenting schools on the mission of the study, the researcher personally administered The Academic Anxiety Rating Scale (AARS) to the students respectively which guided the researcher in picking those with high scores from (AARS) as students with academic anxiety and at the same time served as the pre-test. Other condition that was determined student's participation includes the full consent of the school authority and the students' willingness to participate in the treatment.

The researcher thereafter made an arrangement for preparation for his return to the school to commence the treatment intervention relationship with helps of school teachers. The whole treatment lasted for a period of Eight weeks with eight sessions. It was based on group interactive and each session was lasted for 60 minutes. The experimental groups received treatment and there is no control group. The researcher and the school authority agreed on days scheduled for treatment of the experimental groups, which is four days in a week. It is Mathematically presented as follows: (4 X 8 = 32 contacts session, each session carried 60 minutes, 60 X 32 = 1920 minutes, which is 32 hours for the whole 8 week of the treatment).

Treatment Phase

The Metacognitive scaffolding treatment was trained to the students who had high rate of academic anxiety. The treatment lasted for the period of Eight weeks, each session last for 60 minutes per contact.

The treatment package is as follows;

Week 1-2: Introduction

Session 1: Establishing rapport and relationship with the participants

Session 2: Verbalization of thought, belief and feeling of academic anxiety in respect to Worry problem, Concentration problems and Memory problems indices of academic anxiety base on its sources

Session 3: Discussion on nature and strategies involved in Metacognitive scaffolding

Session 4: Reasoning Assignment

Week 3-5: Planning Strategy

(Analyzing the negative thoughts of anxiety and learning task, planning on how to select a strategy for thinking adjustments).

Session 5: Attention training

Session 6: Reasoning practice

Session 7: Concentration training

Week 6-7: Monitoring Strategy

Session 8: Implementation and checking on the process of planned skills in reflecting and regulating and thoughts in respect to academic anxiety replacement.

Week 8: Evaluation Strategy

Session7: the process of evaluation which involve feedback mechanisms to determine success and weaknesses of strategies used in reflecting and regulating of thinking and cognition on past experience of academic anxiety leading to Worry problem, concentration and Memory problem.

Posttest Phase

After the last session, the researcher then addressed the student once again about the importance of the treatment. The researcher allowed the student to ask question about the whole process and asked them if they have anymore problem relating to the process that needs to be addressed. After the whole of treatment intervention and finally researcher then administered the post test.

Control of Extraneous variables

In an experimental research design, it's clear that the extraneous variables are not intended to be measured but also come up which may interfere with the outcomes of the study. These variables are those that could prevent the researcher from complete attributing the observing changes on the dependent variable to have maximum effect of the independent variables. It is therefore necessary for the researcher to control these variables in order to ensure that the observed changes are due to the introduction of independent variable on the dependent variable.

1. **Understanding the Instrument:** The researcher is anticipating that students in the targeted population might likely not understand the content of the Academic Anxiety Rating Scale (AARS). Therefore the researcher personally read and clarifies the items out

for the student and be ready to answer any question put forward by students for further clarification.

2. Test-retest Effects: Being a Pre-test Post-test design, the same test was used for the pre-test and post-test. Therefore it is likely that the familiarity with the pre-test may affect the participant's response in the post-test. The researchers therefore have to effectively control this by personally administering the instrument. Another scenario expected is that the time span between the pre-test and post-test which will take about good six weeks would have significantly weakened this intervening variable. Within this period, treatment is being carried out on the experimental group.

3. Experimental Mortality: There is every possibility that while the experiment goes on, some of the subjects might withdraw base on the fact that they are being informed from the onset that their participation is voluntary. Therefore to avoid this, the researcher sample more subjects than required right from pre-test. Two students are added in each of experimental groups and at the end of the process, the post test results of the (20 to 24) but its only twenty is analyzed.

4. Participants' Ability: in order to control the extraneous variables, participants would be assign to the treatment groups base on their equal range of scores/ability from the given achievement tests. The essence is to have participants with equal level of academic anxiety scores opt out in same category.

5. Level of the participants: the participants are selected from the same class level (SS2) from public secondary schools only who have same academic background and experience and are on the same syllabus, not to combine with other level.

3.6 Procedure for Data Analysis

The data collected is statistically analyzed using inferential statistics with mean and standard deviations. The percentage counts mean and standard deviation was used in answering research questions. While the paired t-test was used in analyzing the null hypothesis because its established to paired the pre and post data collected from the respondents. The hypotheses one, two and three were tested using paired t-test while hypothesis four is tested using Analysis of Covariance (ANCOVA) to examine the changes that occur in the pretest and posttest, all hypotheses were accepted at 0.05 alpha level of significance using Statistical Package for the Social Sciences (SPSS) version 20.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

The major goal of this study was to assess the effect of metacognitive scaffolding on academic anxiety of senior secondary school students in zaria metropolis, nigeria.a total of 20 students were used. Their academic anxiety scores, responses on items on Worry problem, Concentration problem and the Memory problems were determined before and after exposure to the treatment of metacognitive scaffolding strategies in order to know the effect of the treatment. The descriptive statistics was used to determine the difference before and after treatment of Metacognitive scaffolding strategy in order to know the effect of the treatment. The hypotheses were tested with the inferential statistics of paired sample t test for hypotheses 1, 2 and 3 while hypothesis 4 was tested with the Analysis of Covariance to determine the effect treatment of metacognitive scaffolding strategies, This is to know the effect of the treatment of the Worry problem, concentrating and Memory problem, all the hypotheses were tested at 0.05 alpha level of significance.

4.1 Distribution of Subjects by Demographic Characteristics

Below is the distribution of the subjects by their Bio Data variables:

Table 4.01: Distribution of the subjects by their Bio Data variables

Groups	Frequency	Percentage
Worry problems	7	35
Concentration problems	6	30
Memory problems	7	35
Total	20	100

Table 4.02: Gender distribution of Subjects on Worry problems

Gender	Frequency	Percentage
Male	3	42.9
Female	4	57.1
Total	7	100.0

Among the respondents in Worry problem group, a total of 3 or 42.9% are males and the rest 4 or 57.1% are females

Table 4.03: Gender distribution of Subjects on Concentration problems

Gender	Frequency	Percentage
Male	3	50.0
Female	3	50.0
Total	6	100.0

Among the respondents in concentration problem group, a total of 3 or 50.0% are males and the rest 3 or 50.0% are females

Table 4.04: Gender distribution of Subjects on Memory problems

Gender	Frequency	Percentage
Male	2	28.8
Female	5	71.2
Total	7	100.0

Among the respondents in Memory problem group, a total of 2 or 28.8% are males and the rest 5 or 71.2% are females

4.2 Hypotheses Testing

Hypothesis one: There is no significant effect of Metacognitive scaffolding on Worry problem among Senior Secondary School Students in Zaria Metropolis.

Table 4.05: Paired t- test on the significant effect of Metacognitive scaffolding on Worry problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis.

Variables	N	$\bar{X}$	S.D	Df	t- cal	p (sig)
Pretest scores on Worry problem	7	35.50	4.40	13	11.650	0.002
Post Test scores on Worry problem	7	15.40	3.12			

t (13) = 1.96 P< 0.05

According to the paired sample statistics above, there is significant effect of Metacognitive scaffolding on Worry problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis This is due to the fact that the calculated p value of 0.002 is less than the 0.05 alpha level of significance and the calculated t value of 11.650 is higher than the t critical value of 1.96 at df 13. Their mean Worry problem scores before exposure to Metacognitive scaffolding was 35.50 and reduced to 15.40 after exposure to Metacognitive scaffolding, implying a mean Worry problem reduction of 20.10. This shows that the Metacognitive scaffolding has positive effect on students' Worry problem of academic anxiety. Therefore the null hypothesis which states that there is no significant effect of Metacognitive scaffolding on Worry problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis is hereby rejected.

Hypothesis Two: There is no significant effect of Metacognitive scaffolding on Concentration problem among Senior Secondary School Students in Zaria Metropolis.

Table 4.06: Paired t- test on the significant effect of Metacognitive scaffolding on Concentration problem among Senior Secondary School Students in Zaria Metropolis.

Variables	**N**	$\bar{X}$	**S.D**	**Df**	**t –cal**	**p (sig)**
Pretest scores on Concentration problem	6	23.75	6.00	11	7.401	0.011
Post Test scores on Concentration problem	6	13.66	3.54			

t (11) = 1.96 P< 0.05

According to the paired sample statistics above, there is significant effect of Metacognitive scaffolding on Concentration problem of academic anxiety among Senior

Secondary School Students in Zaria Metropolis This is due to the fact that the calculated p value of 0.011 is less than the 0.05 alpha level of significance and the calculated t value of 7.401 is higher than the t critical value of 1.96 at df 11. Their mean Concentration problem scores before exposure to Metacognitive scaffolding was 23.75 and reduced to 13.66 after exposure to Metacognitive scaffolding, implying a mean Concentration problem reduction of 10.11. This shows that the Metacognitive scaffolding has positive effect on students' Concentration problem of academic anxiety. Therefore the null hypothesis which states that there is no significant effect of Metacognitive scaffolding on Concentration problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis is hereby rejected.

Hypothesis Three: There is no significant effect of Metacognitive scaffolding on Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis.

Table 4.07: Paired t- test on the significant effect of Metacognitive scaffolding on Memory problem among Senior Secondary School Students in Zaria Metropolis.

Variables	**N**	$\bar{X}$	**S.D**	**Df**	**t-cal**	**p (sig)**
Pretest scores on Memory problem	7	31.00	5.04	13	9.012	0.021
Post Test scores on Memory problem	7	18.00	4.00			

t (13) = 1.96 P< 0.05

According to the paired sample statistics above, there is significant effect of Metacognitive scaffolding on Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis This is due to the fact that the calculated p value of 0.021 is less than the 0.05 alpha level of significance and the calculated t value of 9.012 is higher than the t critical value of 1.96 at df 13. Their mean Memory problem scores before exposure to Metacognitive scaffolding was 31.00 and reduced to 18.00 after exposure to Metacognitive scaffolding, implying a mean Memory problem reduction of 13.00. This shows that the Metacognitive scaffolding has positive effect on Students' Memory problem of academic anxiety. Therefore the null hypothesis which states that there is no significant effect of Metacognitive scaffolding on Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis is hereby rejected.

Hypothesis Four: the null hypothesis state that there is no significant differential effect of Metacognitive scaffolding on Worry problem, Concentration problems and Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis.

Table 4.08: Analysis of Covariance (ANCOVA) statistics on the differential effect of Metacognitive scaffolding on Worry problem, Concentration problems and Memory problem among Senior Secondary School Students.

Dependent Variable: Scores

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	15186.365[a]	5	2215.844	68.47	.002
Intercept	88561.024	1	88335.024	66.41	.011
Groups	444.451	2	190.001	4.214	.016
Tests	12232.114	1	11461.014	297.113	.002
Groups * Tests	261.417	2	128.228	3.101	.034
Worry problem				07	*20.10
Concentration				06	*10.41
Memory problem				07	*13.00
Error	4040.220	7	31.660		
Total	107720.001	119			
Corrected Total	16022.701	118			

a. R Squared = .781 (Adjusted R Squared = .661)

The results in the Analysis of Covariance statistics above revealed the existence of differential effect of Metacognitive scaffolding on Worry problem, Concentration problems and Memory problem among Senior Secondary School Students in Zaria Metropolis. This is because the intercept calculated p value of 0.016 is lower than the 0.05 and the computed F ratio value of 4.214 is higher than the F critical value of 2.600. In the same vein the Group versus test calculated p value of 0.034 is lower than the 0.05 alpha levels and the computed F ratio value of 3.101is higher than the 2.60 F value. Significant differences existed among the three components and between the pretest and posttest scores. Therefore there is significant differential effect of Metacognitive scaffolding on Worry problem (20.10), Concentration problems (10.41) and Memory problem (13.00) of academic anxiety among Senior Secondary School Students in Zaria Metropolis. Consequently, the null hypothesis which state that there is no significant differential effect of Metacognitive scaffolding on Worry problem, Concentration problems and Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis, is hereby rejected

4.3 Summary of Findings

The followings are the summaries of the major findings of the study

1. Significant difference existed in the effect of Metacognitive scaffolding on Worry problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis
2. Significant difference existed in the effect of metacognitive scaffolding on Concentration problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis

3. Significant difference existed in the effect of Metacognitive scaffolding on Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis
4. Significant differences existed in the differential effect of Metacognitive scaffolding on Worry problem, Concentration problems and Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis.

4.4 Discussion

This study sought to find measure of reducing academic anxiety among senior secondary students. Metacognitive scaffolding treatment was intervened on the experimental group of twenty students with high academic anxiety in Zaria Metropolis. The results of the experiment at post treatment scores level indicated that the use of metacognitive scaffolding as a treatment technique to reduce students Worry problem, concentration and Memory problems of academic anxiety can be tackled by Psychologists, Counsellors and Teachers with the results findings of the study. The discussions of finding were done as follows:

Finding from hypothesis one revealed that, significant difference existed in the effect of Metacognitive scaffolding on Worry problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis. These findings are reported by the findings of Yunusa, Onogbo and Eze (2014) who researched on the effect of instruction on Metacognitive skills enhance on mathematics test anxiety and interest of low achieving students in senior secondary schools. Their findings revealed that instruction in Metacognition skills enhanced mathematics interest and reduced the anxiety of

mathematics low-achieving students that were in their experimental group more than pretest scores.

Moreover, Chen (2016) conducted an Empirical Study on Chinese University Students' Concentration in the Classroom research. the results are as the following: (1) more severe excessive daytime sleepiness comes along with poorer concentration in the classroom, (2) the level of excessive daytime sleepiness is lower for morning chrono-type, (3) the morning chrono-type has positive indirect influences on concentration in the classroom and (4) study load would moderate the influence of chrono-types on excessive academic anxiety.

High level of academic anxiety negatively affects working memory and is also associated with leading to Worry problem that affects information processing system in a similar study conducted by Ginsberg (2016) conducted a research on Academic Worry problem as a Predictor of Sleep Disturbance in College Students. He used a correlational survey research strategy and the sample of the study was Participants were 55 undergraduate college students at Emory University in Atlanta, Georgia. The sample was composed of 20 (36.4%) males and 35 (63.6%) females. Twenty-three (41.8%) Juniors and 15 (27.3%). The purpose of this study is to address this gap by focusing on academic worries and its effect on length of sleep. The results indicated that academic Worry problem and sleep disturbance ascribed to worry problem were negatively correlated with sleep length. Regression analyses further indicated that academic Worry problem does not predict sleep length above and beyond sleep disturbance ascribed to Worry problem, and that academic Worry problem was significantly negatively related to sleep length regardless of sleep disturbance ascribed to Worry problem.

Also in support of that, Carr and Szabo (2015) conducted a study on academic Worry problem in children and adults. Worry problem in adults has been conceptualized as a thinking process involving problem-solving attempts about anticipated negative outcomes. This process is related to, though distinct from, fear. Previous research suggested that compared to adults, children's experience of Worry problem is less strongly associated with thinking and more closely related to fear. Results suggest important changes in the nature of Worry probleming during late childhood.

Finding from hypothesis two revealed that significant difference existed in the effect of metacognitive scaffolding on Concentration problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis. This finding also agrees with the findings of Sayyadi and Yunusa, (2015) whose study the influence of Metacognitive Evaluation Strategy in reducing test anxiety among low achieving secondary school students in mathematics in Katsina metropolis, which revealed that significance difference exists between participants who received treatment of Metacognitive evaluation strategy training and the control group received no treatment.

Moreover, the finding also conforms to that of Molenaar, Van Boxtel and Sleegers (2011) who investigated Metacognitive scaffolding in an innovative learning arrangement on learning outcomes. The result shows no effect of scaffolding on group performance or on the acquired individual domain knowledge and a small significant effect on acquired individual Metacognitive knowledge. Problematizing scaffolds gained better learning results.

The findings of this study supported the finding in another study by Roll, Holmes; Day & Bonn (2011) who evaluated Metacognitive scaffolding in Guide Invention activities.

They identified key Metacognitive scaffolding strategies of: exploration analysis, peer interaction, self-explanation and evaluation. They used a classroom study with 134 students evaluated the effect of supporting these skills on the quality and outcomes of the Invention Activities. The result of the study revealed that benefits of Invention Activities and gain at both domain and inquiry level using the strategies and it improved student's self-concept and performance.

In a similar way, Concentration problem of academic anxiety has negative effect on thinking and working memory of the students, in a study conducted by Chen (2016) conducted an Empirical Study on Chinese University Students' Concentration in the Classroom research. The researcher proposed an integrated model to examine the influence from chrono-types on the concentration in the classroom. The results are as the following: (1) more severe excessive daytime sleepiness comes along with poorer concentration in the classroom, (2) the level of excessive daytime sleepiness is lower for morning chrono-type, (3) the morning chrono-type has positive indirect influences on concentration in the classroom and (4) study load would moderate the influence of chrono-types on excessive academic anxiety.

In the same vein, Castillo and Caurcel (2015), research on academic anxiety, selective attention and concentration in university students. The principal aim of their study was to assess the level of selective attention and mental concentration before exams in a sample of university students and to determine a possible relationship between anxiety and reduction of levels of attention in this circumstance. These results specifically indicate that when anxiety levels are very high, this could over-activate the orientating and alerting functions and to reduce the capacity of attentional control. These processes could have a

negative impact on specific attentional processes and become a negative influence on performance in exams

Also Rebok, Hawkins Krener, Mayer and Kellam (2016), researched on Effect of Concentration problems on the Malleability of Children's Aggressive and Shy Behaviors in school. The present study investigated the moderating effect of Concentration problems on the impact of a classroom-based preventive intervention directed at aggressive and shy behaviors in an epidemiologically defined sample of 1,084 urban first-grade children. The result of their study reveals that Children with high ratings on Concentration problems in the fall had higher levels of teacher-rated aggressive and shy behavior in the spring than did children without such problems.

In a study conducted by Johnson, Sbrocco and Winston (2014) on the influence of concentration and Memory problems on emotional distress among University students, they examined concentration and Memory problems in first year undergraduate students as they related to emotional distress and interference with daily academic activity. The results showed that problems in concentration and memory were related to emotional distress, fear in one or more school subject/lesson, poor family support, and interference with daily activities. It is suggested that techniques to improve concentration and memory should be incorporated as part of a multidisciplinary Worry problem program.

In line with that, Pilar and Acosta (2015) examine the concentration/attention and anxiety: different attentional function under anxiety. Anxiety modulates the concentration functioning of attention. Although the existence of this relationship is clear, its nature is still poorly defined. Added are the facts that different types of anxiety—state or trait—may

influence attention differently and that attention is not a unitary system. They studied the influence of such types of anxiety by means of a task that, using emotionally neutral information, assesses the efficiency of three attentional networks: orienting, alerting, and executive control. Results showed a double dissociation. Trait anxiety was related to deficiencies in the executive control network, but state anxiety was associated with an over functioning of the alerting and orienting networks.

Finding from hypothesis three revealed that significant difference existed in the effect of Metacognitive scaffolding on Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis, in a related vein which supported the findings of Magno (2010) who conducted on the effect of Metacognitive scaffolding on children's reading speed, reading anxiety and reading proficiency The result indicated a significant increased in the children's reading speed, reading proficiency and significant decrease in the reading anxiety from pre to post test.

The findings of this study are in line with the findings of James and Okpala (2011), who study the effect of Metacognitive scaffolding on college student academic success. The result from the data on the praxis 1 examination shows an improvement as 80% of substantial improvement in student's literacy performance on Praxis 1examination.

In the negative effect of academic anxiety on memory, Brown, John, Langfitt, Hamid, Shinnar, Devinsky, Barr,… and Spencer (2015). Study on the Influence of academic anxiety on memory performance in temporal lobe epilepsy. They examined the degree to which anxiety contributed to inconsistent material-specific memory difficulties among 243 temporal lobe epilepsy patients from the Multisite Epilepsy Study. Visual memory performance on the Rey Complex Figure Test (RCFT) was lower for those with

high versus low level of anxiety, but was not found to be related to side of TLE. Verbal memory on the California Verbal Learning Test (CVLT) was significantly lower for left than right TLE patients with low anxiety, but equally impaired for those with high anxiety. These results suggest that we can place more confidence in the ability of verbal memory tests like the CVLT to lateralize to left TLE for those with low anxiety, but that verbal memory will be less likely to produce lateralizing information for those with high anxiety.

Moran, (2016) conducted a research on Memory problem and Anxiety: A Meta-Analysis and Narrative Review. Cognitive deficits are now widely recognized to be an important component of anxiety. In particular, anxiety is thought to restrict the capacity of working memory by competing with task-relevant processes. The evidence for this claim, however, has been mixed. Although some studies have found restricted working memory in anxiety, others have not. Within studies that have found impairments, there is little agreement regarding the boundary conditions of the anxiety/WMC association. The result revealed that anxiety, whether self-reported or experimentally induced, is related to poorer performance across a wide variety of tasks.

Ali, Rodney and Glenn (2012), investigated on the effects o/f depression and anxiety on memory performance. The effects of depression and anxiety y, as assessed by MMPI D and Pt scales, on memory performance was examined in 3999 veterans who completed the California Verbal Learning Test (CVLT). Depressive symptoms (without anxiety) had an adverse effect on immediate recall of new information and the total amount (but not rate) of acquisition; however, retrieval and retention were unaffected. On the other hand, high levels of anxiety did not have significant detrimental effects on any aspect of memory functioning assessed including immediate recall, total amount acquired, retention,

and retrieval of novel information. However, when depression was compounded by anxiety, there was not only an adverse effect on immediate recall and amount (but not rate) of acquisition, but also on the retrieval of newly learned information. We conclude that the presence of comorbid anxiety may, in part, account for the variability in previous research findings regarding the effects of depression on memory functioning.

Finding from hypothesis four revealed that significant differences existed in the differential effect of Metacognitive scaffolding on Worry problem, Concentration problems and Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis in favour of those with Worry problem with mean scores of 24.950, Concentration problems with mean gain scores of 17.600, and Memory problems with mean scores of 21.00. Furthermore,

The findings of this study are in line with the Flavell's (1976) theory of Metacognition. The theory explained that the term metamemory in regard to an individual's ability to manage and monitor the input, storage, search and retrieval of the contents of his own memory. He implied with his statements that Metacognition is intentional, conscious, foresighted, purposeful, and directed at accomplishing a goal or outcome. any kind of cognitive transaction with the human or non-human environment, a variety of information processing activities may go on. Flavell, (1976) also identified three "metas" that children gradually acquire in the context of an information storage and retrieval. These were: (a) The child learns to identify situations in which intentional, conscious storage of certain information may be useful at some time in the future; (b) the child learns to keep current any information which may be related to active problem-solving, and have it ready to retrieve as needed; and (c) the child learns how to make deliberate systematic searches for

information which may be helpful in solving a problem, even when the need for it has not been foreseen. Looking at the above linkage of Flavell theory of Metacognition, supported the finding of this study in the sense that, senior secondary school students can be able to think deeply and widely to reason when scaffold to be able to replace their thinking, reasoning, thought, negative belief and feelings causes by academic anxiety.

The findings of this study are also in line with the Vygotsky's (1979) theory of scaffolding, Vygotsky's (1978) socio-cultural theory, describes learning as a social process and the origination of human intelligence in society or culture. The major theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition. Vygotsky believed everything is learned on two levels. First, through interaction with others, and then integrated into the individual's mental structure. Second through given support during the task/problem solving under adult guidance or in collaboration with more capable peers. The theory explains how intellectual capabilities are developed and how the relationship between specific subject-matter instruction and its consequences for psychological development is also needed. This last problem was the main tension against which Vygotsky developed his well-known concept of zone of proximal development, where the zone was meant to focus attention on the relation between instruction and development, while being relevant to many of these other problems. Vygots ky's theory is the idea that the potential for cognitive development is limited to a "**zone of proximal development**" (ZPD). This "zone" is the area of exploration for which the student is cognitively prepared, but requires help and social interaction to fully develop. Based on the explanation of the above Vygotskys theory, its fully supported the fin dings of the study, because academic anxiety is one of the ill-problem among

students, due to its complexity students cannot be able to handle it alone unless with the help of a capable elder, expert for them to learn. This supports from a capable peer is what Vygotsky called zone of proximal development. (ZPD) and popularly known as scaffolding. Base on this finding, when the senior secondary school students were metacognitvely scaffold, changes were recorded in their post test scores of academic anxiety as it significantly reduced.

Hence, the results made us to reject the entire four null hypotheses. This means that significance difference between the pretest and posttest of students' academic anxiety after exposed to Metacognitive scaffolding strategies of planning, monitoring and evaluation. Therefore, Metacognitive scaffolding has effects on academic anxiety among senior secondary school students in the sense that it reduced the level of academic anxiety of the students in the experimental groups. This is because Metacognitive scaffolding strategies of planning, monitoring and evaluation are very effective in terms enhancing anxiety free learning ability that boosts performance and achievement. This evident in the fact that before the training of the treatment sessions, both the treatment groups are at the same level of academic anxiety, while after the eight weeks training, the level of academic anxiety differs in favour of posttest scores of the treatments groups.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents introduction, summary, conclusion, contributions to knowledge, recommendations, as well as suggestions for further studies.

5.1 Summary

The study assessed the effect of Metacognitive scaffolding on academic anxiety among senior secondary schools students in Zaria metropolis Kaduna state, Nigeria. The study contained five chapters. In chapter one: the background to the study and the problem statement that led to the study was highlighted. Four objectives and corresponding number of research questions and null hypotheses were formulated to the study, were also explained. Finally the chapter explained the scope of the study and its delimitations.

Chapter two: reviewed on the concepts of the key variables of the study: Metacognitive scaffolding and academic anxiety. The theoretical framework of the study was done and empirical studies were also all reviewed in the chapter. Chapter three: dealt with the research design of the study, which is Quasi-experimental involving the retest and posttest. The study population is 194 senior secondary school students with high academic anxiety were purposively selected on the sample size of 20 students were used from co-educational secondary schools, within Zaria metropolis. The chapter also described the instrumentations, treatment procedures and finally procedures for data analysis. Chapter four: contained the analysis outcomes from the study; that includes data presentation, testing of null hypotheses, and summary of findings and discussions of findings, followed by the analyzed data collected, and the findings based on the hypotheses showed that:

Significant difference existed in the effect of Metacognitive scaffolding on Worry problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis Significant difference existed in the effect of metacognitive scaffolding on Concentration problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis Significant difference existed in the effect of Metacognitive scaffolding on Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis There is significant differences existed in the differential effect of Metacognitive scaffolding on Worry problem, Concentration problems and Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis in favour of those with Worry problem with mean scores of 20.10, Concentration problems with mean gain scores of 10.41, and Memory problems with mean scores of 13.00.

Chapter five contained introduction, summary of the whole chapters contained in the whole of the research work and finally conclusion.

5.2 Conclusion

Based on the findings of this study, it was concluded that metacognitive scaffolding is efficacious in handling worry, concentration and memory problems of academic anxiety of Senior Secondary School Students in Zaria Metropolis, Nigeria.

5.3 Contributions to knowledge

It was established that:

1. It would add knowledge for future researchers who intended to carry out similar research using metacognitive scaffolding in handling academic anxiety of worry problem, concentration problem and memory problem.

2. Significant difference existed in the effect of Metacognitive scaffolding on Worry problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis (t = 11.650; P = 0.002).
3. Significant difference existed in the effect of metacognitive scaffolding on Concentration problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis (t = 7.401; P = 0.011).
4. Significant difference existed in the effect of Metacognitive scaffolding on Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis (t = 9.012; P = 0.021).
5. Significant differences existed in the differential effect of Metacognitive scaffolding on Worry problem, Concentration problems and Memory problem of academic anxiety among Senior Secondary School Students in Zaria Metropolis (F = 4.241; P = 0.016).

5.4 Recommendations

The researcher hereby put forward the following recommendations

1. The school Psychologists, school Counsellors and Teachers should be encouraged to use metacognitive scaffolding strategies in handling Worry problem, concentration and Memory problems so as to reduce academic anxiety of senior secondary school students in Zaria Metropolis, Nigeria.
2. Seminars, conference and workshop should be organized by Government and Educational stakeholders on the related negative effect of academic anxiety on student's information processing system and academic performance, in Zaria Metropolis, Nigeria.

5.5 Suggestions for Further Studies

This study is by no means exhaustive, it is suggested that further study should be under taken on the other components of academic anxiety and metacognitive strategies that are not handled in this study. The suggestions are as follows:

i. Assessment of the effect of Metacognitive scaffolding on Oversensitivity problem of academic among senior secondary school students.

ii. Assessment of the effect of Metacognitive scaffolding on difficulty solving problems of academic anxiety among senior secondary schools students.

iii. Assessment effect of Metacognitive scaffolding on academic anxiety irrespective to cognitive dysfunction among senior secondary schools students.

iv. Assessment effect of Metacognitive scaffolding on academic anxiety in respect to poor attributional style among Senior Secondary School Students.

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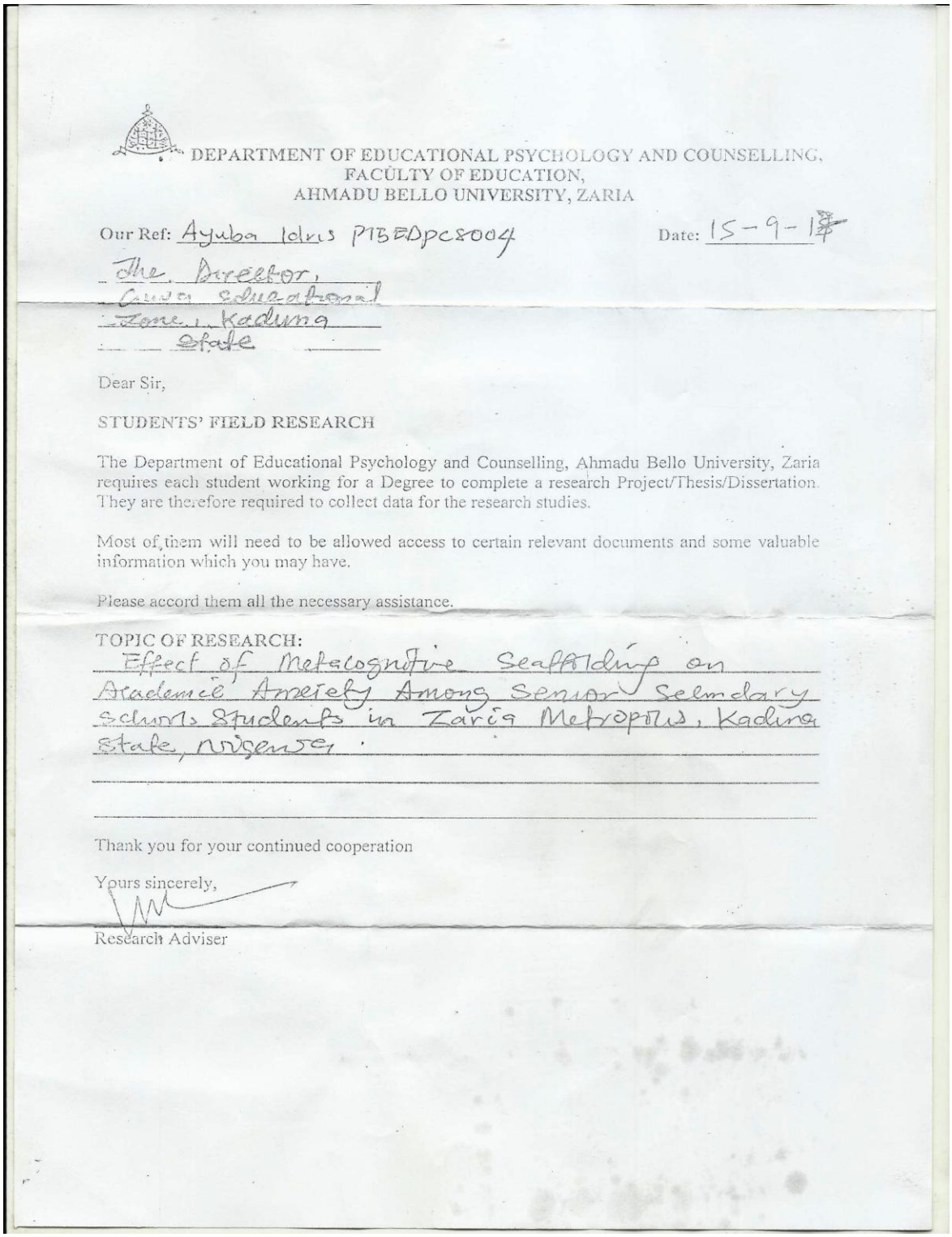
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APPENDIX: 1 (A)

LETTERS OF INTRODUCTION



DEPARTMENT OF EDUCATIONAL PSYCHOLOGY AND COUNSELLING,
FACULTY OF EDUCATION,
AHMADU BELLO UNIVERSITY, ZARIA

Our Ref: Ayuba Idris PTBEDpc8004 Date: 15-9-17

The Director,
Zaria Educational
Zone, Kaduna
State

Dear Sir,

STUDENTS' FIELD RESEARCH

The Department of Educational Psychology and Counselling, Ahmadu Bello University, Zaria requires each student working for a Degree to complete a research Project/Thesis/Dissertation. They are therefore required to collect data for the research studies.

Most of them will need to be allowed access to certain relevant documents and some valuable information which you may have.

Please accord them all the necessary assistance.

TOPIC OF RESEARCH:
Effect of Metacognitive Scaffolding on Academic Anxiety Among Senior Secondary Schools Students in Zaria Metropolis, Kaduna State, Nigeria.

Thank you for your continued cooperation

Yours sincerely,

Research Adviser

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY AND COUNSELLING,
FACULTY OF EDUCATION,
AHMADU BELLO UNIVERSITY, ZARIA

Our Ref: Ajuba, Idris PISEDPC8004 Date: 15-9-17.

The Director,
Zaria Educational
Zone, Kaduna State.

Dear Sir,

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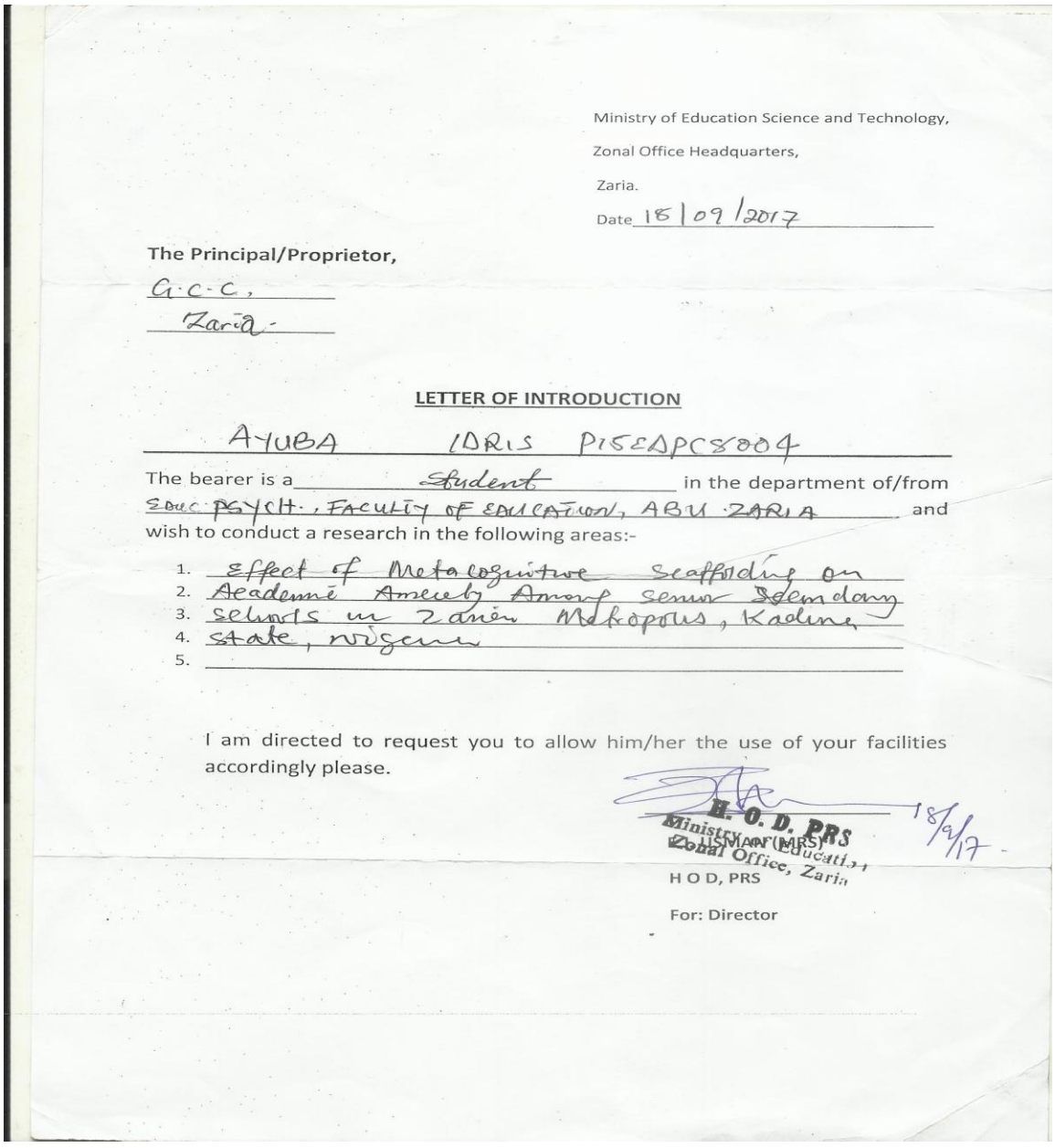
Thank you for your continued cooperation

Yours sincerely,

Research Adviser

APPENDIX: 1 (B)

LETTERS OF APPROVAL



Ministry of Education Science and Technology,

Zonal Office Headquarters,

Zaria.

Date 18/09/2017

The Principal/Proprietor,

G.C.C,

Zaria.

LETTER OF INTRODUCTION

AYUBA IDRIS P15EDPC8004

The bearer is a Student in the department of/from EDUC. PSYCH., FACULTY OF EDUCATION, ABU ZARIA and wish to conduct a research in the following areas:-

1. Effect of Metacognitive Scaffolding on
2. Academic Anxiety Among Senior Secondary
3. Schools in Zaria Metropolis, Kaduna
4. State, Nigeria
5.

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

H. O. D, PRS
Ministry of Education
Zonal Office, Zaria

18/9/17

H O D, PRS

For: Director

KADUNA STATE
MINISTRY OF EDUCATION
INSPECTORATE DIVISION, GIWA
P.M.B. 103, GIWA

Our Ref: _____

Your Ref: _____

Date: 19th September, 2017

The Principal,
G.S.S
Jama'a

RE – INTRODUCTION TO ACCESS TO RELEVANT DOCUMENT

The bearer, Ayuba Idris with Registration number P15EDPC8004 is a student of the department of Educational Psychology and counselling of Ahmadu Bello Univeristy, Zaria undertaking a research project on the topic **"EFFECT OF METACOGNITIVE SCAFFOLDING ON ACADEMIC ANXIETY AMONG SENIOR SECONDARY SCHOOL STUDENTS IN ZARIA METROPOLIS KADUNA STATE, NIGERIA".**

To that effect I am directed to write and request you to give him necessary assistance to make his research a success.

Muntari Mohammed Kaya
AD/ES
For Director

Appendix: 2

Academic Anxiety Rating Scale (AARS)

Dear student:

This questionnaire is aim to identify academic anxiety level, in respect to your thought, belief and feelings in Academic anxiety, asking you to fill the questionnaire based on your feelings, experience, and thoughts regarding anxiety during your study process. For each question choose one of the following options by ticking like this **(√)**. Please answer the questions honestly as possible, there is no right or wrong answer in your options.

Key:

5 - Strongly Agreed (SA)

4 - Agreed (A)

3 –Not Sure (NS)

2 –Disagreed (DA)

1 –Strongly Disagreed (SD)

1	I Worry about making mistakes in the lesson.	5	4	3	2	1
2	I Worry when I know I am going to be called on to explain something during the lesson.					
3	I keep Worrying that other class mates are better than I am in respect to class participation.	5	4	3	2	1
4	I am usually worried during test/ exams	5	4	3	2	1
5	I start to Worry when I have to stand up and speak in the class during lesson.	5	4	3	2	1
6	In my class, I can get so worried if I forget things I know.	5	4	3	2	1
7	I get worried when I do not understand what the teacher is correcting.	5	4	3	2	1
8	Even if I am well prepared for a test, I still worried about it.	5	4	3	2	1
9	I got worried when the teacher asks question which I don't know.	5	4	3	2	1
10	I Worry about the number of rules in learning subjects that	5	4	3	2	1

	require more thinking.					
11	During lesson, I find myself thinking about things elsewhere that has nothing to do with the lesson.	5	4	3	2	1
12	The more I prepare for test/exams, the more confused I get.	5	4	3	2	1
13	I often lose concentration due to series of rules contained in learning subject that requires more attention.	5	4	3	2	1
14	Sometimes I cannot concentrate to learn because it makes me boring to concentrate.	5	4	3	2	1
15	Does feeling of boring and stress from academic endeavour reduces your concentration during the lesson	5	4	3	2	1
16	It's difficult for me to sit for 50 minutes and pay attention during when lesson is going on.	5	4	3	2	1
17	I find it difficult to concentrate for more than 15 minutes to revise my exercise books.	5	4	3	2	1
18	It's difficult for me to listen attentively even when my English teacher is explaining concepts in the class.	5	4	3	2	1
19	I enjoy looking outside the classroom events, when lesson is going on.	5	4	3	2	1
20	I find it difficult to pay close attention to details of what the teacher taught during lesson.	5	4	3	2	1
21	When I finished reading my text book, I often have to re-read to remember what I have read.	5	4	3	2	1
22	In a lesson, I have difficulty understanding what I learned due to fear of the subject.	5	4	3	2	1
23	I often re-read sentence several times to understand a simple text.	5	4	3	2	1
24	I have difficulty remembering what I have just read in my textbook.	5	4	3	2	1
25	I have problem with remembering underlined words and their meanings taught after the lesson.	5	4	3	2	1
26	In a lesson, I can easily forget things I learnt.	5	4	3	2	1
27	My mind goes blank if my teacher pointed at me to answer a question during lesson.	5	4	3	2	1
28	I am having difficulty to produce answers during test or examination.	5	4	3	2	1
29	I would have good retention ability, if I will not be asked to speak or answer a question in my class.	5	4	3	2	1
30	The fear of failure and academic stress cannot make me to forget things I already know.	5	4	3	2	1

Thank you for your co-operation.

Appendix: 3

METACOGNITIVE SCAFFOLDING TREATMENT PACKAGE FOR ACADEMIC ANXIETY

Objectives: Determined the effect of metacognitive scaffolding on academic anxiety among Senior Secondary School Students in Zaria Metropolis, Nigeria.

Week1 -2: Introduction.

Session 1: Establishing rapport and relationship with the participants

Step 1: the researcher warmly welcomed the participants to the first session of the treatment programme.

Step 2: the researcher personally introduced himself, so also the participants did the same.

Step 3: the researcher concluded the session.

Session 2: Verbalization of feelings in respect to negative thoughts of Worry problem, concentration and Memory problems of academic anxiety.

Step 1: the researcher asked the participants to express their emotional experience and feelings verbally in regards to their academic anxiety.

Session 3: Explanation on nature and strategies involved in Metacognitive scaffolding

Step 1: the researcher explains to the participants the meaning and the nature of Metacognitive scaffolding, involving its components of metacognitive knowledge and belief, skills of planning, monitoring and evaluation.

Step 2: the researcher listed and explained to the participants the proactive processes involve in Metacognitive scaffolding strategies which involve (planning, monitoring and evaluation), one after the other.

Session 4: Reasoning Assignment: the researcher gave a home-work reasoning assignment to the participants to deeply think and trace the causes and their feelings of Worry problem, idea block and concentration deficit indices of academic anxiety elaborated and discussed on the session five.

Week 2-4 Planning Strategy

Session 5: Attention training on the process of planning, preparing, processing and analyzing the anxious thoughts and learning task, by organizing, internal calmness and attentional control.

Step 1: the researcher welcomed the participants to the session

Step 2: the researcher guided the participants on how eased and adjusted their thoughts to adjust and recollects their attention thought self organization, analyzing the academic anxiety ill-problem.

Step 3: the participants were given 30 seconds each to practice properly pay attention and concentration by ruminating to adjust area of difficulty causes by academic anxiety.

Session 6: Reasoning practices:

Step 1: the participants were intervening to think about what is already known (prior knowledge) to them in respect to academic anxiety as it interfere to their calmness, concentration and memory stability within the academic endeavour.

Step 2: participants were guided by the researcher in adjusting and replacing the negative thought, belief and feeling leading them to Worry problem,

concentration and Memory problems due to anxiety within the academic endeavour.

Step 3: participants were guided by the researcher on how to engage in excessive amounts of sustained verbal think and dwelling in rumination towards replacing the dysfunction belief, feeling and thought of academic anxiety of Worry problem, concentration and Memory problems indices.

Session 7: concentration training:

Step 1: the participants were guided to deals with the way they think and assumes on the academic anxiety (Worry problem, concentration and Memory problems) rests with inflexible and recurrent styles of thinking in response to emotional and negative thought.

Step 2: The participant were guided by the researcher on focusing about removing unhelpful processing style and proposes that any exclusively at their thinking, the researcher tackles the problems by discussing with the participants base on their feelings, thought and belief about Worry problem, concentration and Memory problems.

Step 3 the participants were guided by the researcher on how to proposes the mechanisms in metacognitive scaffolding to controls the way of thinking and behaves in response to academic anxiety both to their thought, belief and feelings to manage and avoid harmful effects on their information processing, executive functioning and learning processes.

Week 6-7: Monitoring Strategy

Session 7: Implementation and checking on the processes of planning skills in reflecting and regulating of thought, belief and feeling in respect to academic anxiety and replacing the dysfunction thought.

Step 1: the researcher welcomes the participants to the session.

Step 2: the researcher guide the participants to implements and checks the planning skills they acquire in the previous sessions to practice in adjusting their thought, belief and feeling.

Step3: the researcher motivate and encourage the participants to challenge and be replacing the negative thought of I cannot, to I can doing order to avoid Worry probleming, having Concentration problem, and to also avoid memory/retention problem about academic anxiety.

Step 4: the participants be encouraged to monitor their strength in dealing with dysfunction thought of Worry problem, concentration and Concentration problem on academic anxiety.

Step 5: the researcher concludes the session

Week 8: Evaluation Strategy

Session 9: the evaluation process, involving the feedback mechanisms in reflecting and revising on the rumination style in order to determine the success or weakness their metacognitive ability used in implementation.

Step 1: the researcher welcomed the participants to the last session.

Step 2: the researcher guided the participants to reflect and determine their metacognitive ability of evaluating the success achieved in replacing the anxious negative thought with rational ones.

Step 3: the researcher guided the participants to employed techniques mentioned so far and skills that supported their thinking, thought, belief and feeling in order of, if there is need for internal thoughtful revision and reflection in dealing with academic anxiety.

Step 4: The researcher revised the whole sessions to the participants and discussed major areas together.

Step 5: The researcher treated questions and comments from the participants.

Step 6: The researcher appreciate the co-operative efforts of the participants

Step 7: The researcher re-administer the instrument as the post-test.