RELATIONSHIPS BETWEEN ACHIEVEMENT GOALS, METACOGNITIVE AWARENESS AND ACADEMIC SUCCESS AMONG STUDENTS OF COLLEGES OF EDUCATION IN NORTH WESTERN NIGERIA

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DECLARATION

I declare that this dissertation entitled "Relationships between Achievement Goals, Metacognitive Awareness and Academic Success among Students of Colleges of Education in North Western Nigeria" has been carried out by me in the Department of Educational Psychology and Counselling, Ahmadu Bello University Zaria. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this dissertation was previously presented for another degree or diploma at this or any other institution.

_____ _____

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CERTIFICATION

This dissertation entitled RELATIONSHIPS BETWEEN ACHIEVEMENT GOALS; METACOGNITIVE AWARENESS AND ACADEMIC SUCCESS AMONG STUDENTS OF COLLEGES OF EDUCATION IN NORTH WESTERN NIGERIA by LAWAL GIDADO LIKKO meets the regulations governing the award of the degree of Doctor of Philosophy Psychology of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This dissertation is dedicated to my mother Hajiya Aisha Mahmood Tanimu BabanKumbo (Yaya), My late father Alhaji Lawal Shehu Likko, my late brothers; Ibrahim Lawal Likko, Aminu Lawal Likko Snr. and late sister Hajara Lawal Likko, may your souls rest in peace, Amin.

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ABSTRACT

The study examined the relationship of achievement goals, metacognitive awareness on academic success among students of colleges of education in North Western Nigeria. The study was guided by five major objectives. The first two were to find out whether students' achievement goals and metacognitive awareness correlate with their academic success. A total of ten hypotheses were formulated and tested. Out of a sample of 377 NCE III students, there were 17 mortality rates, 358 students comprising 242 males (67.6%) and 116 females (32.4%) were studied. Correlation survey was employed in the conduct of the study. The instruments used to collect data were students' bio data form, achievement goals inventory (Roedel, Schraw & Plake, 1994), metacognitive awareness inventory (Schraw & Dennison, 1994) and students' CGPA (NCCE minimum standard, 2013) was used as the index of academic success. Pearson Product Moment correlation, independent t-test, Analysis of Variance and regression analysis were the statistical tools used to analyze the data. Results of the analysis indicated that students' achievement goals ($r=0.554$, $p=0.004$) and metacognitive awareness ($r= 0.67$, $p=0.001$) positively correlated with their academic success. Similarly, significant relationship exists between achievement goals and metacognitive awareness ($r=0.77$, $p=0.000$), metacognitive knowledge and metacognitive regulation ($r=071$, $p=0.000$). The analysis revealed no mediation effect of gender on students' achievement goals ($p = 0.226$, $t = 1.213$), metacognitive awareness ($p = 0.991$, $t = 0.012$) and academic success ($p = 0.131$, $t = 1.513$). Mastery goals ($p = 0.004$) and metacognitive knowledge ($p = 0.13$) can predict students' CGPA. On the contrary, students of Federal Colleges outperformed those in State Colleges in their achievement goals ($p = 0.000$, $t = 4.933$), metacognitive awareness ($p = 0.000$, $p = 4.313$) and academic success ($p = 0.000$, $t = 6.95$). Students' hostel accommodation was also found to influence their achievement goals ($p = 0.001$, $t = 3.238$), metacognitive awareness ($p = 0.000$, $t = 3.989$) and Academic success ($p = 0.031$, $t = 2.170$). It was also found that NCE Arts had more goal orientation ($p = 0.026$, $t = 2.243$), metacognitive awareness ($p = 0.155$, $t = 1.426$) and academic success ($p = 0.271$, $t = 1.102$) than N.C.E Science students. Intense and moderate use of internet had significant influence on students' achievement goals and academic success. Some recommendations were made, among which include the need for intervention using metacognitively oriented teaching strategies, provision of functional internet facilities and provision of adequate and standard hostel to accommodate more students to improve their achievement goals, metacognitive awareness and academic success.

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OPERATIONAL DEFINITION OF TERMS

Achievement Goals -	refers to learners orientation towards academic task when learning, particularly the instrumental role of what is learned.
Academic Success -	refers to education outcomes of students after the measurement of final grade point average.
Internet Use-	refers to students' ability and access to surf the net for academic purpose such as reading, writing assignment and research.
Mastery Goals -	refers to students orientation towards learning by focusing on understanding, developing new skills and self-improvement using self-reference standards in judging own learning.
Metacognition -	refers to learners' automatic awareness of their own knowledge and their ability to understand, control, and manipulate their own cognitive processes.
Metacognitive Awareness-	refers to the ability to reflect upon, understand, and control one's learning
Metacognitive Knowledge-	refers to the knowledge about memory, comprehension, and learning processes that an individual can verbalize. It includes interaction of person, task, and strategy.

Metacognitive Regulation -	refers to the monitoring of one's thought which includes planning, awareness of comprehension and task performance, and evaluation of strategy success.
Performance Goals -	refers to the orientation students have towards learning with a concern of demonstrating ability and evaluation of one's own performance relative to others.
Self- Regulation -	refers to self-directive processes by which learners transform their mental abilities into academic skills, including domain-specific knowledge, cognitive skills, metacognitive knowledge and skills, and motivational processes.
Socioeconomic Status	refers to students' father and mother educational qualifications.

CHAPTER ONE

INTRODUCTION

1.1 *Background to the Study*

The demand for standard teacher education in Nigeria does not mean increase in the enrolment of prospective teachers or expansion of teacher training institutions in the country. Perhaps, increase in enrolment or expansion could be part of the solutions but certain psychological constructs relating to the teacher and students have to be given more priority in order to prepare their mind for the challenges of classroom teaching and learning. For effective learning to take place, goals must be clearly stated and translated into practicable practice. However, individual differences make every learner to have his achievement goals and this sends signals to learners as they may learn with difficulty and helplessly achieve poor academic output as a consequence.

Lack of achievement goals could make learner find it difficult to function every day. He or she may be reluctant to participate in activities that are meaningful and enjoyable including educational activities. There is substantial evidence that inadequate achievement motivation affects people's performance in their various endeavors. The individual becomes disinterested and disentranced and lack energy and motivation to do anything. In the same vein, it makes students experience high anxiety and relatively poor test performance. *As a result, they become less active physically, mentally and socially which will have significant bearing on their learning* (Adesoji & Olatunbosun, 2008).

One of the major objectives of education is to enable the students to develop their knowledge in problem solving besides enhancing the content knowledge, solving problem help

the students to develop different cognitive abilities and skills (Vezgen & Etkina, 2007). It is expected that learners set standards or goals to strive for in their learning, monitor their progress toward these goals, and then adapt and regulate their cognition, motivation and behavior in order to reach these goals (Pintrich, 2000 in Vrugt & Oort, 2008). But a conflict may arise when the student's goals address only a few of the expected goals and neglecting others. This could affect the students' achievement within school and beyond. It will therefore be relevant to understand the relationship between achievement goals and academic success of students as part of the focus of this study.

*More so, goals orientation has been linked to cultural diversities which may likely affect students' mastery or performance goal orientations. For example, i*n American culture mastery and performance goals of students tend to correlate negatively while in Chinese culture mastery goals are likely to show positive correlation to performance goals (Awofala, Arigbabu, Fatade & Awofala; 2013). The academic achievement in Chinese culture tend to be social-oriented endeavor where the society relies on government that in turn provides services such as education, healthcare, and public transportation for free or at very low cost. So, their education also reflects the political ideology of a socialist country. In contrast, education according to American culture is an individual endeavor that reflects a typical capitalist society where individuals own economic resources and industry. Their system which emphasizes competition for resources as a means of increasing capital (or wealth) and developing personal success may play a role in determining students' goal orientation. In the context of African students who cohabit in a communal society, knowing how goal orientation resides within them will help one to explain the influence of their political ideology on their educational system.

Research in achievement goals began with studies using school children; it has more recently spread from education to sport and organizational settings because of its usefulness in

predicting performance and achievement. Interest in this area led to the development of different frameworks. Initially, achievement goal was viewed as a dichotomy between mastery and performance orientations. As research in this area grew, the performance orientations were divided into approach and avoid forms. A lot has been said in the literature about the influence achievement goals have on students.

It is said that goals orientations influence how students allocate their resources in learning, revise their goals in the face of feedback, engaged in cognitive processing as they prepare for multiple examinations (Radosevich, Vaindynathan & Yeo, 2004). This shows that a major factor which contributes to students' self-regulation of their learning is achievement goals. Good orientation has been linked to adoptive outcomes such as strong self-efficacy, good metacognitive awareness and academic success.

So, the extent with which systems achieve this is an indicator of success. Metacognition implies awareness of one's own thinking and processes and being able to control these processes. It is believed that once people become aware of thinking as a process, they can reflect on how they are thinking and discover effective ways of thinking and learning. It has also been noted that human beings use metacognitive monitoring and control to choose goals, assess their own progress and if necessary adopt new strategies for achieving those goals, or even abandon a goal entirely (Chavan, 2014).

This concept of metacognition has recently become a popular area in education. Researchers and educators are deeply concerned about the type and levels of knowledge students are acquiring in schools. Passive transmission-reception of information and memorization of facts are not the kind of learning that will be required for success in future. The students will be expected to think critically about what they have learnt and read, identify

relationships among ideas, engage in complex decision making and monitor their own thought processes.

Metacognition is an important index in learning and students are likely to have poor metacognition if not checked and this may predict academic success (Dunning, Johnson, Ehrlinger & Kruger, 2003). The importance of metacognition for high quality learning and problem solving is widely accepted (Brown, 1994). It has also been argued that learners can maximize their learning success when they have access to their learning repertoires in addition to insights into their own capabilities (Brown, 1994). Metacognition therefore enables students strategize their learning by learning new information not focusing only on studying information already learned. Of great concern is the fact that if students with poor metacognition are not checked it is likely to affect their learning.

*In fact, there are substantial evidences among Educational Psychologists (such as Kruger & Dunning, 1999) who emphasized the importance of good metacognition on students' learning. Therefore, if students' metacognition can be improved, one will expect such improvements to influence their learning outcomes. In other words, if high level thinking could be controlled, then one will expect some sort of effect on one's learning. Lack of good metacognition which is characterized by dependent learning style, low self esteem (often leads the individual to be physically, mentally and socially inactive) and inability to transfer or adapt one's learning to new contexts and tasks (*Schoenfeld, 1991) *is one of the most hidden psychological problems associated with learning.*

This relates to how people lacking metacognition become unaware of their incompetence, lacking insight about deficiencies in their intellectual and social skills (Dunning, Johnson, Ehrlinger, & Kruger; 2003). *In short, students lacking the skills (of applying metacognition) are likely to produce incorrect answers, and do not know whether when their*

*answers or anyone else's are right or wrong. Thus, m*etacognition has been proposed as a prerequisite of effective behavioral control because it is applicable to so many disciplines. For example, good metacognition help students stay on task, keep track of their effort and progress, and relate to more efficient problem solving in all subjects. In law, it helps in cross-examination of facts while in administration, it has proven to be a good tool that facilitates decision making and generating creative ideas.

Studies on metacognitive awareness or strategies have used primary school subjects, adolescents as well as adults. A few studies exist on the influence of metacognitive awareness and achievement goals across all levels of education and among all categories of learners. This stimulated the present study so that it will add knowledge in this area. On the part of the students, little indigenous and foreign researches exist on their achievement goals, metacognition and academic success especially those in colleges of education. *Therefore understanding the relationship between metacognition and students' academic success to this effect among students of Colleges of Education in the North Western Nigeria is the thrust of this study*.

1.2 Statement of the Problem

The progressive nature of learning points to its connectedness across all levels of education in such a way that any problem in any lower level, which serves as a foundation upon which subsequent learning will be built, no doubt, affects the next higher and subsequent levels. Lack of success as a result of learning is accounted for by many factors; such as poor students' achievement goals and metacognition which are undoubtedly neglected during assessment or evaluation and little or no feedback linked specifically to these variables are seen as point of reference to students' success or failure in examinations

It has been observed by the researcher that majority of students are seen to avoid challenging tasks and do not strive under unfavorable conditions. They are seen to prefer simple tasks where success is guaranteed. They do not want to engage themselves in doing academic work which has certain level of difficulty. It was also observed that many students do not master their subject matter and do not focus sufficiently on learning. For this to occur it has to be linked to adaptive outcomes such as goal orientation, metacognition and academic success. Some will try to solve problem without thinking and this results to their inability to solve non school problems or even processing the essential knowledge and tools necessary to do so. This deficiency could be linked to ineffective metacognitive awareness.

It is also evident that lecturers in Colleges of Education are faced with classrooms full of students who come to them with various levels of how they learn. Some are active self-directed learners who are well acquainted with how they learn and are able to apply what they know to various learning situations. Others may be average learners who work hard and who have awareness of their learning strengths and weaknesses, but who may not adequately regulate their learning. Still others may be passive learners who have little awareness of how they learn and how they regulate their learning. All these happen while students' knowledge regarding their strategies in assimilation and retention of learned materials has become a source of concern for stakeholders in the education sector.

Even literature shows that majority of students do not have the ability of knowing the limits of their own learning and memory capabilities. They also lack the knowledge of what learning tasks they can realistically accomplish within a given period. The ability of knowing which learning strategies are effective, goal setting and planning an approach to a learning task and using effective learning strategies to process and learn new materials seem to be lacking

among NCE students. Worst still, their ability to monitor their own knowledge and the use of effective strategies for retrieval of previous stored information may be lacking. This is in contrast with teacher's expectation for students' success which is always high.

The cumulative nature of the problem is a serious concern for all stakeholders and this may be responsible for the causes of mass failure among students in examinations. This calls for an urgent and critical empirical research evidence to salvage the situation. For this reason, probably, assessing a convergence of theories and researches around the constructs of achievement goals, metacognition in relations to academic success may give answers to why students attain certain success or even why they fail. It is in the light of the above situation that this study is set out to investigate some psychological constructs such as the role of achievement goals and metacognition on students' academic success among students of Colleges of Education in the North Western Nigeria.

The importance of this problem lies in the fact that if students are left unchecked and the same poor result may continue to surface among our tertiary education students. They are likely to continue to perform below standard and consequently, this will affect the students overall academic achievement while some will continue to perform poorly, others may even drop out of the programme completely and this in the end will affect the overall educational objectives of the country and the manpower development of the Nigerian society particularly in the area of education and training of teachers in Nigerian schools. Along with these challenges, learning new ways of thinking and determining how such thoughts could be reached is the focus of metacognition and achievement goals. Consequently, the investigation on these variables for enhanced academic success is therefore the focus of this study.

1.3 *Objectives of the Study*

The objectives of this study are as follows:

1. *To find out whether students' achievement goals relate to their academic success.*

2. To find out whether students' metacognitive awareness relate to their academic success.

3. To find out whether students' achievement goals also relate to their metacognition.

4. To find out whether students' knowledge of cognition correlate with regulation of cognition factor among students of Colleges of Education in North Western Nigeria.

5. To find out whether there is gender difference in students' achievement goals, metacognition and academic success.

6. To investigate whether there is any influence of college type (state or federal) on students' achievement goals, metacogntive awareness and academic success.

7. To find out whether difference exists between Arts and Science students in their achievement goals, metacognitive awareness and academic success.

8. To find out whether parent's educational qualification influence students' achievement goals, metacognitive awareness and academic success.

9. To find out whether accommodation location affect students' achievement goals, metacognitive awareness and academic success.

10. To find out whether students' use of internet facilities influence their achievement goals, metacognitive awareness and academic success.

1.4 Research Questions

In order to guide this investigation, the following research questions are set:-

1. *Do students' achievement goals relate to their academic success?*
2. *Do students' metacognitive awareness relate to their academic success?*
3. *Is there any relationship between achievement goals and metacognition among students?*
4. *Is there any significant relationship between metacognitive knowledge and metacognitive regulation among students?*
5. *Is there any gender effect on students' achievement goals, metacognitive awareness and academic success?*
6. *Does college type (Federal or State) have any effect on students' achievement goals, metacognitive awareness and academic success?*
7. *Does academic discipline of Arts or Science influence students' achievement goals, metacognitive awreness and academic success?*
8. *Does parent's education affect students' achievement goals, metacognitive awareness and academic success?*
9. *Does accommodation location have any effect on students' achievement goals, metacognitive awareness and academic success?*
10. *Do students' uses of internet facilities have any effect on their achievement goals, metacognitive awareness and academic success?*

1.5 Research Hypotheses

The following hypothetical statements are formulated for the purpose of this study.

1. There is no significant relationship between students' achievement goals and academic success.

2. There is no significant relationship between students' metacognitive awareness and academic success.

3. There is no significant relationship between students' achievement goals and their metacognitive awareness.

4. There is no significant relationship between metacognitive knowledge and Metacognitive regulation among students of Colleges of Education in North Western Nigeria.

5. Gender has no significant effect on students' achievement goals, metacognitive awareness and academic success.

6. There is no significant difference between students of State and Federal Colleges of Education in their achievement goals, metacognitive awareness and academic success.

7. There is no significant effect between Arts and Science students in their achievement goals, metacognitive awareness and academic success.

8. Parent's education has no significant effect on students' achievement goals, metacognitive awareness and academic success.

9. Students' accommodation location does not have significant effect on their achievement goals, metacognitive awareness and academic success.

10. Students' internet usage has no significant effect on their achievement goals, metacognitive awareness and academic success.

1.6 Basic Assumptions

Based on the above research problem and the questions generated, the following assumptions are formulated to guide this study.

1. This research predicts that the type of achievement goal-orientation students adopt for their learning may influence their academic success.

2. Students' metacognitive awareness may also boost their academic success.

3. Student's achievement goals orientation may predict his metacognitive awareness and academic success.

4. Certain components of achievement goals and metacognitive awareness may likely correlate with academic success.

5. Gender difference may not predict student's achievement goals, metacognitive awareness and academic success.

1.7 Significance of the Study

The implication for achievement goals and metacognition on students academic success call for effective, sustained and well studied psychological construct in this area to enhance teacher training and academic success of their students. To achieve this, there must be adequate information on the findings of the study. The findings of this study will therefore be useful in the provision of baseline information in this regard.

Government and public institutions such as the National Commission for Colleges of Education (NCCE) and the like will find this research significant. It will provide them with evidence based empirical data which will help them to review and formulate effective teacher training policies in view of the present unimpressive performance of teacher education in Nigeria.

It is undoubtedly believed that whatever issue relating to teacher performance will have direct bearing on his learners. It is therefore the hope of this research that student teacher's academic success will increase by understanding the role of his achievement goals (which are mostly unpronounced) and his metacognition (which unconsciously unknown) as it relate to his academic work.

Also it is not clear whether management of various colleges of education and their lecturers are aware of the effect of achievement goals and metacognition on academic success. The findings of this study on 'relationship between achievement goals, metacognition and academic success among students of federal and state colleges of education in the North Western Nigeria' will be an eye opener in this direction. It will sensitize the management to carefully handle teacher training in their various institutions with utmost attention to achieve the desired objectives of teacher education.

Specifically, teachers/lecturers will benefit with the theoretical as well as empirical findings of this research in the area of planning their lessons which will involve setting of goals, use of appropriate method of teaching that could stimulate students' academic success. It is also hoped that the findings of this research will expose educationists and curriculum experts with the understanding of these psychological factors that might be responsible for success or failure among students of Colleges of Education in the North Western Nigeria.

In a nutshell, the significance of this study cannot be oversimplified as the findings of this research will contribute immensely to the existing body of knowledge, provide information, open up research areas of psychological relevance and assist in the design of similar studies for the in-coming students and researchers alike. In different respect, this study will be a reference material for in-coming students and researchers who are interested in this area of study.

1.8 Scope and Delimitations of the Study

This study covers twelve (12) Federal and State Colleges of Education located across the North Western states of Nigeria. The study is restricted to North West Nigeria. Only NCE three (III) students (both males and females) in both State and Federal Colleges of Education were used for the study. The scope of the findings is limited to North West Nigeria.

Throughout this study achievement goals classification of mastery and performance orientation of traditional/normative theory as cited by Ames (1990) are used in review as well as the instrument. Later extension of the concept such as sub-categorization which includes performance-avoidance was not considered in this study because it is covered by the early categorization. The elements of metacognition identified by Flavell (1979) served the basis of the review on the concept and also the instrument. The variable of academic success is represented in this study by the cumulative grade point average CGPA of the students. Parent's education used is this study represents parent educational qualifications which are categorized as primary, secondary and tertiary. Those parents with no education were not included in the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter presents a review of literature based on the following headings:

2.2 Conceptual Framework

2.2.1 Concept of Achievement Goals

2.2.2 Concept of Metacognitive awareness

2.2.3 Concept of Academic Success

2.3 Theoretical framework

2.3.1 Origin of Achievement Goal Theory

2.3.2 Achievement goals Theory

2.3.3 Traditional Achievement Goal Theory / Normative Theory

2.3.4 Origin of Metacognition Theory

2.3.5 Theories of Metacognition

** Tacit Theories of Metacognition*

** Informal Theories of Metacognition*

** Formal Theories of Metacognition*

2.4 Models of Metacognition

2.4.1 Flavell's Classical Model

2.4.2 An Alternative Model of Metacognition

2.4.3 A Multi-faceted Model of Metacogintion

2.5 Theories of Academic Success

2.5.1 Achievement Motivation Approach of McClelland

2.5.2 Atkinson's Model of Achievement Motivation

2.5.3 Ludwig System's Theory

2.6 Review of Empirical Studies

** Achievement Goals and Academic Success*

** Metacognition and Academic Success*

** Achievement Goals and Metacognition*

** Gender and Achievement Goals*

** Gender and Metacognition*

** Gender and Academic Success*

** Internet Access and Metacognition*

** Internet Access and Achievement Goals*

** Internet Access and Academic Success*

** Parental Education, Support and Achievement Goals*

** Socioeconomic Background and Metacognition*

** Student Accommodation and Metacognition*

** Students Accommodation and Academic Success*

2.7 Summary

2.2 Conceptual Framework

A host of psychological constructs have appeared to be directly or indirectly related to one another. Studies of achievement goals have been a central construct in the study of motivation in achievement settings (Elliot & Murayama, 2008). In short, a prominent feature in motivation theory is the role of goals. Another important construct that has gain psychologists' attention is metacognition. Metacogntion is an important aspect of teaching and learning. It is one of the foundation upon which students may become independent learners. Thus, this section provides a conceptual perspective of achievement goals, metacognition and academic success.

2.2.1 The Concept of Achievement Goals

Achievement goals describe general orientations that concern the reasons or purposes students are pursuing when approaching and engaging in an academic task. It represents the individual's

orientation to the task or situation. The general focus or purpose is achievement, and not just the specific target goal for a particular task. In this sense of achievement goal orientations, the construct may include both the general focus or purpose for achievement, such as mastery or performance, as well as the standards vis-à-vis others (Pintrich, 2000).

In this definition, mastery goals reflect the focus on developing competence, learning, and understanding the task and use of self referenced standards of improvement. Performance goals reflect an orientation to demonstrating competence, being superior to others, and the use of social comparative or normative standards. Also, Ames (1992) stressed that there are two general orientations to achievement: mastery and performance goals. According to Pintrich (2000) in Vrugt and Oort (2008) mastery goals orient student towards learning and understanding, developing new skills, and a focus on self-improvement using self-referenced standards while performance goals represent a concern with demonstrating ability, obtaining recognition of high ability, protecting self-worth and a focus on comparative standards relative to others and attempting to surpass others.

Achievement goal is commonly defined as the purpose of task engagement (Maehr, 1989; Elliot & Church, 1997), and the specific type of goal adopted is posited to create a framework for how individuals interpret, experience, and act in their achievement pursuits. There are two main perspectives of goal concept – the traditional and / or normative perspective reflected primarily in the writings of Ames (1984), Dweck (1988), Maehr (2003), and Nicholls (1984), and the revised theory known as the multiple goal perspective. Several models exist based on these theories. Proponents of achievement goals have differing opinions about whether achievement goals have their origin more in the person, the situation or both. Those who have been influenced by work on attribution theory and the achievement motive tradition believe that individuals have goal tendencies that guide and determine, more or less,

which goals they are likely to endorse in a given situation. Based on the above explanation, there are two goals which are important in academic pursuit. They are:

1. **Mastery (or Learning) Goal**

   Mastery goals are rooted in the desire to improve one's competence during a learning activity. Mastery goals generally cultivate a self-based (or task-based) evaluation on one's competence, and these goals focus the student's attention on developing competence and mastering the task. Achievement in the context of a mastery goal means "making progress".

2. **Performance-Approach Goal**

   With a performance-approach goal, the student seeks to demonstrate or prove competence, especially in the presence of an audience. Performance-approach goals generally cultivate a norm-based evaluation of one's competence, and these goals focus the student's attention on the demonstration of ability relative to that of others. Achievement in the context of a performance-approach goal means doing better than others.

There exist certain assumptions about achievement goal. Psychologists (such as Maehr & Zusho, 2003) have highlighted major assumptions that intersect with the concept of achievement goal. They are namely:

1. *Motivation as a process*
2. *Competence is at the heart of goal*
3. *Goals create motivational systems*
4. *Goals and self-related processes are intertwined*

Recent research in motivation in general and achievement goal in particular has its roots in social-cognitive theory, which emphasizes role of students' beliefs, perceptions and strategies. Motivation is assumed to be discernable through students' report of their beliefs about adoption as well as through

behavior such as choice of activities, level and quality of task engagement, persistence, and performance. This implies that emphasis is placed on the process of learning, and on understanding the factors both personal and contextual, that influence how an individual approaches, engages in, and responds to achievement -related - situations. In contrast to earlier research, motivation is no longer considered to be primarily a dispositional trait, with some students being "more" or "less" motivated. Increasingly, student motivation is recognized to be a function of instruction, tasks, and activities that are placed in a classroom (Ames, 1992; Hickey & McCaslin, 2001; Maehr, 1974; Maehr & Nicholls, 1980).

It is assumed that the goal of achievement behavior is competence, which is defined as the sense of being able to deal effectively with one's environment with the skills and abilities one has developed. This assumption is perhaps best reflected in the two major goals this promotes, namely mastery (also referred to as task-involved, learning goals) and performance (also known as ego-involved, ability goals) goals.

Elliot and Dweck, (1988) have assumed that goals are, in essence, the unifying construct or the motivational linchpin of cognition, affect, and behavior. Thus, goals allow people to identify how certain behaviors, thoughts, and emotions are linked and function as coordinated system. In this way, achievement goal shares similarities with Ford's (1992) Motivational Systems Theory which specifies how personal goals including goal orientations are related to cognitive and emotional arousal processes.

The concept of goals and self-related processes as intertwined. Achievement goals differ in terms of the extent to which "the self" is made salient. Nicholls (1984), for example, referred to performance goals as "ego-related" goals, alluding to the notion that these goals heighten one's awareness of the self, or make individuals more mindful of their abilities – what they can and cannot do (Kaplan & Maehr, 2007). With mastery goals, however, the focus is not necessarily on the self but rather the task at hand. But it has been theorized that mastery goals, given its emphasis on intrapersonal or self-referential

standards, would be associated more with private self whereas performance goals, given its emphasis on normative or interpersonal standards, would be associated more with the public self. In a nutshell, the concept of achievement goal according to Markus and Nurius, (1986) is related to how individuals view themselves in certain situations. For example, possible selves – represented by individuals thoughts about what they might become, what they would like to become, and what they might be afraid of becoming – have been associated with the adoption of certain achievement goals.

The expectancy aspect of goals stressed that a person will decide to act in a certain way because they are motivated to select a behavior over other behaviors due to what they expect the result to be. The individual makes choices based on estimates of how well the expected results of a given behavior are going to match up with or eventually lead to the desired results. The idea of having expectancy as part of achievement goals explains the behavioral process of why individuals are motivated to choose one behavioral option over another. It also explains how they make decisions to achieve the outcome that they perceive as most valuable. Here whether the decision is either to outperform or to master a course coincides with performance and mastery goals orientations of achievement goals.

Expectancy here is all about the mental processes involved in making choices. Vroom proposed that a person decides to behave in a certain way because they select a behavior over other behaviors due to the expected result of the selected behavior. For example, a person will be willing to work harder if he thinks it will get him a reward that is worth the extra effort. In essence, the motivation of behavior selection is determined by the desirability of the reward. However, at the core of understanding the concept, cognitive process of how an individual processes the different motivational elements evolved. Processing is done before making the ultimate choice. Reward, therefore, is not the sole determining factor in making the decision of how to behave because the person has to predict whether or not they will actually earn and receive the reward.

Furthermore, the concept “expectancy” explains the behavioral process of why individuals choose one behavioral option over another. It also explains how they make decisions to achieve the result they desire. Vroom introduces three variables within his expectancy concept: valence (V), expectancy (E), and instrumentality (I). These three elements also have clearly defined relationships: effort-performance expectancy (E>P expectancy), performance-outcome expectancy (P>O expectancy).

These three components (Expectancy, Instrumentality, and Valence) fit together in this fashion:

1. Expectancy: Effort → Performance (E→P)

2. Instrumentality: Performance → Outcome (P→O)

3. Valence - V(R)

Expectancy: Effort → Performance (E→P) Expectancy is the belief that one's effort (E) will result in attainment of desired performance (P) goals. Usually, this is based on an individual's past experience, self-confidence (self efficacy), and the perceived difficulty of the performance standard or goal. Factors associated with the individual's expectancy perception are self efficacy, goal difficulty, and control. Self efficacy is the person’s belief about their ability to successfully perform a particular behavior. Goal difficulty involves how goals or performance expectations that are set too high are most likely to lead to low expectancy. Control is one's perceived control over performance. In order for expectancy to be high, individuals must expect to have some control over the outcome.

Instrumentality: Performance → Outcome (P→O) Instrumentality is the belief that a person will receive a reward if the performance expectation is met. This reward may come in the form of a pay increase, promotion, recognition, or sense of accomplishment. Instrumentality is low when the reward is the same for all possible levels of performance.

Valence - V(R) Valence is the value the individual places on the rewards (R) based on their needs, goals, values, and sources of motivation. Factors associated with the individual's valence for outcomes are values, needs, goals, preferences, sources of motivation, and the strength of an individual's preference for a particular outcome.

Thorough understanding of the expectancy orientation can help teachers understand how individuals are motivated to make decisions regarding various behavioral alternatives. In order to enhance the connection between performance and outcomes, managers should use systems that tie rewards very closely to performance. Managers also need to ensure that the rewards provided are deserved and wanted by the recipients. In order to improve the connection between effort and performance, managers should engage in training to improve employee capabilities and help employees believe that added effort will in fact lead to better performance.

The relevance of the expectancy concept to understanding of achievement goals orientation is numerous. Although achievement goals and expectancy-value variables might independently predict achievement-related outcomes, there are also reasons to believe that these motivational variables are related and jointly predict individuals' achievement behaviors. Researchers have made three major predictions concerning the relation between expectancy-value variables, and achievement goals. From another perspective, goals can be viewed as aspects of the self that exist prior to encountering an achievement situation (Eccles 1983).

The three basic elements that explain the expectancy framework reflected and sometimes correlated the basic types of goal orientation (i.e. mastery and performance orientations). Goals can also be considered as mediators of expectancy value variables in that goals could derive from individuals' expectancies and be a predictor of their subjective value for a task or domain. Goals can be conceptualized as a variable predicted by the perceptions of the current achievement situation,

resulting from their expectancies, and task-values (Plante, O'Keefe, & Theoet, 2012). However, Achievement goals, as well as expectancies and task-values, independently predict individuals' achievement-related behaviors. Accordingly, achievement goals and expectancy-value variables would both predict achievement outcomes without being related to each other.

In a nutshell, achievement goal orientation posited that all actions are given meaning, direction, and purpose by the goals that individuals seek out, and that the quality and intensity of behavior will change as these goals change (Covington, 2000). The present research proposed that certain relationships may exist between achievement goals and academic success among students of Federal and State Colleges of Education in the North Western zone of Nigeria. It will be of great interest to understand whether gender, parent' education, internet access, etc., also have influence on students' achievement goals and their academic success.

2.2.2 The Concept of Metacognition

The time when the word "metacognition" first appeared in psychological literature does not imply that psychologists were not engage in metacognitive thinking or even investigating the phenomenon. McCormick (2003) opined that the term "metacognition" emerged as an explicit focus of research in psychology (with an initial focus on metamemory) in the early 1970s, but psychologists and educators have long been aware of the knowledge and skills encompassed by this term. Flavell (1976) offered an early commonly accepted definition of metacogntion as 'knowledge concerning one's own cognitive processes and products or anything related to them'. He suggested that metacognition is what organizes the learning process. It also refers to a level of thinking that involves active control over the process of thinking that is used in learning situations. This entails planning, monitoring and evaluating the progress of a particular in mental activity. Based on the above definition most models emphasize two aspects of metacognition – knowledge about cognition and control over cognition.

Sources of Metacognition

Psychologists (such as Dowling, 2000; Pressley, 1992; Marks, 1992; Schraw & Moshman, 1995) believed that there are three sources of metacognition as a concept, namely; cultural learning, individual construction and peer interaction and all play important roles in the emergence of the concept metacognition. The three sources are:

1. Cultural Learning.

Literature has it that respective views about metacognition are internalized from one's culture through social learning. Socially shared conceptions about the nature of cognition are transmitted to children through informal experience and formal education. Obviously, cultural learning is direct instruction in which students are taught to use a specified set of cognitive skills and are shown how to coordinate the use of these skills.

The work of Cross and Paris (1988) has given us a clear example of such an approach. In a series of studies, children were taught cognitive and metacognitive skills using the Informed Strategies for Learning (ISL) program which focused on increasing declarative, procedural, and conditional knowledge about the reading process. For example, students received modeled instruction, guided practice, and independent practice on specific reading strategies such as identifying main ideas. Students also were provided with regular feedback regarding their use of strategies. Last, the ISL program also sought to create higher levels of student involvement and awareness through the use of bulletin boards and periodic group discussions.

2. Individual Construction

Literature on cognition and metacogntion revealed that much about cognition develops outside the field of formal or informal instruction. Individuals gradually construct the idea of metacognition for two reasons. One is to systematize their growing stock of cognitive skills and strategies as well as metacognitive knowledge about those strategies. A second reason is to come to holds with what it means to be an effective, strategic learner. Individuals no doubt utilize a variety of strategies to construct their view point about metacognition . Paris and Byrnes (1989) noted the important role of private, reflective analysis of one's own cognition and have suggested that self-directed reflection develops in young children as part of self-correction and takes on increasing importance as children grow older.

3. Peer Interaction

It is a process of social construction that in part from two sides – cultural transmission and individual construction even though cultural processes may also affect it. One way this occurs is when groups of individuals engage in collective reasoning. Review by Pontecorvo (1993) describes a number of advantages of collective and socially shared reasoning processes, but especially the role played by resolving group dissension. A good example of influence peer interaction has can be seen in the study of Geil and Moshman (1994) where college students were asked to solve Wason's (1966) four-card problem. This task requires a person to decide which of four cards needs to be examined further in order to determine the truth or falsity of a given hypothesis. Success on this task requires the metacognitive insight that all those cards—and only those cards—that could falsify the hypothesis must be turned over in order to reach a definitive conclusion. Geil and Moshman proposed that individuals working as a group would engage in more sophisticated hypothesis testing than individuals working alone.

Furthermore, students were asked to solve the problem individually or in groups of five or six. Only 9% of students reached the correct solution in the individual condition, whereas 75% of the groups did so. In half of the groups, students were asked to solve the problem individually prior to group discussion. Of these individuals, 35 gave an incorrect answer before discussion and a correct answer afterward, whereas only two showed the reverse pattern. These results are consistent with the view that discussion of one's metacognitive conceptions with others may help clarify those conceptions and improve complex problem solving.

In conclusion, cultural learning, individual construction, and peer interaction all play important roles in the emergence of metacognitive literature. Probably, their influence is interactive rather than simply additive. By interactive, it implies that improvements made through any of the three factors described above reciprocally affect the remaining factors. For example, the communication of specific information about cognition through direct instruction may enhance a student's ability to construct an informal or formal theory of his or her own cognition. Similarly, peer discussion and collective concern about cognition may enhance the effectiveness of direct instruction. In general, cultural learning, individual construction, and peer interaction are not mutually exclusive pathways to self-regulation, but are interrelated.

Elements of Metacognition

A lot of frameworks have categorized elements of metacognition differently. But all types can be subsumed in the two categories identified by Flavell (1979).

1. *Metacognitive knowledge and*
2. *Metacognitive Regulation*

Researchers distinguish between metacognitive knowledge and metacognitive regulation (Flavell, 1979, 1987; Schraw & Dennison, 1994). Metacognitive knowledge refers to what individuals know about themselves as cognitive processors, about different approaches that can be used for learning and problem solving, and about the demands of a particular learning task. Metacognitive regulation refers to adjustments individuals make to their thinking processes to help control their learning, such as planning, information management strategies, comprehension monitoring, de-bugging strategies, and evaluation of progress and goals. Flavell (1979) further divides metacognitive knowledge into three categories:

- *Person variables:* What one recognizes about his or her strengths and weaknesses in learning and processing information.
- *Task variables:* What one knows or can figure out about the nature of a task and the processing demands required to complete the task—for example, knowledge that it will take more time to read, comprehend, and remember a technical article than it will a similar-length passage from a novel.
- *Strategy variables:* The strategies a person has "at the ready" to apply in a flexible way to successfully accomplish a task; for example, knowing how to activate prior knowledge before reading a technical article, using a glossary to look up unfamiliar words, or recognizing that sometimes one has to reread a paragraph several times before it makes sense.

Livingston (1997) provides an example of all three variables where he said "I know that I (person variable) have difficulty with word problems (task variable), so I will answer the computational problems first and save the word problems for last (strategy variable)". *The quotation above further explains how*

metacognitive knowledge relates to metacognitive experience in a process of monitoring and control of cognition in learning. Thus, the elements of metacognition mentioned above will be used in this study.

Functions of Metacognition

Wilson (1998) has identified three functions of metacognition. They are Awareness, Evaluation and Regulation functions. Cognitive psychologists viewed awareness and evaluation as part of thinking activity classified as monitoring. Reflection is the mediating process through which awareness may become evaluation and evaluation may be transformed into regulation of the thinking processes.

Metacognitive awareness relates to individuals' awareness of their position in the learning process, of their content specific knowledge, of their knowledge about learning strategies, and what is required in particular problem solving situations. According to Nelson (1992), metacognitive awareness is self-reflection about own cognitions. In other words, this definition extends to how people observe, monitor, evaluate and regulate their thinking processes.

Many cognitivists (such as Halter, 2005; Nelson, 1992; Reid, 2005; etc.) have outlined certain questions to which an individual can self assess his metacognitive awareness or assess it for others. For instance, Reid (2005) argued that the following self assessment questions may facilitate metacogitive awareness.

1. *Have I done the task before?*
2. *How did I undertake it?*
3. *What and why did I find easy or difficult?*
4. *What did I learn?*
5. *What do I have to do to finish this task?*
6. *How should I undertake it?*

7. *Should I attempt it the same way as before?*

Metacognition refers to a learner's ability to be aware of and monitor their own learning processes. *At this point, the individual thinks about his knowledge about self and strategies (including the reason (s) of using a particular strategy and also how such strategy is used. Schraw (1998) itemized a regulatory checklist for improving regulation of cognition as pointed out by Dowling (2000). It reads as follows:*

1. *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 will I need?*

2. *Monitoring*

a. *Do I have a clear understanding?*

b. *Am I reaching my goals?*

c. *Do I need to make changes?*

3. *Evaluation*

a. *Have I reached my goals?*

b. *What things that worked at?*

c. *What things did not work?*

d. *What would I do differently next time?*

From the foregone, it can be concluded that the main functions of metacognition are to observe, monitor and regulate the thought processes. Having clear understanding of these functions portrays the importance of the concept in learning.

Importance of Metacognition

First of all metacognition is part and parcel of human abilities and learners who lack the skills to be aware when comprehension is breaking down and what they can do about it, teacher's strategies will fail. Secondly, psychologists (such as Malley; 1985) argued that students without metacognitive approaches are basically learners without direction to review their progress, accomplishments, and future directions. Livingston (1997) argued that metacognition has provided insight into understanding cognitive processes in learning and what discriminates successful students from less successful. More importantly, metacognitive development leads students to independent learning more permanent knowledge, motivation for learning and higher achievement. According to Flavell (1987), metacognition is helpful for any organism that thinks a lot; makes mistakes, needing self-regulation to correct; wants to communicate with other organisms; needs to plan ahead; makes decisions; and /or needs to explain phenomena.

Apart from educational enterprise, metacognition can be applied in other areas. Thus Flavell (1997) has this submission:

> *investigation have recently concluded that metacognition plays an important role and facilitates oral communication of information, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition, attention, memory, problem solving, social cognition and various types of self-control and self-instruction. There are also clear indications that ideas about metacognition are beginning to make contact with similar ideas in the areas of social learning theory, cognitive behavior modification, personality development and education*

From the time of Flavell to date, psychologists have invested a huge amount of effort exploring the effects, influences, relationships, etc., of metacognitive activity within educational contexts which placed metacognition high on educational research. So, it is the aim of this study to investigate the

relationship metacognition has with other psychological constructs of the learner and also to determine the extent to which high or low level of metacognition could affect academic success among students of Federal and State Colleges of Education in the North Western states of Nigeria.

2.2.3 Concept of Academic Success

Academic success refers to academic achievement of students after the measurement of final grade point average. It is seen as the outcome of education – the extent to which a student, teacher or institution has achieved their educational objectives. According to Mahmoud (2011) academic success is influenced by a host of factors. These include the teacher factors, students' personalities, and mastery of the subject matter, their techniques, the classroom setting, materials to be used and the students' ability, their motivation, their interest in the subject matter, their emotional wellbeing and readiness to learn and even their relationship with their peers.

Similarly, the Cambridge University Report (2003) and Martha (2009) have given another perception of the concept "academic success". According to them, academic success is (and should be) frequently be defined in terms of examination performance. This implies that academic success is measured by examination results which represent one of the major goals of a school. It is said that academic success is affected by a number of factors including admission points, socio economic status and school background. In this study academic success is characterized by the cumulative grade point average. Ellis and Worthington (1994) and Scheuerman (2000) explained academic success as the term that refers to those successful students who have ability and endeavor to manage the demand of university effectively both in society and academic, to have a desire to be successful and to be considered as socially proficient, intrinsically motivated and goal oriented.

The achievement dream still exists, and researchers are continuing to launch investigations of academic success in the context of what affects it, how it can be achieved, and how it can be sustained

(Astin, 1982; Graham, 1994; Hrabowski, 1991; Monk, 1998). These researchers reported that academic achievement is associated with non-cognitive variables as well as cognitive variables. For example, non-cognitive variables such as climate and environment when taken into cognizance along with cognitive variable such as high school grade-point average and high school rank (Astin, 1982). Academic success represents what students can do when they have finished a course of study.

Importance of Academic Success

Academic success is important because it directly decides the positive outcomes of the students after graduating. There is nothing out of the blue, a research shows that the students with good degrees or high levels of education are more probably to be employed and paid a higher salary grade than the others with no academic success (National Center for Education Statistics, 2001; U.S. Department of Commerce, Bureau of the Census, 1999). Academic success is important because not only the good jobs with the satisfactory wages the students would have, but also the higher levels of education to tackle the technologically demanding occupations the working students would need in the future (Brown, 1999; National Alliance of Business, Inc., 1998). The students with academic success would have more opportunities to choose their future jobs than those with less academic success.

Additionally, Rentner and Kober (2001) observed that academic success might represent the gap between doing the job for earning money and enjoying the job. Furthermore, the students who succeed in study seem to become:

i. more sustainable in their jobs;

ii. more expected to have health insurance;

iii. more confident about their income;

iv. more active, helpful and healthy;

v. safer from the illegal activities (National Alliance of Business, Inc., 1998)

Finally, academic success helps students to possess a lot of skills as outlined by Nidds and McGerald (1996). According to them, for the 21st century students to be academically successful they must possess the following:

1. Ability to analyze, synthesize and evaluate information.

2. Ability to effectively communicate with others.

3. Proficient in science, mathematics, computer/technical skills, foreign languages, as well as history, geography, and global awareness.

4. Capable of collaboratively working in culturally diverse settings.

5. Leaders who see projects through to completion.

6. Responsible decision makers who are self-motivated and active political participants and

7. Ethical individuals who are committed to their families, communities and colleagues. In addition to reading, writing and arithmetic, successful students should learn to effectively balance the social and academic aspects of school, expect to succeed, may be described as socially proficient, goal oriented, and intrinsically motivated (Ellis & Worthington, 1994; Scheuemann, 2000). Going by the points above, item one to six corresponds to appropriate use of metacognition in learning.

2.3 Theoretical Framework

In this section, three theories served as the framework for this study. For the first variable (i.e., achievement goals), normative or traditional goal theory served as the framework. This is because the dichotomy between mastery and performance goals can be used to provide clear understanding / insight into the type of achievement orientation students pursue in schools. Though, further categorizations in the two-by-two or three-by-three frameworks are derived from the same root. Flavell (1979) model

which is also a formal theory of metacognition also served as the framework for the review. His classifications of metacognitive knowledge and regulation have captured what most recent models explained as metacognition. Ludwig system's theory is used here as the basis for the review of students' academic success. This is based on the assumptions of the theory that the students' input to their academic work will determine the output.

In psychological literature, many theories are linked, interrelated or seen as extension of existing theories. This becomes possible as a result of research and the need to further understand human and animal behavior. For example the concept 'achievement' has been, and remains, a topic of continuing concern for societies, institutions, groups, and the individuals who compose them. Factors that result in achievement are many and varied, but it is widely assumed that one of its primary elements is motivation. Numerous theoretical perspectives on the nature and nurture of motivation exist; one theory that has garnered considerable attention in recent years is achievement goal theory (Maehr & Zusho, 2003). Achievement goal theory originated from three major motivational frameworks, namely, social cognitive theory, the achievement motive tradition, and attribution theory.

First and foremost, goal theory is a social-cognitive approach to motivation. It recognizes and emphasizes the reciprocal influences of personal and environmental factors on goal endorsement, and underscores the importance of perception (Dweck & Leggett, 1988; Maehr & Zusho, 2003). In addition, goal theory is also indebted to the pioneering work on needs and motives by McClelland and Atkinson (McClelland, 1961). In view of the above, the theoretical framework of this research traces the roots and links of achievement goal theory to social-cognitive theory, the achievement motive tradition and attribution theory and also reviews the theoretical in order to give an insight into the role of this variable in this research.

Metacognition emerged as an explicit focus of research in psychology (with an initial focus on metamemory) in the early 1970's, but psychologists and educators have long been aware of the knowledge and skills encompassed by this term (Baker & Brown, 1984; McCormick, 2003). In fact, much of the work on metacognition emerged from Piagetian developmental research. Researchers in cognitive psychology have linked metacognition to a number of other constructs, including metamemory, critical thinking, and motivation (Lai, 2011).

For example, metamemory is closely related to metacognition, particularly cognitive knowledge. Schneider and Lockl (2002) have defined metamemory as 'knowledge about memory processes and contents' and consists of two components that closely mirror the declarative and procedural aspects of cognitive knowledge. Flavell (1979) maintain that critical thinking relates to metacognition. He argued that the definition of metacognition should include "critical appraisal of message source, quality of appeal, and possible consequences needed to cope with these inputs 'sensibly' can lead to "wise and thoughtful life decisions".

So many researchers have highlighted the link between metacognition and motivation (Eisenberg, 2010; Paris & Winograd, 1990, etc.). For instance, Schraw, Crippen and Hartley (2006) in the context of metacognition, have defined motivation as "beliefs and attitudes that affect the use and development of cognitive and metacognitive skills". According to this definition, motivation has two primary subcomponents; (1) self-efficacy, which is confidence in one's ability to perform a specific task and (2) epistemological beliefs, which are beliefs about the origin and nature of knowledge. Cross and Paris (1988) noted that metacognition includes affective and motivational states. Carson (2012) opined that major learning theories such as Vygotsky's activity theory, Siemens connectivism theory (Siemens, 2005) and Bandura's social learning theory (Bandura, 1977) all relate to metacognition theory.

Therefore, relevant theories above will be discussed in this review and also recent trends in the development of metacognition theory will be looked into.

2.3.1 Origin of Goal Theory

In the late 1970s and early 1980s, several researchers introduced an achievement goal approach to study achievement motivation and behaviors (Dweck & Bempechat, 1983; Maehr & Nicholls, 1980; Nicholls, 1979; Guan, 2004). Achievement goals are conceptualized as the purpose (Ames, 1992; Maehr, 1989) or cognitive-dynamic focus (Elliot, 1997) of competence-relevant activity. Initially, achievement goal theorists (Dweck & Elliott, 1983; Nicholls, 1984) incorporated the approach and avoidance motivation into their achievement goal framework and posited three types of achievement goals: a learning/task-oriented goal that focused on the development of competence and task mastery, an approach-oriented performance/ego goal that aimed to attaining favorable judgments of competence, and an avoidance-oriented performance/ego goal that tried to avoid unfavorable judgments of competence.

Each of these goals is hypothesized to lead to different motivational patterns. For example, the pursuit of a learning/task-oriented goal is hypothesized (Elliot, 1997) to generate mastery motivational patterns (e.g., high intrinsic interest in activity, persistence in the face of failure, active engagement). The adoption of approach-oriented performance/ego goals is hypothesized to lead to some adaptive outcomes (e.g., persistence/effort while studying, active task engagement), whereas the pursuit of avoidance-oriented performance/ego goals is expected to result in maladaptive outcomes (e.g., decreased intrinsic motivation, inactive task engagement).

However, the concept of independent approach and avoidance goal orientations received little theoretical and empirical attention and was soon abandoned by achievement goal theorists. As a result, achievement goal researchers collapsed the approach and avoidance component of the performance

goal together into a unitary orientation, and then proposed a dichotomous model, called performance-learning goal dichotomy (e.g., Dweck, 1986) or task-ego goal dichotomy (e.g., Nicholls, Patashnick, Cheung, Thorkildsen, & Lauer, 1989).

These two goals to date have been alternatively labeled task-involvement goals and ego-involvement goals (e.g., Maehr & Nicholls, 1980; Nicholls, 1989; Ryan, 1982), learning goals and performance goals (e.g., Dweck, 1986; Elliot & Dweck, 1988), and mastery goals and ability goals (e.g., Ames, 1984; Butler, 1992). In this study, the term mastery goals and performance goals will be used throughout the paper. Despite differences in terminology for these two goals, the frameworks have been considered similar enough to justify convergence in a mastery goal versus a performance goal dichotomy (Ames & Archer, 1987). As stated earlier the following theories served as the foundation of achievement goals theory.

1. Social-cognitive Theory

Goal setting is central process within social-cognitive theory (Bandura, 1986; Schunk, 1990). Goals reflect cognitive representations of anticipated, desired or preferred outcomes. Hence, goals exemplify the agency view within social cognitive theory that people not only learn, they use forethought to envision the future, identify desired outcomes, and generate plans of action. Goals are also closely related to other important processes within social-cognitive theory. For instance, models can provide goals in the form of specific behavioral outcomes or more general standards for acceptable levels of performance. Goals also are intricately related to students' outcome expectations and their perceived self - efficacy. Goals are a function of the outcomes students expect from engaging in particular behaviors and the confidence they have for completing those behaviors successfully. Finally, goals are an important prerequisite for self- regulation because they provide objectives that students are trying to achieve and benchmarks against which to judge progress (Denler, Wolters & Benzon, 2013).

The classroom implication of social cognitive theory on goal setting entails that instruction should help students to set effective goals by addressing the properties found in the most effective goals (Schunk, 1990). Instructional practices should promote students' efforts to set attainable goals that are clear, specific, and moderately challenging. Similarly Mahmoud and Likko (2011) have further affirmed this assertion where they reported the importance of prior-presentation of behavioral objectives in determining attainable goals which is seen as a booster to students' retention and academic success. In order to show progress and to maintain self-efficacy (in the view of Denler, Wolters & Benzon, 2013), learning goals should be attainable with moderate levels of effort. These goals are likely to reduce disappointment and frustration that students might feel if they fail to reach their goals. Specific goals are more effective than general or vague goals spurring students to action and in guiding their behavior. Students are expected to have both distal and short – term goals for their learning in school. However, proximal goals are more effective at guiding behavior because they allow for more immediate feedback about progress. Finally, goals that students set or endorse themselves have a bigger impact on their behavior than the goals that are assigned. Hence, instruction is to help students develop the ability and willingness to form their own academic goals.

2. Achievement Motive Tradition

Goal theory is indebted to the pioneering work on needs and motives by McClelland and Atkinson. Elliot and Dweck (1988) opined that the primary assumption of goals organizers and energizers of action comes from this historic area of inquiry, with achievement goal representing a perhaps more finer-grained, and therefore potentially more predictive, unit of analysis. Moreover, many of the defining features of contemporary frameworks, chiefly the approach-avoidance distinction, grew-out of the works on motives (Elliot, 1999; Maehr & Zusho, 2003). Barron and Harackiewicz (2001) among contemporary theorists have suggested that achievement goals have their basis, in two achievement motives. Elliot and

Church's (1997) hierarchical model of achievement motivation, for example, outlines the idea that the motive to approach success and the motive to avoid failure may effect the endorsement of approach and avoidance goals respectively.

In his dissertation, Balarabe (1989) traced the early achievement motivation approach and links to contemporary goal theory. Thus the achievement motivation theory of McClelland and Atkinson emphasized the measurement, implications and acquisition of the achievement motive on individual achievement behavior particularly in entrepreneurial activities. According to the achievement motivation model, individuals with high in the motive are more inclined to choose tasks of medium difficulty levels while those with low in it, are likely to choose very difficult or very easy tasks (Weiner, 1971; Covington & Omelich, 1979; in Balarabe, 1989). The idea of choosing tasks according to the model above implies setting out goals depend largely on high or low level of the person's motive.

3. Attribution Theory

Maehr and Zusho (2003) have argued that across the three motive traditions which served as foundations of goal theory, attribution theory has been the most influential. Attribution theory is widely agreed to have originated from Heider in his conception of man as a "naïve psychologist" seeking to explain the events occurring in his life, hence giving to the theory its major role of identifying the rules, the average individual uses in attempting to infer the causes of observed behavior (Balarabe, 1989). In achievement domain, which has served as a model for the causality in other contexts, success and failure often are attributed to an ability factor that includes both aptitude and acquired skills, an effort that can be either temporary or sustained, the difficulty of the tasks, luck, mood and help or hindrance from others.

Ultimately goal theory is a theory concerned with the source of attributional styles; it is a theory governed by a quest to identify why students often of equal academic ability, respond so differently to

the same academic task (Maehr & Zusho,). For example, why do some students exhibit what Dweck and her colleagues called a "helpless" orientation while others display a "mastery" orientation (Dweck & Leggett, 1988; Elliot & Dweck, 1988)? When faced with an academic task, why do some students make more ability attributions (e.g., "was I smart?) than effort (e.g., did I try hard?) attributions (Ames, 1984)? The answer, according to goal theory, is the two primary goal of mastery and performance. Nevertheless, questions remain and differing opinions exist about the nature and origins of these goals.

2.3.2 Achievement Goal Theory

Achievement goal is commonly defined as the purpose of task engagement (Maehr, 1989; Elliot & Church, 1997), and the specific type of goal adopted is posited to create a framework for how individuals interpret, experience, and act in their achievement pursuits. There are two main perspectives of goal theory – the traditional and / or normative perspective reflected primarily in the writings of Ames (1984), Dweck (1988), Maehr (2003), and Nicholls (1984), and the revised theory known as the multiple goal perspective. Several models exist based on these theories. Proponents of achievement goals theories have differing opinions about whether achievement goals have their origin more in the person, the situation or both. Those who have been influenced by work on attribution theory and the achievement motive tradition believe that individuals have goal tendencies that guide and determine, more or less, which goals they are likely to endorse in a given situation.

There exist theoretical assumptions of goal theory. Psychologists (such as Maehr & Zusho, 2003) have highlighted major assumptions that intersect with the goal theory. Namely:

5. *Motivation as a process*
6. *Competence is at the heart of goal theory*
7. *goals create motivational systems*
8. *Goals and self-related processes are intertwined*

Recent research in motivation in general and achievement goal theory in particular has its roots in social-cognitive theory, which emphasizes role of students' beliefs, perceptions and strategies. Motivation is assumed to be discernable through students' report of their beliefs about adoption as well as through behavior such as choice of activities, level and quality of task engagement, persistence, and performance. This implies that emphasis is placed on the process of learning, and on understanding the factors both personal and contextual, that influence how an individual approaches, engages in, and responds to achievement -related - situations. In contrast to earlier research, motivation is no longer considered to be primarily a disposional trait, with some students being "more" or "less" motivated. Increasingly, student motivation is recognized to be a function of instruction, tasks, and activities that are place in a classroom (Ames, 1992; Hickey & McCaslin, 2001; Maehr, 1974; Maehr & Nicholls, 1980).

Goal theorists have assumed that the goal of achievement behavior is competence, which is defined as the sense of being able to deal effectively with one's environment with the skills and abilities one has developed. This assumption is perhaps best reflected in the two major goals this promotes, namely mastery (also referred to as task-involved, learning goals) and performance (also known as ego-involved, ability goals) goals.

Goal theorists (such as Elliot & Dweck, 1988; Maehr; 2001) have assumed that goals are, in essence, the unifying construct or the motivational linchpin of cognition, affect, and behavior. Thus goals allow people to identify how certain behaviors, thoughts, and emotions are linked and function as coordinated system. In this way, achievement goal theory shares similarities with Ford's (1992) Motivational Systems Theory which specifies how personal goals including goal orientations are related to cognitive and emotional arousal processes.

Goal theorists also viewed goals and self-related processes as intertwined. Achievement goals differ in terms of the extent to which "the self" is made salient. Nicholls (1984), for example, referred to

performance goals as "ego-related" goals, alluding to the notion that these goals heighten one's awareness of the self, or make individuals more mindful of their abilities – what they can and cannot do (Kaplan & Maehr, 2007). With mastery goals, however, the focus is not necessarily on the self but rather the task at hand. But it has been theorized that mastery goals, given its emphasis on intrapersonal or self-referential standards, would be associated more with private self whereas performance goals, given its emphasis on normative or interpersonal standards, would be associated more with the public self. In a nutshell, goal theorists (such as Markus & Nurius, 1986) presented evidence to suggest that achievement goals may be related to how individuals view themselves in certain situations. For example, possible selves – represented by individuals thoughts about what they might become, what they would like to become, and what they might be afraid of becoming – have been associated with the adoption of certain achievement goals.

2.3.3 Traditional Achievement Goal Theory

Traditional achievement goal theory, also referred to as normative goal theory evolved from work in which researchers sought to identify goals that lead to helpless and master patterns of response to different achievement contexts (Dweck & Leggett, 1988). Achievement goal theorists commonly identified two distinct orientations toward competence, namely mastery and performance goals. Mastery goals have been labeled task-goals (Nicholls, 1984) and learning goals (Dweck & Leggett, 1988), which focused on the development of competence and task mastery.

Robustelli (2006) found in her review of literature on research using normative goal that mastery goals demonstrated a consistent pattern of results relating to adaptive motivational patterns but not to increased achievement. On the other hand, Was, Al-Harthy, Oden and Isaacson (2009) found in their literature that mastery goals are appropriate approach to enhancing learning, increasing self-efficacy,

effort, and persistence as well as the goal orientation, which would encourage the use of effective cognitive strategies. Performance goals focused on the demonstration of competence relevant to others. The adoption of performance goals is hypothesized (Elliot & Church, 1997) to produce susceptibility to a "helpless" pattern of responses in achievement settings (e.g., a preference for easy or difficult tasks, withdrawal of effort in the face of failure, and decreased task enjoyment). Performance goals have been labeled ego-goals (Nicolls, 1984) and ability goals (Ames & Ames, 1984). Robustelli (2006) asserted that performance goals yielded mixed result with educational outcomes, they were correlated with both maladaptive motivational patterns and increased achievement. Research by Dweck (1986) has however revealed that students who attuned to performance goals are likely to become frustrated in the face of failure and attribute success and failure to more external factors such as luck, task difficulty, and an uncontrollable lack of ability.

Was (2006) further explained that mastery goal orientation encourages the use of metacognition, while Nicholls and Miller (1984) referred to this category of learners as task-involved learners who focus on mastering the task at hand, not in performing compared to others. Students attuned to learning or mastery goals persist longer on difficult tasks and are more likely to attribute success and failure to internal controllable causes. Students who set learning goals, are also more likely to show preference for challenge and academic risk taking. Dupeyrat and Marine (2005) found that when adults in continuing education courses displayed mastery goals, there was positive impact on learning outcomes, while who displayed performance goals had negative outcomes. Again, when a student is attuned to mastery goals, effort is seen as contributing to success and not as a measure of ability (Middleton & Midgley, 1997). When oriented toward mastery goals students see achievement (success) as learning something new or mastering the task at hand. Elliot (1992) discussed task-referential vs. past-referential orientation, all in relation to mastery orientation. Although details were not given to what he meant by mastery past-referential orientation but he explained the attributes of the

past-referent oriented student. Student having this attributes uses past performance as a measure of achievement, as a scale by which to set new goals. Whereas mastery task-referential orientation refers to measuring one's competence according to whether one has completed or fully understood the task at hand. Therefore, past-referential goals are measured by whether one has improved one's performance or has further developed one's skills or knowledge. This orientation is also referred to as intrapersonal competition.

Performance goals lead students to attempt appearing competent or to avoid appearing incompetent when compared to others (Leeper, 1988). Students who attuned to performance goals are more apt to become frustrated and defensive in the face of failure and attribute success and failure to more external factors such as luck, task difficulty, and uncontrollable lack of ability (Dweck, 1986). Many researches are said to have examined the circumstances in which performance goal orientation leads to higher achievement (Brophy, 2005). This view of goal theory makes a distinction between performance approach and performance-avoidance goals.

Multiple Goal Theory

Multiple goal theory is also known in psychological literature as "revised goal theory". This theory broke the competence based mastery and performance into valenced dimensions, termed approach and void. Two new frameworks, the trichotomous and 2x2 framework were devised to include the approach and avoid dimensions of performance and mastery goals. The trichotomous framework includes mastery, performance approach and performance avoid goals, while the 2x2 framework completes the addition of approach and avoid dimensions by including master avoid goals (Robustelli, 2006).

Moreover, Elliot (1994) and Church (1996) have proposed an integrative achievement goal conceptualization that incorporates both the contemporary performance/mastery and the classic

approach/avoidance distinctions. In this framework, the conventional performance goal is partitioned into independent approach and avoidance components and three achievement orientations are posited: a mastery goal focused on development of competence and task mastery, a performance approach goal directed toward the attainment of favorable judgment of competence, and a performance-avoidance focused on avoiding unfavorable judgments of competence. Multiple goal theory emanates as result of many research findings that revealed no correlation or only a weak positive correlation between mastery and performance goals. The multiple goal frameworks keep on changing from a 2×2 model (Elliot, 1999) to a more recently 3×3 model of achievement goals proposed by Elliot, Muryama and Pekrun (2011).

In this model, goal orientation is divided into six goals based on the three standards (task, self, and other) used to define competence crossing with the two ways that competence may be valenced (approaching success and avoiding failure). These goals are: task-approach goal focused on the attainment of task-based competence, task-avoidance goal focused on the avoidance of task-based competence, self-approach goal focused on the attainment of self-based competence, self-avoidance goal focused on the avoidance of self-based competence, other approach goal focused on the attainment of other-based competence, and other avoidance goal focused on the avoidance of other based competence.

Major setbacks to these models are that all revolve around the early conception of goal orientations of mastery and performance. They failed to capture all categories of students' goal as they expand propositions. Indeed, it is possible to have a student pursuing both mastery and performance goals at the same time but the higher his inclinations toward a particular goal will dominate the other. Academic activities of students can be interpreted outside the scope of mastery and performance orientation. Many students are seen in schools not pursing either mastery or performance goals. Some students are in school because of the social setting and interaction which school stands to offer them.

This indicates that neither of the achievement goals frameworks proposed above could explain what goal exactly such students have.

2.3.4 *Origin of Metacognition Theory*

Metacognitive theories originated from the theory of mind, but are not limited to, theories of cognition. Theories of mind address mental phenomena such as emotion, personality, and so forth (Astington, 1993; Schraw & Moshman, 1995). This implies that metacognitive theories are those theories of mind that focus on cognitive aspects of the mind. Moreover, Schraw and Moshman (1995) have further explained that, 'metacognitive theory is a relatively systematic structure of knowledge that can be used to explain and predict a broad range of cognitive and metacognitive phenomena.' meaning, metacognitive theories ere theories of cognition that focus on cognitive aspects of the mind. To this end, Bunge (1992) argued that all theories are cognitive in the sense that they are structure of knowledge, but not all theories are about cognition.

According to King (1999), metacognitive theory originated from the works of great philosophers such as Plato, Aristotle, Confucius, Lao Tzu, etc. A good example of their contribution is reflected in the work of John Locke (1690) who observed that most children steadily develop the ability to reflect on their thought processes. Strategies for assessing and teaching metacognitive skills were in use before the term was coined. Reading was an early center of research on reflective thinking. As early as 1909, a questionnaire was developed and used by Baldwin to learn about students' reading, and later Dewey introduced "reflective reading". Dewey viewed reflection as a kind of thinking. By 1917, Thorndike used reflection when asking students to solve problems by answering questions on texts they had read (Brown, 1987).

Moreover, it was noted among many psychologists that higher order thinking caught the interest of researchers when Flavell published the Developmental Psychology of Jean Piaget in 1963. This is why

the basic idea of metacognition has been traditionally associated with Piaget's stage of formal operations (McCormick, 2003). Researches in Pigetian tradition have been quite influential in shaping expectations of young children's metacognitive capacity (McLeod, 1997; Lai, 2011). Researchers studying Piaget's work have often concluded that young children are not capable of formal operations, which are necessary for abstract thought. This view of Piaget inspired many psychologists (Flavell, 1979; Schraw & Moshsman, 1995; Whitebread, 2009) to undertake researches and equally found that young children have difficulty appraising their own ability to memorize a set of objects and identifying what they do and do not understand about a set of written instruction. Specifically, White-bread (2009) held that children do not develop metacognitive skills before 8-10 years of age.

In 1967, Flavell introduced the idea of "metamemory" and conducted the first study on children's metamemory. In 1977, Flavell and Wellman presented a theory of metamemory to explain young children's development and application of recall strategies. Flavell and Wellman stated that young children's failure to use strategies for recalling information was due to lack of awareness of "parameters that govern effective recall" (Wong, 1995). As a result, they concluded that children's failure to recall is due to deficiency in metamemory. By 1975, the word "metacognition" had come into common use (King, 1999).

2.3.5 Theories of Metacognition

This refers to relatively systematic structure of knowledge that can be used to explain and predict a broad range of cognitive and metacognitive phenomena**.** *Schraw and Moshman (1995) have outlined two characteristics of metacognitive theories. One primary characteristic of a metacognitive theory is that, it allows an individual to integrate diverse aspects of metacognition within a single framework. For example, research indicates that young children often find it difficult to use their knowledge about memory and learning strategies to regulate their cognition. Reason being that,*

children have not integrated their metacognitive knowledge and regulatory skills within a unified conceptual framework. As a consequence, many of the skills at their disposal remain inert and difficult to apply beyond the context in which they were learned (Kuhn, Schauble, & Garcia-Mila, 1992).

Second characteristics is that metacognitive theories coordinate beliefs or postulates that allow individuals to predict, control, and explain their cognition, the cognition of others, or cognition in general (Flavell. 1992; Montgomery, 1992 in Schraw and Moshman, 1995). Example of this is the Good Strategy User as described by Pressley (1987). This individual understands that effective learning depends on activating relevant knowledge from memory, using automated procedures whenever possible, allocating one's resources in a planful way, using strategies selectively, and motivating oneself to learn the material at a deeper level of understanding. To the extent that such understanding is sufficiently coordinated to enhance control of one's learning, it constitutes a theory of what it means to be an effective learner. Schraw and Moshman (1995) posited that the degree to which a metacognitive theory possesses each of these properties, and the degree to which an individual is aware of these properties, varies from person to person. They concluded that metacognitive theories change gradually over time given personal experience and self-reflection. Moreover, metacognitive theories have been classified into three, namely; tacit theories, informal theories and formal theories. Individuals construct these theories in order to systematize cognitive knowledge and plan cognitive activities.

Tacit Theories

Tacit theories are acquired without any explicit awareness that one possesses a theory (McCutcheon, 1992). Dweck and Leggette (1988) opined that young children hold "implicit" theories about the nature of intelligence that, in turn; affect their behavior in the classroom. An incremental theory of this framework is one in which the child believes that intelligence can easily be influenced and subject to change other – or self-directed processes (Schraw & Moshman, 1995). Given the two criteria

proposed, one could argued that a child's implicit beliefs about intelligence constitute a theory because they allow the child to synthesize observations about the nature of intelligence and make predictions based on those observations. In fact, tacit theories are unconscious structures that arrange metacognitive knowledge. This can be seen in the way many children do not spontaneously report holding a "theory of intelligence" even though they systematically express beliefs consistent with such a theory. These theories may be difficult to change precisely because they are implicit.

Cognitive psychologists have portrayed several affects of tacit theories. For example, Sternberg and Caruso (1985) considered tacit theories about one's own cognition or about the epistemic nature of the world affect the way adult perform. While McCutcheon (1992) in his discovery found how teachers' tacit theories affect their interactions with students and curricular choices. It is also reported that tacit theories affect teachers' decision making and that tacit theories may be difficult to change even when individual are encouraged explicitly to do so (Kagan, 1992; Glass & Gamas, 1993).

In a nutshell, Schraw and Moshman (1995) have viewed tacit metacognitive theories as gradually constructed, implicit of organized frameworks that systematize one's metacognitive knowledge. Some of the beliefs about cognition that form the core of one's metacognitive theory may be acquired from peers, teachers, or ones culture. If this assertion is true one will expect that students' metacognition culminates from social interaction. This assertion may be the reason why individuals are not readily aware of either the theory itself or evidence that supports or refutes it. Kuhn (1989) concluded that tacit theories are not readily distinguished from relevant data. Though the construction of this theory is unconscious, it has highlighted on how individual beliefs about his cognition to could lead to formulating a metacognitive theory.

The assumptions of the theory render it deficient because it lacks a common ground to explain how people use their metacognition. Individual difference in cognitive abilities is enough to discredit

whatever one holds as his metacognitive theory. Developmental psychologists have explained that maturity does not start and end in body increase of an individual; rather it covers development in cognitive faculties. For example, children begin to "formal operate" when they reach certain level of cognitive development. So individual construction based on beliefs and observations may not actually give details about metacognitive theory.

Informal Theories

Informal theories are fragmentary in that learners are aware of some of their beliefs and assumptions but have not yet constructed an explicit theoretical structure that integrates and justifies these beliefs. Informal theories do have some degree of explicit metacognition and thus can judge the value of their framework (McCormick, 2003). In other words, individuals may be aware of some aspects of these theories, but lack an explicit structure for organizing their beliefs about knowledge. Over time, these informal theories are expected to become more sophisticated and formalized (Lai, 2011). Kuhn, (1989) opined that informal theorists may have only a rudimentary awareness of their own metacognitive knowledge. Informal theories develop slowly and are affected by a number of social and personal influences.

Paris and Byrnes (1989) highlighted an important difference between tacit and informal theorists. Informal theorists possess some degree of explicit metacognition. It seems likely that simple informal theories begin as domain-specific entities and gradually are generalized to other domains. Increasing the depth and breadth of metacognitive theories over time may allow informal theorists to better understand and direct constructive processes (Flavell 1993; Montgomery, 1992; Schraw & Moshman, 1995).

Recognition and control of constructive processes is a basic characteristic of informal metacognitive theories that is not found among tacit theorists. Awareness of the constructive nature of

knowledge and theories is important because, without it, individuals are unable to strategically modify their theories, and as a consequence, should be less able to regulate their cognition and learning. Having such awareness, individuals can begin to (a) purposefully formalize informal aspects of their theory, and (b) evaluate the adequacy of their metacognitive theory as it becomes increasingly formalized.

A good example of how tacit theories develop into increasingly sophisticated informal theories comes from the literature on false beliefs (Moore & Frye, 1991). Research indicates that very young children simply do not question the truth and certainty of their own beliefs or those of others (Montgomery, 1992). One reason is that most children younger than four are unable to conceptualize false beliefs and therefore find it impossible to think of true (or false) beliefs as a subset of beliefs in general. By the age of four, however, most children recognize that beliefs can be false and that it is thus reasonable to inquire about the truth or falsity of a claim as part of the reasoning process (Flavell *et al.,* 1993). At this age, children begin to develop what Flavell refer to as *postulates* regarding the truth and certainty of a claim. Although initially tacit, such postulates over time may provide a basis for testing an increasingly explicit metacognitive theory. At the age of six, children also begin to develop awareness that knowledge and understanding are constructed and that they have some degree of control over this process. Understanding the constructive nature of knowing may help children develop rudimentary informal theories of their own thinking (Montgomery, 1992), although such theories clearly continue to develop well into adolescence (Chandler, 1988; King & Kitchener, 1994).

One distinct advantage of an informal metacognitive theory compared to a tacit one is that it enables individuals to reflect purposefully and systematically on their performance and, in turn, to use this information to modify or redirect their future performance and thinking (Kuhn, 1992). For example, Moshman (1990) argued that children who apply tacit logical rules experience more difficulty solving complex deductive reasoning problems than individuals who have explicit knowledge (i.e., an informal

theory) concerning the nature and use of such rules. One explanation is that individuals adopting a "theory-driven" approach are better able to think about their performance and understand it as an integrated system of actions.

A second advantage of explicit theories is that individuals can begin to distinguish *formal* from *empirical* aspects, where the formal aspect refers to the structure and contents of the theory, and the empirical aspect refers to data that the theory attempts to explain (Hergenhahn & Olson, 1993). Making this distinction allows beginning informal theorists to evaluate formal aspects of their theory in light of disconfirming empirical evidence. In comparison, tacit theorists may abandon formal aspects of their theory on the basis of irrelevant evidence or ignore relevant, disconfirming evidence because it threatens the integrity of formal aspects of their theory.

A third advantage of explicit theories is that which distinguish the structure of one's metacognitive theory from evidence that supports or refutes it, which is a necessary step in the development of more sophisticated theories. For example, Reich, Oser, and Valentin (1994) have argued that knowledge about the knowing process develops in a predictable sequence in which individuals first become aware of changes in their beliefs, develop reasons for these changes, and finally attempt to explain these changes in terms of a lay theory of metacognition.

Formal Theories of Metacognition

Formal theories are highly systematized accounts of a phenomenon involving explicit theoretical structures. Kuhn (1989) viewed formal theories about one's performance or anything else is rare outside the realm of one's immediate expertise, if they even occur there. Formal theorists are explicitly aware of their purposeful efforts to construct and modify metacognitive theories (Schraw & Moshman, 1995). These theories allow students to make well-informed options about self-regulatory actions. The metacognitive knowledge of the Good Strategy User (Pressley, Borkowski & Schneider, 1987) is not only

integrated and explicit, but in some individuals (e.g., professional educators) may constitute a formalized theoretical structure involving a set of postulates that can be used to test and evaluate one's metacognitive knowledge.

Potential advantage to formal metacognitive theory is that it allows the individual to make informed choices about self-regulatory behaviors. Reich *et al.* (1994) refer to individuals who make such choices as "producers of their own development." Kuhn (1989) has described two skills that may be necessary for the construction of a formal theory. One is the ability to clearly distinguish and coordinate the formal and empirical aspects of a theory. Formal theorists understand that the formal and empirical aspects of a theory are conceptually independent of each other even though each can be used to evaluate the adequacy of the other.

A second skill is the ability to evaluate and interpret the meaning of empirical evidence apart from the formal aspects of one's theory. Kuhn reports strong developmental changes in this regard in which children and some adolescents appear unable to evaluate the adequacy of empirical data. In contrast, professional scientists evaluate evidence with a far greater degree of accuracy. It appears likely that the ability to use evidence to test the formal aspects of a theory is a late developing skill associated with formal theorizing. The relevance of formal theory to this study is that the individual using this framework in learning is that it gives room for individuals to make informed choices about self regulatory behaviors that need to be known, used or remembered.

2.4 *Models of Metacognition*

Attempt to generate a formal model of metacognition was first presented by Flavell (1979). He acknowledged the significance of metacognition in a wide range of applications which included reading, oral skills, writing, language acquisition, memory, attention, social interactions, self-instruction, personality development and education. Flavell mentioned that components of metacognition can be

activated intentionally, as by a memory search aimed at retrieving specific information, or unintentionally, such as by cues in a task situation. 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.

2.4.1 Flavell's Classical Model

This is a cognitive monitoring model proposed by John Flavell (1979). He was influenced by the work of Jean Piaget. According to Flavell (1979), the monitoring of a wide variety of cognitive enterprises occurs through the actions and interactions among four classes of phenomena

a) metacognitive knowledge

b) metacognitive experiences

c) goals (or tasks) and

d) actions (or strategies)

Metacognitive knowledge is that segment of a child's or an adult's stored word knowledge that has to do with people as cognitive creatures and with their diverse cognitive tasks, goals, actions, and experiences. An example would be a child's acquired belief that unlike many or her friends, she is better at arithmetic than at spelling.

Metacognitive experiences are any conscious cognitive or affective experiences that accompany and pertain to any intellectual enterprise. An example would be the sudden feeling that you do not understand something

another person just said. Flavell assumed that metacognitive knowledge and metacognitive experiences differ from other kinds only in their content and functions, not in their form or quality.

Goals (or tasks) refer to the objectives of a cognitive enterprise, while actions (or strategies) refer to the cognitions or other behaviors employed to achieve them. Flavell states that goals (or tasks) refer to the objectives of a cognitive enterprise, while actions (or strategies) refer to the cognitions or other behaviors employed to achieve them. Thus below is the analysis of metacognitive knowledge and metacognitive experience as proposed by Flavell, (1979)

(A) Metacognitive Knowledge

This refers to the segment of acquired world knowledge that has to do with cognitive matters. It is the knowledge or beliefs accumulated through experience and stored in long-term memory that concern the human mind and its doings. Some of this stored knowledge is declarative ('knowing that') and other procedural ('knowing how'). For example, your declarative knowledge is knowing how and when to supplement your poor memory by the use of shopping lists and other external memory aids (Chi, 1984). One's knowledge of any given metacognitive item, could, of course, be both declarative and procedural. For example, one might both know as a verbalizable fact that writing a shopping list is a good memory strategy and also 'know to' write them on appropriate occasions.

As already made clear, metacognitive knowledge consists primarily of knowledge or beliefs about what factors or variables act and interact to affect the course and outcome of cognitive enterprises. These factors or variables fall into three major categories: person, task and strategy.

The Person category

The person category encompasses everything that you might believe about the nature of yourself and other people as cognitive processors. It can be further categorized into beliefs about intra-

individual differences, inter-individual differences, and universals of cognition. An example of the first subcategory would be one's belief that one person remembers more easily than another; of the second, a belief that one can learn most things better by listening than by reading; of the third subcategory the ascertainment that we usually forget many of the things we have learned as time passes.

Task variables

The task category of matacognitive knowledge encompassed all information about a proposed task that is available to a person (Flavell, 1979). Knowledge of task variables include knowledge about nature of task as well as the type of processing demands that it will place upon individual. In other words, the individual learns something about how the nature of the information encountered affects and constrains how one should deal with it. An example would be the knowledge that it is easier to learn the essence or gist of something, such as a story, than it exact wordings.

Strategy variables

The strategy category of metacognitive knowledge involved identifying goals and sub-goals and selection of cognitive processes to use in their achievement (Flavell, 1979). Knowledge about strategy variables include both cognitive and metacognitive strategies, as well as conditional knowledge about when and where it is appropriate to use such strategies. In other words, strategy variables are about what strategies are likely to be effective in achieving what goals in what sorts of cognitive undertakings. A child may come to believe, for example, that one good way to learn and retain information, is to pay particular attention to the main points and try to repeat them to him/herself in his/her own words.

Finally, most metacognitive knowledge actually concerns interactions or combinations among two or three of these three types of variables. To illustrate a combination involving all three, one might believe that a pupil (unlike his/her brother - person variable) should use strategy A (rather than strategy

B, - strategy variable) in task X (as contrasted with task Y – task variable) (Flavell, 1979; 1987). Metacognitive knowledge can have a number of concrete and important effects on the cognitive enterprises students. It can lead somebody to select, evaluate, revise and abandon cognitive tasks, goals, and strategies. Furthermore, it can lead to any of a wide variety of metacognitive experiences and help us interpret the meaning and behavioral implications of these metacognitive experiences.

(B) Metacognitive Experiences

According to Flavell (1979), metacognitive experience implies "affective or cognitive awareness that is relevant to one's thinking. Metacognitive experiences can be fully or less fully conscious and verbalizable, brief or lengthy, simple or complex in context. What makes them metacognitive experiences rather than experiences of another kind is that they have to do with some cognitive (and often affective) endeavour or enterprise, most frequently a current, ongoing one. For example, if one suddenly has the anxious feeling that he does not understand something and wants and needs to understand it, that feeling would be a metacognitive experience.

One is having a metacognitive experience whenever he has the feeling that something is hard to perceive, comprehend, remember or solve; if there is a feeling that he is far from the cognitive goal. Metacognitive experiences are especially likely to occur in situations that stimulate a lot of careful, highly conscious thinking, and provide many opportunities for thoughts and feelings about your own thinking to arise. They may also occur at any time before, during or after a cognitive endeavor; may be more apt to occur when the cognitive situation is something between completely novel and completely familiar; and when attentional and mnemonic resources are not wholly preempted by more urgent subjective experiences, such as pain, anxiety, or depression. Thus, a metacognitive experience can be any kind of *affective or cognitive* conscious experience that is pertinent to conduct in an ongoing cognitive situation or enterprise (Flavell, 1979, 1987).

Metacognitive experiences can have very important effects on cognitive goals or tasks, metacognitive knowledge and cognitive actions or strategies. First, they can lead somebody to establish new goals or revise old ones. Experiences of puzzlement or failure, for example, can have any of these effects. Second, metacognitive experiences can affect one's metacognitive knowledge store by adding to it, deleting from it, or revising it, as in Piaget's model of assimilation and accommodation. Finally, metacognitive experiences can activate strategies aimed at either cognitive or metacognitive goals. As an example of the former, one senses (metacognitive experience) that he does not yet know a certain chapter in a text well enough to pass tomorrow's exam, so he reads it through once more (the cognitive goal here, to improve his/her knowledge). As an example of the latter, one wonders (metacognitive experience) whether he understands the chapter well enough to pass tomorrow's exam, so he tries to find out by asking oneself questions about it and noting how well s/he is able to answer them (the metacognitive goal, here, is to assess one's own knowledge).

Adding to the concept of 'metacognition', Efklides (2002) introduces another aspect of it, one that serves the control of cognition, namely**,** *metacognitive skills*. Since the components of metacognition serve the monitoring rather than the control of cognition (Brown, 1978), one could refer to this new aspect of metacognition, as one that serves the control of cognition. Metacognitive skills refer to conscious control processes such as planning, monitoring of the progress of processing, effort allocation, strategy use and regulation of cognition.

Before ending up with this model it must be noted that metacognitive knowledge, metacognitive experiences and metacognitive skills form partially overlapping sets. Some experiences have such knowledge as their content and some do not. Some knowledge may become conscious and comprise such experiences and some may never do so. Moreover, metacognitive knowledge, metacognitive experience and metacognitive skills complement and enrich each other. For example, not

only does some kind of metacognitive knowledge seem to be needed for one to interpret properly and act upon metacognitive experience, but conversely, metacognitive experience also contributes in adding information about persons, tasks, and strategies to one's developing store of metacognitive knowledge: The ideas and feelings one experiences while watching or playing, say, tennis, might contribute to the knowledge of tennis. To put it simply, it seems likely that metacognitive knowledge, metacognitive experience and metacognitive skills, are constantly informing and eliciting one another during the course of a cognitive task.

Important aspects of this model to this study is that metacognition seem to contain a knowledge component and secondly, a management or control component. The definition has grown and developed over the years and issues such as conscious access to cognition. It is also noted that the lack of knowledge and management or control of metacognitive strategies seems to be characteristic of the novice and students with learning problems. Again, the explanations offered by Flavell in the model above, indicate that the monitoring aspects of cognitive enterprises has to have interaction with four classes among which goals or tasks are included. This shows that the variable of achievement goals in the topic has a theoretical base to be investigated along with that of metacognition.

2.4.2 An Alternative Model of Metacognition by Nelson and Narens

Nelson and Narens (1990) suggest an alternative model of Metacognition and the 'control' - 'monitoring' processes. In this model there are two critical features: The first is the splitting of cognitive processes into two or more specifically interrelated levels. This model shows a simple metacognitive system containing two interrelated levels that Nelson and Narens' (1990) call the "meta-level" and the "object-level." The second critical feature of a metacognitive system is also a kind of dominance relation, defined in terms of the direction of the flow of information. This flow - analogous to a telephone

handset – gives rise to a distinction between what they call "control" (Miller et al., 1960 in Nelson & Narens' 2000) versus "monitoring" (Hart, 1965 in Nelson & Narens' 2000).

The meta-level also contains a model that a person's understanding and task are performing and the ongoing cognitive processes that are engaged while completing the task. In other words, this model is based on the idea that a meta-level contains a model of the object-level, these two abstract features, splitting into two interrelated levels (meta-level versus object-level) and two kinds of dominance relations (control versus monitoring), comprise the core of metacognition as use the term.

Research based on Nelson's theory has been limited primarily to metamemory and the phenomena of Feeling-of-knowing and Judgment-of-learning. Their framework organizes the different judgments of monitoring and measures of control in to three stage of learning: acquisition, retention and retrieval. According to Nelson and Narens model the meta-level monitors the object-level; for example, it makes judgments of how easy an item will be to learn (Ease-of-Learning), whether an item has been learned (Judgment-of- Learning), whether an item not currently recalled is nevertheless known (Feeling-of-Knowing), and how likely it is that a retrieval answer is correct. The meta-level also exerts control over the object-level; for example, it selects strategies and allocates time for learning or for search.

This model has so many implications for the study. It is a model that gives explanations on how metacognition relates to learning situations thereby discussing monitoring and control of cognition separately as part of regulation of cognition. It can be applied by both students and teachers. Students at individual level when taught this approach to learning can easily develop their metacognition and self regulate their learning. Teachers can adopt this technique in learning to teach and in teaching for effective learning. The detail explanation of this model is easy to comprehend. Three stages are at work in which each stage is related to the subsequent one. Ease of Learning and Judgment of Learning direct

one to use metacognitive skills at the point of acquiring knowledge. His selection of appropriate method(s), his beliefs that the item to be studied is simple as well as how his teacher(s) simplify the concepts, formulas, laws, etc. can lead him to judge the item as being easy or difficult to learn. Judgment of Learning is the second aspect of this stage. It informs the learner to terminate his study because it has been learned. Here the learner judges the possibility of remembering recently studied item.

The second stage of this model relates to retention of the learned material. Feeling of Knowing informs the learner the information has been stored and there is every possibility of recognizing un-recallable answers whenever needed. The last stage of this model combines two processes during retrieval of the stored information i.e self directed search and output of a response. The student selects a particular strategy for producing a response during a test and then takes a decision to terminate a search for a response in memory. All these stages described above can be applied in any learning situation.

A major setback to this model is that it is tilted towards importing metamemory into the study of metacognition- though they are related. It is too subjective to be relied upon as a measure of metacognition because in some cases learners who are very unserious may judge themselves to have passed a stage whereas they need more time to simplify the item before they reach a stage of Feeling of knowing or even judgment of learning.

2.4.3 A Multi-faceted Model of Metacogintion by Efklides

Efklides (2008) had presented multi-faceted and multilevel model of metacognition. According to her model of metacognition, there are three distinct facets of metacognition, namely, Metacognitive Knowledge (MK), Metacognitive Experiences (ME), and Metacognitive Skills (MS). According to this

model, metacognitive monitoring and metacognitive control function at a conscious and non-conscious level and are essential constituents of the self-regulation process.

Metacognitive Knowledge

Metacognitive Knowledge (MK) is a declarative knowledge stored in memory and comprises models of cognitive processes, such as language, memory, and so forth. It also encompasses information regarding person, as well as information about tasks, strategies and goals. More specifically, metacognitive knowledge regarding person involves the self and the others as cognitive beings, that is, how we or other people process various tasks and how good are on them, what was felt during a specific task processing. Metacognitive task knowledge involves task categories and their features, relations between tasks, as well as the ways they are processed. Metacognitive strategy knowledge involves knowledge of multiple strategies as well as the conditions for their use. Finally, metacognitive goal knowledge involves knowledge of what sort of goals people pursue when confronted with specific tasks or situations. Metacognitive knowledge gets continuously enriched, updated and differentiated by integrating information coming from the monitoring of cognition at a conscious level through observation of one's and others' behavioural actions and their outcomes when dealing with specific tasks in various contexts, through awareness of our metacognitive experiences as well as through communication and interaction with others.

Metacognitive Experiences

Metacognitive experiences (ME) are what the person is aware of and what she or he feels when coming across a task and processing the information related to it. They are the interface between the

person and the task, the awareness the person has of task features, of the fluency of cognitive processing, of the progress toward the goal set, of the effort exerted on cognitive processing, and of the outcome of processing. They take the form of metacognitive feelings, metacognitive judgments/estimates, and online task-specific knowledge. Feeling of knowing, feeling of familiarity, and feeling of confidence are some indicative metacognitive feelings extensively studied in metamemory research. Also, there are feelings studied in the context of problem solving, such as feeling of difficulty, that are crucial for the self-regulation of effort.

Metacognitive judgments/estimates include judgment of learning, estimate of effort expenditure, estimate of time needed or spent, but also estimate of solution correctness, and so forth, that make clusters with feelings of difficulty and confidence. The online task-specific knowledge comprises task information that we are attending to, and ideas or thoughts that we are aware of as we deal with a task (e.g., cognitive procedures we are applying). It also comprises MK that we retrieve from memory in order to process the task; for example, MK about tasks and procedures that we used in the past, comparison of the current with other tasks about their similarities or differences, and so forth.

Metacognitive Skills

Metacognitive skills (MS) refer to the deliberate use of strategies (i.e., procedural knowledge) in order to control cognition. Brown (1987) identified the control of cognition with executive control. Executive control involves selective attention and working memory, as well as planning, conflict resolution, error detection, and inhibitory control and, therefore, is related to metacognitive regulation; that is, to both monitoring and control. However, MS have characteristics that are distinct from MK and ME, which are products of different processes in the monitoring of cognition, as already discussed.

Metacognitive skills comprise orientation strategies, planning strategies, strategies for regulation of cognitive processing, strategies for monitoring the execution of planned action, and

strategies for the evaluation of the outcome of task processing. Such a conceptualization of MS implies that they are operating on cognition through the cognitive regulatory loop, and that they can call in cognitive strategies - such as rehearsal, elaboration, and so forth – to regulate cognition, as well as strategies to analyze task requirements and evaluate the response. In this direction, MS make use of online task-specific knowledge, as well as of MK. Moreover, for MS to be activated there needs to be awareness of the fluency of cognitive processing and awareness that a conflict or error has occurred. The latter information is conveyed by ME, such as feelings of familiarity, of difficulty, or of confidence. Thus, ME provide the input that triggers control decisions (e.g., regulation of effort) or MS, either directly or indirectly through MK. In conclusion, there is evidence as well as theoretical reasons to support the claim that metacognition is a multifaceted phenomenon and that ME, MK, and MS are three distinct facets of metacognition, despite their close interrelations.

These facets serve different functions in the self-regulation process, with ME and MK involved in the monitoring function that informs self-awareness as well as awareness of cognition, and MS involved in strategy use for the control of cognition. Also, MK (being declarative knowledge of self and others) along with metacognitive judgments about other persons' current cognitive processing, are instrumental for the co regulation and other regulation of cognition and behavior. Finally, MS can also contribute to the co-regulation and other regulation of cognition, possibly through the control of one's own cognition following feedback from the other persons or through the guidance given to the other person (Brown, 1987).

2.4.4 A Multifaceted and Multilevel Model of Metacognition

This model of metacognition is a tentative model which posits that the object level comprises processes involved in cognition as well as in emotions/affect. It functions at a non-conscious level and involves two separate regulatory systems based on non-conscious monitoring and control processes.

Products of each of the two regulatory systems, as well as of their interactions, along with perceptions of their behavioral outcomes, are represented at the personal awareness level. Emotions, thoughts, ideas, desires, perceptions, and so forth - as well as ME, MK, and MS - are the components of self-awareness at this level. Also, at this level, integration of the person's explicit representation of the situation and of its demands with the action/behavior ensued is accomplished.

What is important to note here is that at the personal-awareness level, metacognition is not cold (i.e., purely cognitive) as the nature of MK would suggest; it is hot, because affect is integrated with the monitoring of cognition in the case of metacognitive feelings. Moreover, having represented at the same forum - that is, in conscious awareness - cognition, affect, and metacognition, the self- regulation process is facilitated because the person is informed of what is subjectively significant and of the progress toward one's goal. In the case of control being needed, then ME and MK can activate MS, and through them the cognitive regulatory loop. However, metacognitive feelings can also activate the affective regulatory loop, directly through their affective quality, or indirectly through MK and MS; in the latter case, there is cognitive control of emotion.

At the same time, the personal-awareness level informs the meta- meta level that represents the social level of metacognition. This level comprises only metacognitive judgments about the one's and others' ME, MK, and MS; it is informed by self-awareness at the personal level, as well as by information received from the ongoing interaction with others. Monitoring at this level is explicit and can take the form of reflection. It leads to a socially shared and negotiated representation of the person-in context. Control at this level is exercised in a conscious analytic mode and its access to one's own and others' cognition and affect at the object level is through the personal- awareness level of the interacting persons (Efklides, 2008).

2.5 Theories of Academic Success

Achievement or success is task-oriented behavior. Academic success of individuals is often compared against standards or with others for assessments. The differing perspectives of scholars result in various definitions of academic success which reflect an educational expectation. Educational expectations of every individual or society may vary in philosophical terms but success in such objectives is largely determined by how individuals or societies achieve. Many psychologists have explained in their theories the 'why' and 'how' individuals or societies differ in achievement motivation.

Cliff (2003) figures out that a lot of careful researches have attempted to find out the factors that predict the academic success of student, especially the undergraduate student, and the way these factors are diversified due to the fact that students' populations, academic and other needs are differentiating. Specifically, numerous of research studies focus on measuring the student intellectual and non-intellectual factors that can be considered as useful predictors of student academic success in general.

Many scholars from a lot of universities have tried as much as possible to classify the determinants of academic success for years. Kuh (2007), for example, did the same thing when he pointed out that there should be five factors that influence the academic success of the students (Kuh, 2007). The first factor is the background characteristics of students, such as his or her demographic and other pre-college experiences. The second factor is the structural features of the institution, such as its dimensions, missions and admission standard. The third factor relates to the interactions between student and faculty, student and university staff, and student and peers.

The fourth factor is the student's awareness of learning environment. Last but not least, the achievement behaviors of students during their study period at college are one of the most important factors which put a big effect on academic success. The five determinants of academic success which Kuh suggests are very similar to the factors are discussed in the model of activity behavior of Eccles

(Eccles & Harold, 1991). Kuh and his assistants classified socializers, pre-college experiences, background characteristics and awareness as important factors of academic success. In that case, the model of Eccles is similar because it identified the same determinants of achievement context choices.

Cotton and Wilson (2006) had the same idea with Kuh because they also figured out that the efforts which the student put on themselves in the academically educational situations have a certain association with student success. Researchers have also discovered that the self-efficacy and the substantial quality of teaching – learning system in higher education are absolutely linked to academic achievement (Pintrich & De Groot, 1990). Moreover, psychologists also noticed that there are still many other factors influencing the success and diligence of students during their college years.

There are quite a number of empirical and theoretical researches that illustrate how academic success is influenced by so many factors. For example, gender, ethnicity, parent's education, intelligence, etc., were reported to have impact on student's academic success. The foundation of most of these findings is a theory. Here, McClelland Achievement motivation, Atkinson's Achievement motivation as well as Ludwig Von Bertalanffy (1956) theories will be reviewed.

2.5.1 McClelland Achievement Motivation Theory

David McClelland in his acquired-needs theory proposed that an individual's specific needs are acquired over time and are shaped by one's life experiences. Most of these needs can be classed as achievement, affiliation, or power. A person's motivation or effectiveness in certain job functions are influenced by these three needs. What concerns this review is his contribution to the understanding of achievement in individuals and societies.

Chapman (2009), argued that McClelland' observations of how some people have an intense desire to achieve while others are not so keen about achievement led to his study of the phenomenon. He used twenty years while at Harvard University and proposed his Achievement Motivation Theory. Studies showed that people with a high need for achievement seek to excel and thus tend to avoid both low-risk and high-risk situations. Achievers avoid low-risk situations because the easily attained success is not a genuine achievement. In high risk- projects, achievers see the outcome as one of chance rather than one's own effort. High needs for achievement individuals prefer work that has a moderate probability of success, ideally a 50% chance. Achievers need regular feedback in order to monitor the progress of their achievement. They prefer either to work alone or with other high achievers.

McClelland firmly believed that achievement motivated people are generally the ones who make things happen and get results. To them achievement is more important than material or financial reward the will get in school, workplace, etc. achieving the aim or task gives greater personal satisfaction than receiving praise or recognition and financial reward is regarded as a measurement of success, not an end in itself. The person desires to succeed in competitive situations and also desires to prove his superiority over others. Such person sets reasonably difficult but potentially achievable goals for himself, such person has high level of energy and capacity to work hard. He naturally prefers tasks which tax his abilities and skills fully. According to McClelland, the need for achievement is most important which can be used effectively for the economic progress of a nation.

In schools students with achievement needs tend to be motivated by difficult, challenging and competitive activities. They habitually spend their time thinking about doing things better. They are not motivated by any external incentive but in their future achievement. Such students are better achievers and naturally excel in their academics. McClelland's theory is important as he argues that the achievement motive can be taught. It can be achieved by learning. A teacher can raise achievement need

level of his students by creating a healthy classroom atmosphere, provision of reasonable freedom to students, provision of more responsibilities and making tasks more interesting and challenging. Even reward and appreciation of high performance of students is useful for raising their achievement need level. This is how motivation of employees is possible by developing the desire for higher achievement in their mind; such achievement motivation is necessary and useful for the success of an educational system. High achievers should be identified by the teacher and be given challenging projects with reachable goals. They should be provided frequent feedback

Mukherjee (2002) explained the method David McClelland and his co-workers developed in measuring achievement motivation of individuals. They adopted four pictures from the Thematic Apperception Test and the subjects to write stories in response to the four questions presented. (1) what is happening? Who are the persons (2) What has led to this situation? That, what has happened in the past? (3) What is being thought of? What is wanted? By whom? And (4) what will happen? Or what will be done? However, the scoring is to be done by a team of experts who look at the responses against achievement thema, deprivation thema, positive or negative goal, positive or negative outcome, nurture or hostile press, etc. the child's overall achievement depends on the above criteria judged by experts.

A major setback of this method is that it is very subjective in nature. Some scorers will find it difficult to avoid giving higher marks for irrelevant ideas that concurred with their opinions. Also, some points which expressed potentialities of achievement motivation may not be interpreted or even scored appropriately.

2.5.2 Atkinson's Achievement Motivation Theory

The idea of Atkinson was based on an approach-avoidance conflict situation with hope for success and fear of failure being the main considerations determining achievement motivation (Atkison, 1964; Weiner & Kukla, 1970; Covington & Omelich, 1979; Balarabe, 1989). Thus Atkinson (1964) states,

"the theory of motivation attempts to account for the determinants of the direction, magnitude and persistence of behavior, in limited but very important domain of human activities". Three determinants each were proposed for approach and avoidance behaviors with the three determinants of approach being the motive to succeed (MS), -the probability of success (PS), and the incentive value for success (IS). Likewise for avoidance behavior the three determinants are the motive to avoid failure, the probability of failing, and the incentive for failing.

Atkinson's achievement is a function of the likelihood of success, the motive to succeed, and the self-reward of pride or shame associated with success in the task. The emphasis is on individual's emotional anticipations as sources of motivation. Atkinson also explained that the relationships between the probability of succeeding or failing in the task and the self-reward of pride for success, or shame for failure are inverse. Hence the academic achievement setting, optimal levels of motivation are aroused when the task is of medium difficulty, thus promising a 50-50 chance of success or failure.

2.5.3 System's Theory (Input-Output Model)

Ludwig Von Bertalanffy (1956) developed the System's theory which is termed as input-output model. The theory, according to Koontz and Welhrich (1988) in Martha (2009) postulates that an organized enterprise does not exist in a vacuum; it is dependent on its environment in which it is established. They add that the inputs from the environment are received by the organization, which then transforms them into outputs. As adapted in this study, the students (inputs) are admitted into the college, with different goal orientation, having different level of metacognition, from different social backgrounds and are from various school backgrounds, when they get into tertiary institution system, the management of the institution transforms them through the process of teaching and learning and the students output is seen through their academic performance.

Robbins (1980) argued that organizations were increasingly described as absorbers, processors and generators and that the organizational system could be envisioned as made up of several interdependent factors. System advocates, according to Robbins (1980) have recognized that a change in any factor within the organization has an impact on all other organizational or subsystem components. Thus the outputs, the processors and the generators should function well in order to achieve the desired outcome. Seleemi (1990) concurred with Robbins that all systems must work in harmony in order to achieve the overall goals. According to the input-output model, it is assumed that the students with high admission points high social economic background and good school background will perform well if the institution facilities are good, the lecturers and the management of the institution is good which may not always be the case and this is the shortcoming of this theory. But Oso and Omen (2005) emphasized that the interrelationship among parts of a system have to be understood by all parties involved. The theory requires a shared vision so that all people in a tertiary institution will have an idea of what they are trying to achieve from all parties involved, a task that is not easy to achieve.

Important of this theory to the present study can be seen in the way students entered college with different motives and goals. After acquainting themselves with the environment, receive training and also interact with colleagues, it is assumed that some students have their achievement goals, formulated, adjusted or even modified which is hoped to tally with the output i.e., academic success. More so, it is assumed that students' metacognitive theories might be altered from tacit to formal theories as a result of multi-dimensional approaches to teaching adopted by their teachers. Going by the theory above, one will expect a correspondence between the input (achievement goals and metacognition) and the output (academic success).

2.6 Review of Empirical Studies

This section reviewed empirical findings reported by different researchers which are relevant to the topic at hand. Thus, the review centers on highlighting the findings of either weak or strong correlation among the following. Achievement goals versus academic achievement; metacognition versus academic achievement; achievement goals and metacognition; and also the relation of relevant demographic variables captured by the hypotheses with the main variables of the study.

2.6.1 Achievement Goals and Academic Success

Roebken (2007) has investigated the relationship of multiple goals and satisfaction on academic achievement of undergraduate students. Using data on 2309 college students from the University of California Undergraduate Experience Survey (UCUES), he analyzed the relationship between different types of goal orientations and student behavior and academic outcomes. The results revealed that students pursuing both mastery and performance goals are more satisfied with their academic experience, have a higher degree of academic engagement, and achieve better grades than students who pursue a mastery orientation alone or a work-avoidance / performance orientation.

He employed cluster analysis in grouping students of similar goal orientation into one cluster. Three clusters were formed, namely, mastery, performance, or work-avoidance orientation. The results of the cluster analysis indicate that three orientations can be complementary and that it is possible for students to pursue several goals simultaneously. Data showed that more than half of the participants were female (57.5%), and 41% were male.

Groups differed significantly in their satisfaction with their educational experience. The post-hoc contrast revealed that students from the work-avoidance/performance group (M=4.02) were significantly less satisfied with their educational experience than students from the mastery and the performance/mastery groups. Students with performance/mastery orientation (M=4.43) did not differ significantly in terms of educational satisfaction from students pursuing only a

mastery goal (M=4.33). Significant group differences were also observed with regard to the overall undergraduate experience. Students with a work-avoidance/performance orientation are significantly less satisfied (M=4.27) with their overall undergraduate experience than students form the mastery (M=4.45) and the performance/mastery group (M=4.53). Between the MG and the MPG group no significant differences were observed.

In academic achievement, the differences across all three groups were significant. Post hoc contrasts indicated that students from the performance/mastery group had significantly higher GPA scores (M=3.41) than students who pursued only a mastery orientation (M=3.3). Students from the avoidance/performance group obtained significantly lower scores than the other two groups (M=3.18). In the variable integrative learning, there were significant group differences, as well. Students from the work-avoidance/performance group engage significantly less in integrative learning (M=3.34) than students from the mastery (M=3.65) and the performance/mastery (M=3.71) groups. No statistically significant differences were observed between the latter two groups.

With regard to deep learning, the groups differed significantly. In this case, post hoc contrasts showed that students from the work-avoidance/performance group (M=3.67) obtained significantly lower scores than students from the performance/mastery group (M=3.85). The differences between the mastery (M=3.77) and the performance/mastery group were not statistically significant.

The study also revealed significant differences with regard to the effort students spent on academic activities. Students from the performance/mastery group (M=3.68) spent significantly more time on studying than did students from the mastery (M=3.48) and the work-avoidance/performance group (M=3.37). On the other hand, no significant differences were obtained between the mastery and the work-avoidance/performance groups. With regard to

teamwork, all groups differed significantly from each other. Post hoc contrasts indicated that students with a performance/mastery orientation engage more often in teamwork (M=3.81) than students from the work-avoidance/performance group (3.63). Students who pursue a mastery goal orientation scored significantly lower than the other two groups (M=3.44). Based on the results above, the researcher opined that this method could be applied during screening of student applicants either to be used for recruitment, employment or admission into a advanced or special programs.

In an analytical survey involving 179 undergraduate (87 females and 92 males) Ndidiamaka (2010) examined the correlates of academic success among students of Alvan Ikoku Federal College of Education, Owerri. Achievement goals variable was among the variables tested against students' academic success. Two hypotheses guided his study while the instrument for data collection used were the Achievement Goals Inventory and the index of academic success i.e., CGPA. Findings showed that mastery orientation of achievement goals correlate with student's academic success i.e., CGPA (r=73) while performance goals were unrelated to CGPA (r=.10). Based on the above, he recommended that teachers should be adopting teaching techniques which will present information to students in a way that encourages the use of mastery goals.

Moreover, Coutinho (2007) investigated the relationship between goals and academic success of college students involving 179 undergraduates (87 female, 92 male) in Midwestern University. Although his findings was based on the hypothesis that the relationship between goals and academic success was fully mediated by metacognition but the results have revealed that mastery goals modestly correlated to academic success (r = .29, p = 0.1) whereas performance goals were unrelated to academic success of students (r = .10, p = .19). He

suggested based on the results the need for support training programs instructing students learn how to master information instead simply seeking to perform well.

2.6.2 Metacognition and Academic Success

Research by Zulkiply (1999) has revealed that there is a significant relationship between metacognitive awareness and students' academic performance of level 2 and level 5 of faculty of sciences and human development, University of Malaysia. The sample for his study was 73 students, 35 males and 38 females. An established instrument by Shraw and Anderson's Metacogitive Awareness Inventory was used. The correlation survey revealed also relationship among the five components of metacogntive regulation. Findings of his work shows that students academic performance correlated with MAI score (r=0.77, p<.05). This result convinced Zulkiply (1999) to assert that students who do well examination are better on metacognition measures which should be promoted at all levels of learning.

Ebra, Beharooz and Mahmood (2014) have conducted a study on the relationship between metacognitive skills and academic achievement among students of Islamic Azad University, Iran. They worked with four hypotheses out of which one directly concerns this review. In attempt to test the hypothesis which says no relation between metacognitive skills and academic achievement, a sample of 375 students were drawn out of a population of 14,354 students using proportional stratified random sampling. In a correlation survey, they employed a metacognitive questionnaire similar to MAI for data collection while average of students' score was used as index of academic success.

The result of their analysis using Pearson Product Moment Correlation, findings indicate a direct and significant relationship between the two variables (metacognition and academic success) at % 1 error level and % 99 confidence (sig. =0.002, p =0.146). Part of their recommendation for the study includes a call to Universities, Colleges and related organizations to develop special programs capable of boosting students' metacognitive skills.

Furthermore, Onovughe and Hannah (2011) of University of Ado-Ekiti have assessed students' awareness and application of metacognitive strategies in comprehending academic material. The study was conducted in attempt to tackle the challenges posed second language during learning. So use of metacognitive strategies in reading was perceived as a tool to create awareness and instruction. 120 Secondary school students participated in their study. They adopted a survey design were participants filled a 15-items questionnaire titled 'Students Awareness and Application of some Reading and Comprehension. After data analysis, findings revealed that secondary school students were aware of metacognitive strategies in reading and comprehension exercises (where 76% were aware of skimming, 94.2 were aware of scanning, etc) and also apply these strategies in comprehending academic material. Results of Pearson Product Moment Correlation statistic showed a significant relationship between students' awareness and application of metacognitive strategies (r-cal. =0.28 while r-crit. = 0.195 at 0.05 level of significance. Thus, their null hypothesis was rejected.

In another study, Chiejina and Ebenebe (2013) have compared the metacognitive strategies adopted by nursing students in two Nigerian Universities. The study was a survey involving 240 undergraduate nursing students. Participants were drawn from level 3, 4 and 5. They constructed and used metacognition strategies in nursing as an instrument using Flavell's model. Information was elicited in relation to students applying metacognition in both classroom setting and in their clinical practice. Apart from the descriptive statistics, Spearman Rank Order Correlation Co-efficient were used to answer questions and to also test the hypotheses at 0.01 level of significance. Results of their investigation revealed a significant correlation between students' metacognitive self-regulation and the strategies they adopt in their classroom learning (rho = 0.354), as well as the students' self-reinforcement of their goal-oriented behavior (rho = 0.502). The result of Wilcoxin Rank Test comparison of metacognitive self-regulated behavior of nursing in government-owned and private universities also revealed a significant relationship where the z-cal. shows 0.836 while z-crit. is 0.403. Based on these results they believed that

when teachers assist students become aware of their metacognition and when and how to apply the strategies, self-regulated learning as well as academic success will guaranteed.

Rahman, Jumani, Chaudry, Chisti and Abbasi (2010) have assessed the correlation between students' metacognitive awareness and academic success in learning chemistry. 900 students participated in the study, out of which 525 were male and 375 were female students. Metacognitive awareness was measured using inventory, while academic success in chemistry was measured with researcher made test in the subject of chemistry. Two statistical tools were used i.e, Pearson Correlation and ANOVA statistical tools. Findings indicate a positive relationship (r = 0.45) between Metacognitive Awareness Inventory (MAI) and test score of students at 0.01 level of significance. F-table also reveals a significant effect (f, 5.8, p,00) of metacognition on students' test scores in chemistry which led to the conclusion that highly metacognitively aware students were more likely to perform better on the test.

Paris and Paris (2001) observed that regulation of one's own learning through the use of metacognitive strategies is widely to be the most elaborated form of learning and is often assumed to be one of the strongest predictors of optimal learning (Wang, Haetel & Walberg 1990 in Nett, Goetz, Hall & Frenzel 2012). In educational research it is typically hypothesized that students' self-regulatory efforts toward their learning goals should have a direct impact on subsequent achievement, and further, mediate linkages between dispositional factors such as cognitive abilities or contextual characteristics such as the classroom environment and achievement (Boekaerts & Corno, 2005). In contrast to theoretical assumptions, empirical findings concerning the relationship between the use of metacognitive strategies and academic success are inconsistent.

Correlational studies conducted (by Pintrich, Smith, Garcia & McKeachie 1993; Zimmerman & Martinez-Pons, 1986; Zimmerman & Martinez-pons 1988) show the use of metacognitive strategies positively correspond with academic success. Meta-analytic reviews of intervention studies also suggest

that the promotion of self-related learning strategies typically has a positive impact on learning behavior and academic success, particularly when metacognitive awareness is encouraged (Dignath, Buettner & Langfeldt, 2008).

Conversely, other correlation studies revealed notably weak or no significant relationships between the use of metacognitive strategies and students' achievement or the relation between metacognition and performance to be entirely mediated by other factors (e.g., self-efficacy). Veenman (2005) assessed the influence of metacognitive skills on academic success in a review of 21 questionnaire studies where more than 7000 students participated in the study. Findings indicate that on the average, no more than 3% of the variance in students' achievement was explained by the use of metacogoitive strategies.

Wilson and Clark (2002) posited that previous researches have revealed close relationships between metacognition and students' academic success. They further hypothesized that maximum utilization of metacognitive behavior can be harnessed in three ways; 1) one's ability to properly use relevant metacognitive function, 2) the optimal frequency of metacognitive actions relevant to cognitive actions, and 3) the best sequencing of metacognitive actions and functions.

For example, Maqsud (1997) investigated the effects of metacognitive skills and nonverbal ability on academic success of high school students. The result revealed that metacognitive ability positively associated with academic achievement of school pupils. In the same year Tobias and Laitusis (1997) examined the correlation among measures of metacognitive knowledge , learning and study strategies, and academic success in domains of verbal ability and mathematics. Using parallel measures of knowledge monitoring in both verbal and mathematics, the result showed that metacognitive knowledge may be generalized across both verbal and mathematics domains. High correlation was also found between the two knowledge-monitoring measures and students' confidence estimates.

Aslan, Atasoy and Ulutas (2012) examined the role of metacognitive awareness in academic performance. Their literature suggests that metacognition is important to improve the science learning in classrooms and also that students with higher metacognitive awareness are more strategic and successful in cognitive enterprise. Two hypotheses were formulated and tested. In all, the sample made up of 300 hundred prospective teachers enrolled in the department of biology, chemistry and physical education in a state university in Turkey.

Nett, Goetz, Hall and Frenzel (2012) have examined the influence of metacognitive strategies on students' test performance. A sample of 70 students from 22 classes of grade 11 participated in the study. They completed a series of structured, state-based measures over a two-week period via the metacognitive instrument tagged as "Experience Sampling Method". It is naturalistic assessment method where participants complete a short questionnaire concerning their learning behavior at randomly selected times over a period of days via a personal digital assistant (PDA) with PMat software. Result illustrated student's metacognitive ability to preserve their motivational and cognitive resources, with test related cognition evidenced significantly more often in learning related as opposed leisure settings. The first test in mathematics (M =2.94, SD =1.27) and the second test (M = 2.87, SD = 1.26) were significantly correlated at r = .54 (p<.01). Thus, out of 382 samples, the experience sampling group (treatment group) have a mean as (M1= 2.94, SD = 1.27; M2 = 2.87, SD2 = 1.26) and the control group (M1 = 2.82, SD1 = 1.33; M2 = 2.71, SD2 = 1.17) was observed with p values being above 0.14.

2.6.3 Achievement Goals and Metacognition

Ndidiamaka (2010) has found an existence of a relationship among the index of achievement goals and metacognition of Alvan Ikoku Federal college of education. In a survey, involving 179 participants a modest correlation was found between performance goals of achievement goals and metacognition where the r-value is 0.26 at 0.05 significance level. But in the case of mastery goals of the students investigated, a high correlation was observed between metacognition and mastery goal orientation (r=0.73). This result concurred which what is in the literature that students with mastery goals are likely to have metacognitive awareness, and thereby, be better learners than students with performance orientation.

Dina and Efklides (2009) have investigated the effect of students' profiles of achievement goals and other person characteristics such as metacognitive experiences, emotion on mathematical problem solving in Greece. They used 870 students of seventh and ninth grades of both gender. Participants completed a series of self-report questionnaires. MANOVA was used as statistical tool and the outcome of the test revealed significant effects of profile and treatment on task performance, on metacognitive experiences and emotions, as well as a significant interaction of profile with treatment in the case effort ratings.

Regarding metacognitive experiences the results showed that treatment effects were found for all metacognitive experiences, except for activity-related emotions, namely liking and interest. On the other hand, they found that metacognitive experiences which monitor cognitive processing and its outcome are influenced by external feedback on success or failure. Outcome-related metacognitive experiences were reported to be higher in profile with high task performance – which is very clear. Impliedly, this result indicates students' ability to monitor their performance and can easily realize how correct the solution was, and this was reflected in their feeling of confidence and other outcome-related metacognitive experiences.

Furthermore, the findings of Coutinho (2007) have revealed strong relationship between mastery goals and metacognition (r = .73, p = .01) compared to performance goals (r = .26, p = .01) indicating that students with students with good metacognition have strong mastery goals whereas students with performance goals may or may not have good metacognition. Based on these results, he suggested teaching students ways of adopting effective metacognitive skills and strategies in order to generate academic success rewards.

2.6.4 Gender and Achievement Goals

Tahir, Ghayas and Adil (2012) study was aimed at investigating the achievement goals and sociability as predictors of academic achievement. Gender differences in academic achievement, achievement goals, and sociability were also explored in the study. Their participants drawn through stratified random sampling consisted of 300 undergraduates from different departments of University of Sargodha including boys (152) and girls (148). Achievement Goals Questionnaire and Sociability Subscale of California Psychological Inventory were used to measure achievement goals and sociability level respectively. Regression analysis showed that only performance-approach goals significantly predicted academic achievement. Independent sample t-test demonstrated that girls are significantly high on academic achievement and performance-approach goals whereas boys were significantly more sociable.

2.6.5 Gender and Metacognition

Developmental psychologists have great interest in investigating individual differences in metacognition among students (Baker, 2009). One cannot simply assert that an individual has or does not have metacognition. Metacognition is not a unitary construct, either across domains or within

domains, nor is the deployment of a metacognitive strategy all or none. Individual differences in metacognition involve comparisons of better or poorer students across all levels of education. Like developmental differences, countless studies have investigated students differences in relation to gender.

Previous researches have shown inconsistent results regarding gender differences on metacognitive skills. For example, Niemivirta (1997) reported that male students use more superficial learning strategies than females and Bidjerano (2005) indicated that girls use much more often than boys self-monitoring, goal setting and planning. In the same vein, researchers (such as Zimermann & Martinez-Pons 1990; Zhu, 2007) have reported that there are no significant difference between boys and girls regarding mathematics and self-efficacy.

Thus, Liliana and Lavinia (2011) investigated gender differences in metacognitive skills among Romanian students. 90 students were used as participants where males and females in the study represented 61.1 % and 38.9% respectively. Metacognitive awareness inventory was used to assess students' metacognition. Data analysis revealed that there are some gender differences in metacognition. The most differences seem to firstly emerge on knowledge of cognition ($F = 7.91$, $p<0.01$) rather than on regulation of cognition ($F= 4.23$, $p<0.05$). However some elements of both knowledge and regulation of cognition are differently related to learning according to students' gender. The result also revealed that male and female students use differently their metacognitive knowledge and skills in the process.

In Nigeria, Chukwudi (2012) has examined the effects of metacognitive classroom environment on students' academic success and self-regulation learning skills. Six hypotheses guided his study. 361 students participated in the study. Data analysis was done using co-variance and t-test at 0.05 level of significance. Findings indicate that metacognitive classroom environment significantly affects students' academic success and self-regulation learning skills. Gender was reported to be a significant factor in

academic achievement of students taught in a metacognitive classroom environment as male participants manifested better academic success. On the other hand, he reported absence of any gender influence on students' self regulation learning skills.

This report concurred with the findings of Rani and Goril (2013) who examined metacogition and its correlates in India. They used a 30 item metacognitive inventory (MCI) developed by them. The value of reliability coefficient was found to be 0.82 for the inventory. Their study was conducted on the participants of 313 undergraduate students. Apart from gender, other demographic information (such as place of living, academic achievements, parents' education, separately for father and mother) were measured against students' metacognition. Report of the analysis, using t-test and ANOVA revealed no significant gender difference of male and female undergraduate students. Although the mean performance of female (mean= 93.04) is higher than the mean score (91.98) of their male counterpart on the variable of metecognition and it is very clear by the t- value (1.06) that the difference between them was not significant.

2.6.6 Gender and Academic Success

Blume (2011) affirmed that most studies show that, on average, girls do better in school than boys. Girls get higher grades and complete high school at a higher rate compared to boys (Jacobs, 2002). Standardized achievement tests also show that females are better at spelling and perform better on tests of literacy, writing, and general knowledge (National Center for Education Statistics, 2003). An international aptitude test administered to fourth graders in 35 countries, for example, showed that females outscored males on reading literacy in every country. Although there were no differences between boys and girls in fourth grade on mathematics, boys began to perform better than girls on science tests in fourth grade (International Association for the Evaluation of Education Achievement). Girls continue to exhibit higher verbal ability throughout high school, but they begin to lose ground to

boys after fourth grade on tests of both mathematical and science ability. These gender differences in math and science achievement have implications for girls' future careers and have been a source of concern for educators everywhere.

During the past decade, there has been a concerted effort to find out why there is a shortage of women in the science, math, engineering, and technical fields (AAUW, 1992). In 1995, 22% of America's scientists and engineers were women, compared to half of the social scientists. Women who do pursue careers in science, engineering, and mathematics most often choose fields in the biological sciences, where they represent 40% of the workforce, with smaller percentages found in mathematics or computer science (33%), the physical sciences (22%), and engineering (9%).

Part of the explanation can be traced to gender differences in the cognitive abilities of middle-school students. In late elementary school, females outperform males on several verbal skills tasks: verbal reasoning, verbal fluency, comprehension, and understanding logical relations (Hedges & Nowell, 1995). Males, on the other hand, outperform females on spatial skills tasks such as mental rotation, spatial perception, and spatial visualization (Voyer, Voyer, & Bryden, 1995). Males also perform better on mathematical achievement tests than females. However, gender differences do not apply to all aspects of mathematical skill. Males and females do equally well in basic math knowledge, and girls actually have better computational skills. Performance in mathematical reasoning and geometry shows the greatest difference (Fennema, Sowder, & Carpenter, 1999). Males also display greater confidence in their math skills, which is a strong predictor of math performance (Casey, Nuttall, & Pezaris, 2001).

2.6.7 Internet Access and Metacognition

Self-regulation as a term used to mean metacognitive activity of an individual has received scholastic attention in education and psychology. Many psychological constructs have been examined to see whether there is any significant metacognitive effect. For example, Rouis, Limayem and Sangari (2011) reported that students who are self-regulated control the distracting activities while surfing the net more effectively than those who are yet to develop their metacognition. They argued that students with high self-regulation likely allocate less time to social networks and maintain more organized attitudes toward such platform. *Their reflections on interactions on Facebook generated by the online communities are more effective. That the self-regulated students think in terms of the 'utility' of the interaction they might have, rather than using an affective basis.*

2.6.8 Internet Access and Academic Success

Recent researches have argued that technologies such as the internet have strong effect on students' academic success. These affects could either be positive or negative. A lot of reasons (scientific or otherwise) might lead technology to assist or impair students' academic success. Students may employ the internet in educational matters such as writing papers, searches for answers to classroom assignments' questions and communicating with classmates on homework, projects, etc. Apart from the purpose of using the internet by students, the time spent might also facilitate or inhibit learning and may consequently influence academic success of students positively or negatively.

Wesley and Michael (2011) have investigated High school students' performance and the internet use where they classified users into groups (i.e., intense, moderate and light users). Their main objective was to determine if any level of internet use raises or lowers grades. 12, 184 enrolled high school students were used as participants to their investigation. Students provided estimates of their internet use and then logged their actual daily use for a period of one week. Comparisons between estimates internet use and actual use showed reliability of the self-reported estimates.

Results revealed that intense Internet use was significant and lowers the probability of earning an 'A' or 'B' versus lower grades; light Internet use also lowers the probability while moderate use elevates the probability of an 'A' / 'B'. Intense Internet use is 0.047 and moderate Internet use is 0.491 while light use is lower with a mean of 0.350--all indicating abundant exposure to the Internet. The Log Pseudolikelihood is -6707.84. Intense Internet use reduces the probability of achieving an 'A'/ 'B' by 0.03--for students that were intense Internet users, the probability of having an 'A'/ 'B' average is undercut by approximately 5 percent compared to students who did not use the Internet at all in the past 30 days. So, a student who reports moderate usage, the probability of having an 'A'/ 'B' increases by 0.08 compared to no use--moderate users have a roughly 12 percent increased probability of earning this average compared to no use.

The negative effects associated with intense Internet utilization may indicate that this level of usage actually impairs the learning process (perhaps by lowering attention span) which, in turn, reduces the capability of the student to earn top grades. Also, students using the Internet at a friend's house or cafe may be distracted by non-academic conversations even when using the Internet for academic purposes. In addition, intense use may translate into less time spent on and homework and studying, compared to no use; hence, grades are lower for those

in the intense use category versus no use.

Interestingly, light users have a diminished probability of an 'A'/ 'B' versus no use. This may provide evidence that when students have Internet access only at school, that time is utilized "surfing the net" for recreational purposes (e.g. Facebook), which is time subtracted from studying; therefore, grades are actually lower for those in the light use category compared to no use. Overall, moderate use (which includes home use as a major component) has the most positive impact on grades, which could

indicate that home Internet use by students is more focused on academic pursuits compared to other venues.

In support of the above result, Kubey, Lavin and Barrows (2001) have reported that heavy Internet use is highly correlated with poor academic performance. They used 575 students of Public University as participants of their investigation. Survey method was also employed and participants' responses were compared against their Grade Point Average GPA. Similar this findings is that of Jackson, Von Eye, Biocca, Barbatsis, Zhao and Fitzgerald (2002). They studied the impact of home internet use on academic performance of 140 low-income students between December 2000 and June 2002. The degree of internet use was calculated using four measures: minutes per day spent online, logins per day, number of domains visited per day, and number of emails sent per day. Academic success of participants was measured by GPA and a standardized test scores on the Michigan Educational Assessment Program (MEAP). Results suggest that students with greater Internet use had higher GPAs and higher MEAP scores. However, the higher MEAP scores were only in the reading portion, with Internet use having no effect on the mathematics portion of the MEAP test.

Munoz and Montoliu (2008) investigated the relationship between students' uses of internet and academic performance in the Catalan university system. Their main objective was to identify the uses of the internet in the Catalan university community, especially in training, and also examined its repercussions. The methodology used for this project focused mainly on a study based on an electronic questionnaire completed by all students in 2004-2005 and all lecturers teaching at public Catalan universities. 14,936 students were the participants of this research. The techniques employed to analyze these data were prior descriptive analysis of the variables, bivariate analyses and data association analyses, and subsequent multivariate analyses, with binary logistic regression used for high performance. Thus, academic success was classified into three. Students who scored 80% and above

were ranked as high academic performance, medium academic success was between 50% and below 80% of credit passed, low academic success were those students who scored less than 50% of credits.

Research findings indicate that use of internet is not a factor behind students getting one academic result or another. In fact, an overall analysis of factors contributing to high academic success shows that those variables related to technologies do not have an important effect on the academic performance of Catalan students. For example, capacity of students to use the internet (p-value 0.004, n= 13881, *X*= 154.47), number of non-academic uses whenever student logged in (p-value 0.00, n= 14936, X=115.75) and computer skills (p-value, 0.00 from very high ability to very low ability, n=14936, X=77.99) are seen to influence students' academic success.

The results further revealed that those students with their own infrastructure use the internet in more places, especially at home, have diversified their internet use. This implies that these students use the internet for more non-academic purposes, while those students without their own internet infrastructure connect mainly at university, where they use it for academic purpose to complement and expand upon their classes. The result also portrayed that the more competences and skills students have in using computers, the more uses they make of the internet, and therefore the less time they have for other academic tasks. In fact, the result shows that no relationship exists between non-academic uses and good performance.

Huang (2006) in his dissertation examined the relationship between computer use and academic achievements among tenth grade students. Out of eight (8) hypotheses, four hypotheses (i.e., 1, 2, 5 and 6) addressed the relationship between the computer activities of the tenth-grade students and their performance on standardized math and reading exams. Survey method was used where the statistical tool used was regression analysis. Statistical Package for Social Sciences (SPSS) Version 14.0 was used. There were 15,362 student participants that represented 3 million 10^{th}-graders attending school in

2002. The math and reading standardized test scores of the students were used to measure the academic achievement. The findings showed very similar relationships whether or not the students are non-native English speakers. The result further revealed that it depends on the people who are using the computer that makes it good or bad for the students. The results showed the relationship, not the cause-effect. Using computers for students to learn on their own does not show a significant relationship to students' reading performance on exams. The following factors showed statistically significant positive relationships to students' academic performance: using computers to analyze data in math class, the frequent use of computers for fun, for school work and the hours/day on computers for school work.

Akcay, Durmaz, Tuysuz and Feyzioglu (2006) did a research using the students from Dokuz Eylul University to examine the effects of computer based learning on students' attitudes and achievements towards analytical chemistry. They concluded that the attitudes and grades of the students are better with technology. And, a multimedia application for graphs and questions is more attractive than traditional teaching, especially the use of animation and sound effects. Their study showed that stimulation saved money and time; it also showed that students who hesitate to study with computers abstain from business life after education.

Hunley, Evans, Delgado-Hachey, Krise, Rich and Schell (2005) did a study to investigate the relation between adolescent computer use and academic achievement. They used questionnaires and seven-day time logs to gather data from 101 tenth-grade students in three high schools in southwestern Ohio. The results showed no statistically significant relationship between time spent on the computers at home and grade point average, nor were there significant relationships between grade point average and the amount of time spent on homework or going out with friends.

Funchs and Woessmann (2004) examined factors that account for international differences in student performance. They claimed that students who use computers a lot at school have worse math and reading performance. They analyzed the set of data obtained by the Organization for Economic Cooperation and Development (OECD) Program for international Students Assessment (PISA) conducted in 2000 by the National Centre for Education Statistics (NCES) of the institute of Education Sciences, U.S. Department of Education. Even though the analyses show a positive correlation between students' achievement and the availability of computers both at home and at school, it was also argued that once family background and school characteristics are controlled, the relationship turns negative. As stated in the literature, Funchs & Woessmann (2004) stated that the mere availability of a computer at home distracts students from learning. And they also argued that schools with more computer access also possess other resources, which leads to the wrong conclusion that computers were the cause of positive effect. So, the correlation becomes almost zero once they control for other school characteristics.

Rouis, Limayem and Sangari (2011) have investigated the impact of Facebook Usage on Students' Academic Achievement and also looked at the roles of Self-Regulation and Trust on the above variable. 239 participants among the Undergraduate students of Lulea University of technology in Sweden were used. Their proposed research model tests the perceived effects of personality traits, Self-Regulation, and Trust on students' achievements. This was done on the basis of flow theory which suggests negative mediating effects of the use of cognitive absorption on Facebook; it leads to a decrease in students' academic performance but a positive effect on satisfaction with life that limits the undesirable effect.

The results indicate that extensive use of Facebook by students with extraverted personalities leads to poor academic success. Thus the path analysis indicates that personality traits significantly affect time spent on the networking site (pc=0.23, T=3.82), but not immersion (pc=0.03, T=0.58) by

students while surfing and interacting on the platform. Extraverted and open personality traits are significant characteristics of students who use Facebook the most (AVE = 0.74, α = 0.65).

Fasae and Aladeniyi (2012) have surveyed the use of internet by students of faculty of science in two Nigerian Universities where 210 students out of the population (1200) participated in the study. The study focused on the undergraduate students that were in the School of Science in Federal University of Technology, Akure (FUTA) and those in Faculty of Science at Adekunle Ajasin University Akungba-Akoko (AAUA) running full-time programme. So many hypotheses were formulated and tested. Specifically, the findings in relation to the influence of science students academic efficiency exhibits that 94% of the participants believed that the use of internet has increased their access to current information, while the least which was 62% claimed that it contributed to increase in dependence on internet. Thus, by this finding the researchers believed that use of internet positively influenced the academic efficiency of the students. In a related study, Oyedun (2007) conducted a study on the internet use in the Library of Federal University of Technology, Minna and observed that most of the participants claimed that through the internet services in the library, they have improved considerably in their academic performance.

2.6.9 Parent Support and Achievement Goals

Read's (2010) thesis investigated the mediating role of achievement goals of parental involvement as a predictor of school success. 77 students were used as participants of his research out which 39% were males and 61% were females. Two hypotheses were formulated and tested. From the data participants provided, there were 66 mothers, 53 fathers, and 33 other parental figures, such as stepparents and grandparents. There were 49 participants who had both a mom a dad together. The regression analysis revealed that parental support and school success was significantly correlated, β (75) = .28, p<.01. Also there was an insignificant relationship between parental support and school success,

while controlling for mastery goals with β (75) =.26, p =n.s, but the reduction was very small to conclude anything from this analysis. On the other hand, parental monitoring and success was not significantly related, β(75)=.09, p=n.s., and it was positively, rather than negatively correlated.

Alyssa, Gordon and Jin have examined the relationships among Baumrind's three parenting styles (as perceived by the student) and the mastery and performance goal orientations of undergraduate college students. In addition, parent educational attainment and parent involvement were included in the analysis for the purposes of controlling the effects of these variables on student goal orientation. The sample consisted of 311 undergraduate students enrolled in education or psychology course.

Of the participants, 234 were female; 77 were male. Also, 236 were Caucasian, 24 were Hispanic, 11 were Asian American, 30 were African American, and 10 of mixed ethnicity. The majority of participants (89%) were between 18 and 22. Close to 78% of participants' parents had at least attended some college or vocational school; only 5% were not at least high school graduates. Participants reported high levels on most parental involvement types (only 36% said parents helped with academic course selection).

Data were collected by means of a questionnaire that was a combination of the Goals Inventory (Roedel, Schraw, & Plake, 1994), Parental Authority Questionnaire (Buri, 1991), and a background information sheet that measured participants' gender, ethnicity, age, level of mother's (ME) and father's (FE) educational attainment, and parent involvement in students' public school education: helping with student's homework (PIA), attending school programs (PIB), attending athletic or extracurricular events (PIC), helping student choose academic courses (PID), and keeping informed on how student is doing in school (PIE). Questionnaires were given out during a class period, which students were allowed to complete at home. Students were offered extra credit for their participation and, confidentiality was

assured. A correlation matrix of the variables of parenting style, parent involvement, parent education, and goal orientations was computed for the entire sample. The correlation between mother's authoritativeness and a mastery orientation (r = .19), and between father's authoritarianism and a performance orientation (r = .21) were in the expected direction and worthy of further consideration.

2.6.01 Socioeconomic Background and Academic Success

Students' socioeconomic backgrounds have long been recognized as a significant potential influence on their academic success and achievement (Duncan, Featherman, & Duncan, 1972; Boocock, 1980).Whilst the reasons for this influence are not always clear, particular features of students' socioeconomic backgrounds have consistently been shown to influence students' motivation, cognition, and achievement. These features include, particularly, parental attitudes and practices which are linked to families' socioeconomic status (Epstein, 1989, 1985). For example, Stevenson and Baker (1992) found that students from higher socioeconomic backgrounds are more likely to have participated in positive learning experiences outside of school (what they called 'shadow education') and that participation in these experiences, in turn, increases the likelihood of students attending university. McInerney (1994), Roche, McInerney, and Marsh, (1997), similarly, found that both the quantity and quality of students' academic motivation may be influenced by parental encouragement and their support of students' school achievement.

Thus, recent research affirms the influence of students' socioeconomic backgrounds on important aspects of their motivation, cognition, and achievement. There is still considerable debate in the literature, however, as to how variables related to students' socioeconomic backgrounds may influence particular aspects of students' motivation, cognition, and achievement. Thus, as with the other variables above, there is, at least, a case for the inclusion of socioeconomic status as a variable in

research studies even if specific hypotheses as to the direction of its effects on students' motivation and cognition are difficult to generate.

Ogunshola and Adewale (2012) investigated the effects of parental socio-economic status on academic performance of students in Kwara state. 180 students (randomly selected) served as the participants of this study. Four factors that were examined and statistically analyses were: parental socio-economic background, parental educational background, parental educational qualification and students' health statuses. Results revealed that parental socio-economic status does not have any significant effect on students' academic success. From the table, the mean scores of students from high and low parental socio economic status were 53.4 and 52.3. The difference here is negligible 0f only 1.10 which statistically is insignificant. Also the t calculated was less than 1.96 critical t which implies that the hypothesis was retained.

Parental educational background was found to have no significant effect on students' performance result of the analyzed data revealed that the calculated t-value of 1.22 was less than the t-tabulated of 1.96. By implication, parental educational background has no significant influence on students' academic performance in the area. However, it was found that the mean scores of students from educated parents were higher than scores of students from not-scores of students i.e., from not-educated parents. This is an indication that parental educational background still play minimal role in student's ability to perform academically.

Result of Ogunshola and Adewale's (2012) investigation also indicates that parent's qualification has significant effect on students' academic success. From the f-table, the calculated f-value (7.68) is greater than the critical value (3.00), the null hypothesis was rejected at 0.05 level at 2.177 degree of freedom. This implies that parental qualification has significant effect on students' academic success. Thus, it was recommended students whose parents are not educated or have low educational

qualification should endeavor to attend remedial coaching so as to supplement the regular school programme.

Sirin (2005) has carried a meta-analytic review of socio-economic status and academic achievement in journal articles published 1990 to 2000. The participants included 101, 157 students, 6,871 schools, and 128 school districts from 74 independent samples. The results showed a medium to strong socioeconomic status – achievement relation. This relation was however, moderated by the unit, the source, the range of socioeconomic status variable, and the type of socioeconomic status – achievement measure.

Sun and Bradley (2004) have identified a great number of studies that established an empirical relationship between students' family socio-economic status and their academic success, even though the strength of the relationship varies to a great extent. Based on what they reviewed they argued that family SES will largely determine the location of the child's neighborhood and school; it provides home resources as well as the "social capital," that is, supportive relationships among schools and individuals (ie, parent-school collaborations) that promote the sharing of societal norms and values, which are necessary to success in school. Therefore, it is necessary to give considerable attention to the role of family SES in determining student academic performance in educational studies.

Barry (2005) in his thesis examined the effect of socio-economic status on academic achievement. Composite test scores of tenth grade students from the Educational Longitudinal Study of 2002 were examined using a four-part model which includes student role performance, school family and peer factors. Ordinary Least Squares analysis indicates that the strongest predictor of student test scores is socio-economic status, resulting in a statistically significant increase in the standardized coefficient of .224 points. These results support previous findings (Eamon, 2005; Hochschild, 2003; Jeynes, 2002; e.t.c.) that SES affects student outcomes-meaning that student who have a low SES earn lower test scores and

are more likely to drop out of school. In a related study Seyfried (1998) has concluded (based on his findings) that low SES students have been found to score about ten percent lower on the National Assessment of Educational Programs than higher SES students.

A study by Campbell, Hombo and Mazzeo (1999) indicated that students who reported higher parental education level tended to have higher average scores. This view is in line with what Dave and Dave (1971) found that higher percentage of rank holders belong to homes with parental education and higher percentage of failed students belong to those who have lower parental education. However, Hawkes (1995) argued that students' academic performance in most cases, do not necessary depend on parental educational attainment. More so, Jacquelynn, Eccles and Daviskean (2005) stated that relation of parent's education to their children's academic performance rests upon quite specific beliefs and behavior. Parent's education influence in manner in which parent's communicate with their children. They concluded that parent educational qualification does not have a major influence on students' academic success.

2.7 Summary

In this review, achievement goals and matacognition like other psychological constructs have been seen as very important in teaching and learning. Achievement goals portray the general orientations and purposes of students in pursuing academic activities. Mastery goals orient student towards learning and understanding while performance goals represents student's aim to outperform or surpass his colleagues. Achievement goal theory originated from social cognitive theory, achievement motive tradition and attribution theory – all are part and parcel of motivation literature. All the theories reviewed in the literature have acknowledged the existence of performance goals as well as mastery goals. In trichotomous or multiple goal theory, have also added another goal which is seen by most

psychologists as derived from performance goal which is performance avoidance. The literature also suggests students' high level of mastery orientation to learning correlates with their use metacognition.

Many researches reviewed have continued to show the importance of achievement goals to achieving higher degree of students' academic engagement and also boosting their grades. Little gender difference was found in students' achievement goals. It seen that girls are significantly high on academic achievement and performance-approach goals while males were significantly more sociable.

All the theories that explained metacognition in this review defined it as one's ability to use knowledge to direct and improve thinking skills. Three theories of metacognition were reviewed in this study. Tacit theories are acquired without any implicit awareness that one possesses a theory. Other theories of metacognition include formal and informal theories of metacognition. Metacognition is said to be a tool that give students direction to review their progress, accomplishments and future directions. Flavell's classical model was identified among the early models of metacognition. This model appreciates the pioneering effort of the famous cognitive psychologist – Piaget.

The literature has shown inconsistent results regarding gender differences on students' metacognitive skills. Some research finding have shown that female students self-regulated their learning better than the males while some result revealed no significant difference. Internet access was also said to affect students metacognition – depending on the amount of time used. *The literature also suggests that relationship exists between achievement goals and meatacognition which have strong influence over academic achievement. In fact there is ample research confirming that metacognition and achievement goals are important constructs in education; however, there is a gap in the literature with respect to achievement goals, metacognition and students' teachers (NCE students).*

The review did not provide adequate explanations on prospective teachers (N.C.E.) goal orientations, metacognitive awareness and academic success. In fact, so many interesting questions

have been raised in the review. Questions such as 'does mastery and performance goals have positive or negative correlation among prospective teachers (N.C.E III)? Which of the goals type could have high /low correlation with students' academic success? What biological / environmental factors could have been responsible for students' achievement goals, metacognitive awareness and academic success? These and more questions created gab in the literature which this study set out to fill.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on the process to be followed in conducting the research. The procedure includes the research design, the population of the study, samples and sampling technique, instrumentation, reliability of the instrument(s), validity of the instrument(s), pilot study, scoring procedure, procedure for data collection and procedure for data analysis.

3.2 Research Design

This is a correlation survey design. This is because the design can provide all the safeguards prerequisite for confirming or rejecting hypothesis. Correlation survey allows researchers to predict behavior or events. Assessing the relationship between students' achievement goals and their metacognitive awareness on academic success will help in explaining the dimensions of their relations in terms of both direction and the magnitude of that relationship. Thus, Shaughnessy, Zechmeister and Zechmeister (2012) have suggested that survey design can be employed on correlation research which is an excellent method for meeting the scientific goals of description and prediction. Psychologists such as Coutinho (2007), Kazak (2010) and Moreano (2004) have long been using this approach to investigate psychological phenomena like the ones employed in this study.

3.3 Population of the Study

The target population for this research was made up of all Nigeria Certificate in Education Students (N.C.E.) III across the twelve (12) Colleges of Education in the North Western Nigeria. The total number of N.C.E. III students was 22,021 (NCCE, 2014) at the time of conducting this research. This

figure represents both States and Federal Colleges of Education across the North Western states of Nigeria. All the 12 Colleges of Education were used for this study. This is because the higher the sample, the better the result. At least there is 100% representation of the population. Below is table 3.3.1 showing names of colleges, location, gender representation and the ownership status of each college as well as the number of NCE III students.

Table 3.1 Distribution of NCE III Students Population of Colleges of Education across North Western States of Nigeria, their Ownership and Gender Representation

S/N	College Name	Location	Ownership	Male	Female	Total
1.	Federal Coll. of Educ., Kano	Kano, Kano State	Federal	976	686	1662
2.	Federal Coll. of Educ., Katsina	Katsina State	Federal	709	496	1205
3.	Federal Coll. of Educ., Zaria	Kaduna State	Federal	1139	1054	2193
4.	Federal Coll. of Educ., (Technical) Bichi	Bichi, Kano State	Federal	1389	401	1790
5.	Federal Coll. of Educ., (Technical) Gusau	Gusau, Zamfara State	Federal	0	1382	1382
6.	Sa'adatu Rimi Coll., of Educ., Kumbotso	Kumbotso, Kano	State	3739	819	4558
7.	Kaduna State Coll., of Educ.,Gidan-Waya kafanchan	Kafanchan, Kaduna State	State	477	420	897
8.	Adamu Augie Coll., of Educ., Argungun	Argungun Kebbi, State	State	743	149	892
9.	Jigawa State Coll., of Educ., Gumel	Gumel Jigawa State	State	1609	222	1831
10.	Shehu Shagari Coll., of Educ., Sokoto	Sokoto State	State	1716	1092	2808
11.	Zamfara State Coll., of	Zamfara State	State	1425	170	1595

	Educ., Maru					
12.	Isa-Kaita Coll., of Educ., Dutsin-Ma	Dutsin-Ma, Katsina State	State	996	212	1208
	Total			**14,918**	**7,103**	**22,021**
						Grand Total

Source: National Commission for Colleges of Education (2014).

From the table (3.1) above, five Colleges of Education are owned by Federal Government. Out of these five Federal Colleges, two are located at Kano state alone while the remaining three are located in Katsina, Kaduna and Zamfara States. From the table, Sokoto, Jigawa and Kebbi states have no Federal College of Education in their respective states. Moreover, state Colleges are found across the states of Katsina, Kaduna, Kano, Zamfara, Jigawa, Sokoto and Kebbi. It is then clear here that four states (Katsina, Kaduna, Kano and Zamfara) have both states and Federal Colleges of Education in their states. States Colleges represent 58.3% of the colleges while the Federal Colleges represents 41.7%. In all, Kano state leads with three (3) Colleges of Education representing 25% of the whole colleges in the zone. On the gender aspect, male students are represented by 67.7% having a total of 14,918 populations while females represent 32.3% with 7,103. All information is obtained from the NCCE (2014), Nigeria.

3.4 Sample and Sampling Technique

Based on the nature of the population above, the main sampling technique employed to determine the sample size was simple random sampling technique. This is to enable each member of the population to have equal chance of being selected. Moreover, the federal owned colleges have diversity of students from all over the country and especially their cluster states which also serve as their catchment areas. At the same time, the State owned colleges are predominantly indigenes of the state with few students from other parts of the country. All the colleges have been represented through sampling in the study.

In order to determine the sample size for this study, Krejcie & Morgan (1970) table for determining sample size was employed. Going by this table the sample size for a population of 22,021 indicates 377. Therefore, 377 NCE III students were used as the sample for this study. *The procedure of obtaining 377 was done through proportionate sampling in which 123 (representing 32.6%) respondents were females while 254 (representing 67.4%) participants represent the male counterpart to form the sample size for the study. Each sub-unit of the sample was determined through proportionate sampling technique as seen in the table below.*

Table 3.2 Distribution of Samples of Respondents for the Study

S/N	***Institution***	***Sample***		***Total***
		Males	***Females***	
1	Federal Coll. of Educ., Kano	*17*	*12*	*29*
2	Federal Coll. of Educ., Katsina	*12*	*08*	*20*
3	Federal Coll. of Educ., Zaria	*19*	*18*	*37*
4	Federal Coll. of Educ., (Technical) Bichi	*24*	*07*	*31*
5	Federal Coll. of Educ., (Technical) Gusau	-	*24*	*24*
6	Sa'adatu Rimi Coll., of Educ., Kumbotso	*64*	*14*	*78*
7	Kaduna State Coll., of Educ.,Gidan-Waya kafanchan	*08*	*07*	*15*
8	Adamu Augie Coll., of Educ., Argungun	*13*	*03*	*16*
9	Jigawa State Coll., of Educ., Gumel	*27*	*04*	*31*

10	Shehu Shagari Coll., of Educ., Sokoto	*29*	*19*	*48*
11	Zamfara State Coll., of Educ., Maru	*24*	*03*	*27*
12	Isa-Kaita Coll., of Educ., Dutsin-Ma	*17*	*04*	*21*
	Total	*254*	*123*	*377*

3.5 Instrumentation

For the purpose of this investigation, items of appendix A are meant to elicit biographical information of the respondents while Items in appendices B, C and D were adoption of standardized instruments of achievement goals, metacognition and academic success respectively. Four instruments were used and represented as appendices lettered A to D. Appendix A measures the demographic information of the participants which includes gender, institution, enrolled programme (Science or Art), parent's education, student's accommodation and internet access etc. Based on the objectives of the study, the instruments that were adopted to be used for data collection in appendix B, C and D. include:

1. Achievement Goals Inventory
2. Metacognitive Awareness Inventory
3. Academic Success Measure

3.5.1 Achievement Goals Inventory

This instrument is a 17-item Goals Inventory developed by Roedal, Schraw and Plake (1994). It comprises of 12-items assessing mastery goals and 5-items assessing performance goals. Participants were required to respond to each item on a five likert scale ranging from *Strongly Agree* to *Strongly Disagree*. The scale was adopted because it has been used widely in the literature to assess mastery and

performance goals and has been shown to have strong reliability (of .80 and .76 respectively) and validity for assessing goals. It has been developed for use by students in Schools, Colleges and Universities (Sendurur, Mutlu, & Baser, 2011).

3.5.2 Metacognitive Awareness Inventory

The Metacognitive Awareness Inventory was developed by Schraw and Dennison (1994) and measures two main constructs, namely knowledge of cognition and regulation of cognition. The questionnaire consists of 52-items and will be answered on a 5 point likert type scale ranging from *Strongly Agree* to *Strongly Disagree*. The items are organized in two scales of eight sub-scales. The sub scales definitions according to Schraw and Dennison, (1994) are as follows:

Knowledge of cognition

- Declarative knowledge: knowledge about one's own learning skills and abilities
- Procedural knowledge: knowledge of how to implement a learning strategy
- Conditional knowledge: knowledge of when and why to use a learning strategy

Regulation of cognition

- Evaluation: analysis of one's performance and learning strategies used after the task has been completed
- Debugging strategies: implementation of strategies to improve performance and comprehension
- Information processing strategies: strategies to organize, develop and summarize information
- Monitoring: continuous calculation of the learning process and the strategies that have been used.
- Planning: planning / goal setting before one commences with a learning task

3.5.3 Academic Success Measure

Academic success was obtained by students' cumulative grade point average (CGPA) where the National Commission for Colleges of Education (N. C. C. E.) categorization used.

3.6 Validity of the Instrument

Content validity was done. This is to ensure that the adopted items of the scales elicit the desired information it is expected to provide. Experts in the field of Educational Psychology and Counseling of Ahmadu Bello University Zaria were provided with copies of the instruments to validate. Their observations, comments and corrections have been effected on the questionnaire. This is to ensure that the items will work for the purpose intended.

3.7 Pilot Testing

For the purpose of ascertaining reliability of the instruments, especially when that of achievement goals inventory and metacognitive awareness inventory are foreign by design, pilot testing was carried out. This is to ensure that the instruments can elicit the desired information among Nigerian students. For this reason fifty (50) students of F.C.T. College Education, Zuba (state college) were used because they have similar characteristics of the research population. The data collected was analyzed using statistical package for social science (SPSS). Then, test-retest technique was used to determine the reliability index of the instrument. Cronbach's alpha indicates .85 and .89 for both first and second test which implies that there is internal consistency of the instruments.

3.8 Reliability

According to the literature, Achievement Goal Inventory has a good reliability index. Test-retest reliability estimates for evaluating goals according to Roedel, Schraw and Plake (1994) were .73 and .76 respectively while coefficient alphas were .80 and .75 respectively. Metacognitive Awareness Inventory (MAI) has an index of metacognitive knowledge and metacognitive regulation. In the original inventory (Schraw & Dennison, 1994; Young & Fry, 2008; Sendurur, Mutlu & Gul Baser, 2011), internal consistency was almost excellent [Cronbach's alpha values for metacognitive knowledge reveals α=.88 while metacognitive regulation reveals α=.88. The entire inventory assessment revealed a reliability of α=.93. Similarly, Cooper (2004) reports that internal consistency reliability of the MAI ranged from .93 to .88 with a significant relationship between the knowledge and regulation factors. The cronbach alpha reliability index as adopted for use in Nigeria (Ndidiamaka, 2010) reveals an internal consistency of 0.69. Tok, Ozgan and Dos (2010) also reported the reliability index of the eight subscales of Metacognitive Awareness Inventory as follows:

Table 3.3 Reliability of Metacognitive Awareness Sub-scales

Instrument	Number of Items	Reliability
Metacognitive Awareness Inventory		
Subscales		
Procedural Knowledge	4	.69
Declarative Knowledge	8	.81
Conditional Knowledge	5	.73
Planning	7	.78
Comprehension Monitoring	7	.82
Evaluation	6	.73
Debugging Strategies	5	.71

Information Management	10	.83
Total	52	.96

Therefore because of it strength and satisfaction for research work, all items were applied and analyzed in consistence to Schraw and Dennison's (1994) article as well as the reliability obtained after pilot testing.

3.9 Scoring Procedure

Demographic characteristics are measured by six items. All the items in appendix A were treated as nominal data (no magnitude). The scale for measuring achievement goals has 17 items and is on five point likert scale. Each point in the scale was assigned a value. The point at the end of the scale describing the strongest affirmation has a value of five (5) while the point at the end of the scale describing the least affirmation has a value of one (1). Each question was marked and analyzed on the basis of the number of responses for the item. A participant can score a minimum of 17 marks and a maximum of 85 marks.

Metacognitive Awareness Inventory (which measures metacognition) was also on five likert scale. Respondent can score a minimum of 52 marks and a maximum of 260 marks. Each of the six items in appendix A was used to group participants on the basis of institution type, gender, parental level of education, etc.

Imbalance in the number of items in the scales of achievement goals and metacognition requires that the scores have to be compatible. For this reason, the researcher has normalized the scores before subjecting the data to relevant statistical analysis. The essence was to balance the scales so that the index of the variables does not overlap.

The scale was scored by computing the mean of each section for further analysis. Thus Musa (2011) suggested that after the questionnaire is completed, each item may be analyzed separately or in some cases item response may be summed to create a score for group of items. Hence, likert scales are often called summative scale. In fact, summation here entails that the items are not only interval- level data but also ordered categorical data. .

3.01 Procedure for Data Collection

The National Commission for Colleges of Education in Nigeria was informed about the study through an introductory letter by Department of Educational Psychology and Counseling, Ahmadu Bello University Zaria and was asked to provide the researcher with the enrolment data for all the Colleges of Education in the North West Zone from 2011/2012 academic session to 2013/2014 session (Appendix refers and attached). Upon obtaining this document, all the sampled colleges were informed of the study by the university and were asked to cooperate with the researcher. Two research assistants for each institution were required during administration of the questionnaire. The researcher and his assistants administered questionnaires to students in their various lecture halls in the institutions. They were given 30 minutes to complete the questionnaires and were told the aim of the research was to understand learning process. Filled questionnaires were retrieved thereafter and participants appreciated.

3.02 Procedure for Data Analysis.

Data collected was subjected to SPSS version 24 for analysis. Descriptive statistics as well as inferential statistics were employed. Specifically, Pearson Product Moment Correlation, t-test, Analysis of Variance (ANOVA) and Regression Analysis tools were used. Pearson Product Moment was used to test hypotheses 1, 2, 3, and 4 to find out relationship between achievement goals and academic success, metacognition and academic success, as well the relationship between achievement goals and

metacognition. Regression analysis was used as a post hoc analysis to check the excesses of hypotheses 1 and 2. Independent t-test was used to test hypotheses 5, 6, 7 and 9 while ANOVA was used to test hypotheses 8 and 10. All hypotheses were tested at 0.05 level of significance.

CHAPTER FOUR

DATA ANALYSES AND DISCUSSIONS

4.1 Introduction

This study was aimed at primarily assessing relationships between achievement goals, metacognitive awareness on the academic success among students of Colleges of Education in North Western Nigeria. Five major objectives were formulated. Out of a total of 377 NCE III students (participants), 358 participants provided complete data used for data analysis. The Statistical package IBM version 20 was used for the analysis. Apart from the bio data section three instruments namely, achievement goal inventory, metacognitive awareness inventory and academic success profile were administered to students sampled for the study. The first section of analysis is descriptive measure of the bio data variables as well as the analysis of answering the research questions. The descriptive statistics were computed and comparatively answered. However, inferential procedure was used in testing the research hypotheses for significance. Pearson Product Moment Correlation (r) statistics, regression analysis, the Independent t test statistics and the Analysis of Variance (ANOVA) were used. All hypotheses were tested at 0.05 alpha level of significance. The summary of the major findings, discussion of results were presented at the end of the chapter.

4.2 Descriptive Analysis

4.2.1 Bio Data Variables.

The demographic variables used in this study include gender, parents' education, internet usage, accommodation, college type and academic discipline of Arts and Science. This section gives the description of students' responses that explain relative effect of intervening variables based on the research questions formulated.

Table 4.1 Distribution of Respondents by College Type

Colleges	Frequency	Percentage %
FCE	141	39.3
COE	217	60.7

Total	**358**	**100**

The table above shows the percentage of ownership of both state and federal colleges of education where 141 or 39.3% are from Federal Colleges of Education and the rest 217 representing 60.7% are from State Colleges of Education

Table 4.2: Distribution of Respondents by Institution

Name of Institution	Frequency	Percentage %
1. FCE Kano	27	7.6
2. FCE Katsina	20	5.6
3. FCE Zaria	37	10.5
4. FCE Technical Bichi Kano	28	7.9
5. FCE Technical Gusau	22	6.0
6. Sa'adatu Rimi COE Kumbotso, Kano	71	20.0
7. Kaduna state COE Gidan Waya	15	4.4
8. Adamu Augie COE Argungun	16	5.0
9. Jigawa State COE Gumel	31	8.8
10. Shehu Shagari COE Sokoto	43	12.0
11. Zamfara State COE Maru	27	7.6
12. Isa-Kaita COE Dutsen-Ma	21	5.9
Total	**358**	**100.0**

The above 4.2 table revealed the name, number and percentage of participants from all institutions under this study. 27 or 7.6% are from FCE Kano, while 20 or 5.6% are from FCE Katsina, as against 37 or 10.5% from FCE Zaria, while 28 or 7.9% are from FCE Technical Bichi Kano, while 22 or 6.0% others are from FCE Technical Gusau. A total of 71 or 20.0% are from Sa'adatu Rimi COE Kumbotso Kano, while 15 or 4.4% are from Kaduna state COE Gidan Waya, Adamu Augie COE Argungun has a total of 16 or 5.0% respondents. 31 or 8.8% of the respondents are from Jigawa COE while 43 or 12.0% are from Shehu

Shagari COE Sokoto. At COE Maru Zamfara State 27 (7.6%) students participated and the remaining 21 or 5.9% were from Isa Kaita COE Dutsin-Ma Katsina state.

Table 4.3 Distribution of Respondents by Gender Type

Gender	Frequency	Percentage %
Male	242	67.6
Female	116	32.4
Total	**358**	**100**

A total of 222 representing 62.0% are male students and the rest 136 representing 38.0% are females

Table 4.4 Distribution of Respondents by the nature of their Programme

Programme	Frequency	Percentage %
NCE Arts	166	46.4
NCE Science	192	53.6
Total	**358**	**100**

On the programme of study, 166 or 46.4% are NCE Arts students while the rest 192 or 53.6% are NCE science students

Table 4.5: Distribution of Respondents by Father's Educational Qualification

Educational Background	Frequency	Percentage %
Primary	46	12.8
Secondary	136	26.3
Tertiary	218	60.9
Total	**358**	**100.0**

Table 4.5 above showed the respondents' fathers level of education. It showed that 46 or 12.8% have primary education, while 94 or 26.3% possess secondary certificates and the rest 218 representing 60.9% have had tertiary education.

Table 4.6: Distribution of Respondents by Mother's Educational Qualification

Educational Background	Frequency	Percentage %
Primary	149	41.6
Secondary	119	33.2
Tertiary	90	25.2
Total	**358**	**100**

The table 4.6 above revealed the respondents mothers educational level. It showed that 149 or 41.6% have primary education as against 119 or 33.2% that have secondary education and the 90 mothers or 25.1% that obtained tertiary education.

Table 4.7: Distribution of Respondents by Accommodation Location

Accommodation Location	Frequency	Percentage %
College Hostel	117	32.7
Off Campus	241	67.3
Total	**358**	**100.0**

On their accommodation status, table 4.2.7 reveals that 117 or 32.7% students were living in the college hostels while the rest 241 representing 67.3% stayed off campus students. This shows that the college hostel could not accommodate majority of students.

Table 4.8: Distribution of Respondents by Internet Usage

Regularity of Internet Use	Frequency	Percentage %
Intense User	60	16.8
Moderate User	186	52.0
Light User	112	31.2
Total	**358**	**100.0**

Table 4.8 above showed that 60 students or 16.8% were intense internet users compared to 186 representing 52.0% moderate users and the rest 112 or 31.3% were light users. Based on the analysis, majority of students (52%) moderately use internet.

4.2.2 Research Questions

This section presents descriptive statistics for the variables. The information obtained from the mean scores indicates that the data are normally distributed and had no problems with skewness or kurtosis. Thus, the mean scores as well as the standard deviation in the analysis below gives more insight into the nature of the distribution.

Research Question 1: Do students' achievement goals relate to their academic success?

Table 4.9: Distribution of responses on students' achievement goals and their academic success

Measure	N	Mean	SD
Academic Success	358	3.51	1.089
Achievement Goals			
Mastery Goals	358	47.24	7.315
Performance Goals	358	19.74	3.496

The table 4.9 above showed that students' overall academic success has a mean of 3.51 while the total mean for achievement goals was 66.98 out of which mean scored for mastery goals (M=47.24, SD =7.3) representing 70.52% which is greater than that of performance goals with M=19.74, SD = 3.4 i.e.,

29.48%. This suggests that mastery goal is higher than the performance goals of students in their overall goals.

Research Question 2: Do Students' metacognitive awareness relate to their academic success?

In order to answer this question, regression analysis was used to ascertain the level of the relationship between students' assessment of their metacognitive awareness and their Academic Success. Thus, the table below gives details.

Table 4.10: Distribution of responses on students' metacognitive awareness and their academic success.

Measure	N	Mean	SD
Academic Success	358	3.51	1.089
Metacognitive Awareness			
Declarative Knowledge	358	30.75	4.86
Procedural Knowledge	358	35.62	5.81
Conditional Knowledge	358	19.88	3.53
Planning	358	28.39	4.76
Information Strategies	358	38.83	7.65
Comprehension	358	58.65	4.87
Debugging Strategies	358	19.75	4.48
Evaluation	358	23.94	4.25

Table (4.10) shows the means and standard deviations on the average performance of students in academic success is 3.51, have good comprehension monitoring (M = 58.65) and poor use of debugging strategies during monitoring and control of their cognition (M =19.75) Their awareness of which

strategies to be used for metacognition (M =38.83) suggest almost similar to the procedure of how to implement a learning strategy (M = 35.62). Acquaintance with their own skills and abilities (M = 30.75) was slightly lower than their procedural knowledge. The table has also shown that on the average the students' awareness of how to plan regulating their cognition (M = 28.39) suggest to be far better than their awareness of when and why to use a learning strategy (M = 19.88). The distribution of means and standard deviations suggests an existence of good relationship between students' metacognitive awareness and academic success.

Research Question 3: Is there any relationship between Achievement goals and metacognitive awareness among students of Colleges of Education in North Western Nigeria?

In attempt to provide answer to this question, descriptive analysis was used to determine the relationship between students' responses to achievement goals items as well as that of metacognitive awareness.

Table 4.11: Distribution of responses on students' Achievement goals and metacognitive awareness

Variables	N	Mean	S.D
Achievement Goals	358	66.98	9.72
Metacognition Awareness	358	205.7458	31.41686

Table 4.11 above shows that students' average achievement goals scores was 66.98 representing 78.8% of the overall scores (85) of the achievement goals inventory having a standard deviation of 9.72. The mean scores of students Metacognitive awareness was 205.74 representing 79.13% of the maximum scores of metacognitive awareness inventory. The average scores as well as the percentages of above

70% for each scale, suggests that high correlation exists between students' achievement goals and their metacognitive awareness.

Research Question 4: Is there any relationship between Metacognitive knowledge and Metacognitive regulation among students of Colleges of Education in North Western Nigeria?

Table 4.12: Distribution of responses of Students' Metacognitive Knowledge and Metacognitive Regulation.

Variables	N	Mean	S.D
Metacognitive knowledge	358	31.5978	5.56451
Metacognitive Regulation	358	28.2598	4.85326

The analysis on table 4.12 above showed that students' metacognitive knowledge has a mean score of 31.59 having a standard deviation of 5.56. On the other hand, students' metacognitive regulation has a mean and standard deviation of 28.25 and 4.85 respectively. The difference in means suggests that students' knowledge about their cognition is slighter than the way they control their cognition. The mean scored for each subscale suggests that there is good relationship between students' metacognitive knowledge and their metacognitive regulation.

Research Question 5: Is there any gender effect on students' Achievement goals, Metacognitive Awareness and Academic success?

Table 4.13: Distribution of responses on students' Assessment of their Achievement goals, Metacognitive Awareness and Academic Success by Gender

Variable	Gender	N	Mean	SD
Achievement Goals	Male	222	66.49	9.63
	Female	136	67.78	9.86
Metacognitive Awareness	Male	222	205.76	30.74
	Female	136	205.72	32.59

Academic Success	Male	222	3.45	1.10
	Female	136	3.63	1.06

Table 4.13 above shows descriptive statistics obtained for the analysis of gender difference on students Achievement goals, Metacognitive awareness and Academic success. From the mean scores no gender difference was observed on students' Achievement goals (male = 66.49 and female = 67.7794), metacognitive awareness (Male = 205.76, Female = 205.72) and academic success (Male = 3.45, Female = 3.63). Going by these differences observed, students achievement goals, metacognitive awareness and academic success may not likely to be affected by gender difference.

Research Question 6: *Does College type (Federal or State) influence students' achievement goals, metacognitive awareness and academic success?*

Table 4.14.: Distribution of responses on the mediation effect of college type (state and Federal Colleges of Education) on students' Achievement goals, Metacognitive awareness and Academic success

Variable	**College**	**N**	**Mean**	**SD**

Achievement Goals	FCEs	144	69.979	7.68
	COE's	214	64.967	10.43
Metacognitive Awareness	FCEs	144	214.277	24.70
	COE's	214	200.004	34.09
Academic Success	FCEs	144	3.97	.877
	COE's	214	3.21	.76

Results in table 4.14 above showed difference in means between students of State Colleges and Federal Colleges of Education in their Achievement goals (M, FCE =69.9792, M COE's = 64.9673). Based on these figures, students of Federal Colleges of Education seem to have higher Achievement goals than their counterparts in State Colleges of Education. This suggests that college type influence students' achievement goals.

More so, the descriptive analysis showed that difference exists between students of State Colleges and Federal Colleges of Education in their Metacognitive Awareness. The calculated mean of students' Metacognitive Awareness were 214.27 for students in Federal Colleges while students of State Colleges had a mean score of 200.00. Going by this analysis, students of Federal Colleges of Education seem to have higher Metacognitive Awareness than their counterparts in state colleges of education. This implies that students' metacognitive awareness is influenced by the college type. The table further revealed the statistical difference that exists between students of Federal and State Colleges of Education in their Academic success (3.97 and 3.21respectively). This may imply that Students of Federal

Colleges of Education had higher index of academic success than those in State Colleges of Education. Going by the results, college might influence students' academic success.

Research Question 7: *Does academic discipline of Arts or Science influence students' achievement goals, metacognitive awareness and academic success?*

Table 4.15: Distribution of responses on the influence of academic discipline (NCE Arts and NCE Science students) on students' Achievement goals, Metacognitive awareness and Academic success

Variable	Programme	N	Mean	SD
Achievement Goals	NCE Arts	166	68.21	8.65
	NCE Science	192	65.91	10.47
Metacognitive Awareness	NCE Arts	166	208.28	31.24
	NCE Science	192	203.54	31.47
Academic Success	NCE Arts	166	3.45	1.224
	NCE Science	192	3.57	.957

From the foregoing, table 4.15 above reveals that difference exists between NCE Arts and NCE Science students in their Achievement goals (M=68.2169 and M= 65.9167 by NCE Arts and NCE Sci., statistically different). This may imply that NCE Arts Students had higher Achievement goals than their counterparts in Science programme which suggests that academic discipline of Arts / Science influence students' achievement goals.

The results of the descriptive statistics above suggest that difference does not exist between NCE Arts and NCE Science students in their metacognitive awareness. The mean score for metacognitive

Awareness by both NCE Arts and NCE Science students reveals statistical a difference (Arts M=208.28, Sci. M= 203.54). This result may imply that higher order thinking is independent of academic discipline of Arts or Science. In other words, academic discipline might not influence students' metacognitive awareness.

Furthermore, the descriptive analysis indicates no differences between NCE Arts and NCE Science students in their academic success. The mean points of academic success for the two groups (3.45 and 3.57) are almost the same. By implication, it suggests that academic discipline does not influence students' academic success where both NCE Arts and Science students do not differ in terms of academic success.

Research Question 8: *Does parent's education affect students' achievement goals, metacognitive awareness and academic success?*

Table 4.16a Distribution of responses on the effect father education on students' achievement goals, metacognitive awareness and academic success

Variable	Father Education	N	Mean	S.D
Achievement Goals	Primary	46	67.50	7.91
	Secondary	94	68.03	10.08
	Tertiary	218	66.42	9.91
Metacognition	Primary	46	212.00	29.54
	Secondary	94	206.65	31.26
	Tertiary	218	204.04	31.81
Academic Success	Primary	46	3.57	1.06

	Secondary	94	3.59	1.10
	Tertiary	218	3.47	1.09
Total		**358**		

It is clear from table 4.16 above that the mean score of achievement goals of students whose father had primary educated is 67.50 with S.D. 7.91 while the mean scores of students on secondary educated and tertiary educated for their fathers are 68.03 and 66.42 with S.D. 10.08 and 9.91 respectively. The difference in the mean score suggests that fathers' educational qualification may not have much effect on the achievement goal of their wards. Hence, it suggests that there is no much effect of parent's education represented by fathers' educational qualification on students' achievement goals.

A further analysis in the table above shows the descriptive statistics on father's education may have some effect on students' metacognitive awareness. The calculated mean scores of students metacognitive awareness were 212.00 and 204.03 for students whose fathers education level were primary and tertiary education respectively. This may imply that fathers' educational qualifications with respect to primary and tertiary may have some effect on the students' awareness and use of metacognition.

On the issue of academic success, the table shows that students' academic success may be independent of their father's level of education. The calculated mean scores of academic success for the three groups portrays virtually no difference (primary= 3.57, secondary= 3.59 and tertiary= 3.47), which may imply that their fathers' education may not affect the Academic success of their wards.

Table 4.16b Distribution of responses on the effect of mother's education on students' achievement goals, metacognitive awareness and academic success

Variable	Mother Education	N	Mean	S.D
Achievement Goals	Primary	149	66.53	9.88
	Secondary	119	67.04	9.47
	Tertiary	90	67.65	9.87
Metacognitive Awareness	Primary	149	205.04	31.02
	Secondary	119	205.49	30.96
	Tertiary	90	207.24	32.92
Academic Success	Primary	149	3.44	1.135
	Secondary	119	3.58	1.077
	Tertiary	90	3.51	1.029
Total		**358**		

From the table (4.16b) the mean difference of achievement goals, metacognitive awareness and academic success for students whose mother educational qualification are primary (M = 66.53), secondary (M = 67.04) and tertiary (67.65) did not show any much difference in all the cases. This therefore suggests that parents' educational qualification (mother) representing socioeconomic status of students have no effect on students achievement goals, metacognitive awareness and as well as their academic success.

Research question 9: *Does accommodation location have any effect on students' achievement goals, metacognitive awareness and academic success?*

Table 4.17: Distribution of responses on the effect of students' Accommodation Location (of college hostel and off campus) on Achievement goals, Metacognitive Awareness and Academic Success

Variable	Accommodation	N	Mean	SD
Achievement Goals	College Hostel	117	69.34	8.12
	Off Campus	241	65.83	10.23
Metacognitive Awareness	College Hostel	117	215.05	23.44
	Off Campus	241	201.22	33.76
Academic Success	College Hostel	117	3.69	0.96
	Off Campus	241	3.43	1.13

Table 4.17 shows distinction between group of students who reside in college hostels and those that live off campus, in their Achievement goals. This is based on mean scores of achievement goals obtained by each group (college hostels= 69.34 and off campus 65.83). In terms of achievement goals of students in the college hostel they had 4 point greater than those staying at various locations outside the college premises. This may imply that students who live college hostel accommodation location had higher Achievement goals than their counterparts in off campus accommodation locations. Thus, the means and standard deviations suggest that accommodation location may affect students' achievement goals.

Moreover, the outcome of the above analysis showed that difference may exist in terms of metacognitive awareness between students who live in college hostel and their counterpart in off campus accommodation locations because the mean scores of metacognitive awareness of the college

hostel group (215.05) is also greater than 201.22 obtained by students residing off campus. This may imply that students of college hostel accommodation location had higher metacognition than their counterparts that stayed off campus. Thus, the statistics suggests that accommodation location might affect students' metacognitive awareness.

In addition, the results of the analysis showed that differences exist between students of college hostel and off campus accommodation location in their Academic success. Obviously, the mean of 3.69 and 3.43 scored by students of college hostel and off campus did not differ much. This suggests that students' accommodation location might have some effect on their academic success.

Research question 10: *Do students' uses of internet facilities have any effect on their achievement goals, metacognitive awareness and academic success?*

Table 4.18: **Distribution of responses on the effect of students Internet Usage Regularity on their Achievement goals, Metacognition and Academic Success**

Variable	Regularity	N	Mean	SD
Achievement Goals	Intense Users	60	67.65	10.68
	Moderate Users	186	68.15	8.43
	Light Users	112	64.68	10.83
Metacognitive Awareness	Intense Users	60	208.63	39.85
	Moderate Users	186	206.91	26.97
	Light Users	112	202.25	33.13
Academic Success	Intense Users	60	3.68	1.12
	Moderate Users	186	3.58	1.05
	Light Users	112	3.31	1.09

Table 4.18 shows that students in moderate use group had higher achievement goals (M= 68.15) compared to those in the light internet usage group (M=64.68) and intense uses group (67.65), implying that internet moderate users have higher achievement goals than the light and intense users. This suggests that internet use regularity may affect students' achievement goals.

Further analysis in the table shows that there is difference between intense users and light users of internet on their Metacognitive awareness (208.63, and 202.25). The amount of time students use in surfing the net has shown positive impact or advantage for the awareness and reflecting upon cognition especially with higher users of internet, implying that their internet usage status does affect their metacognition in learning. This further suggests that internet use regularity might not affect students' metacognitive awareness.

Similarly, table 4.18 above did not show much difference in students' internet usage regularity on their Academic success. The calculated mean Academic success were 3.68, 3.58 and 3.31 by students whose internet usage regularity were intense users, moderate users and light users respectively, implying that difference exists among internet intense users, moderate users and light users in their Academic success. Implying that internet users' regularity has little effect on students Academic Success.

4.4 Hypotheses Testing

In this section, ten hypotheses were stated to guide the conduct of this study. The hypotheses were tested using Pearson Product Moment, Regression Analysis, t-test and Analysis of Variance. The probability of retaining or rejecting the hypotheses is $P \leq 0.05$.

Hypothesis 1: This null hypothesis states that there is no significant relationship between achievement goals and academic success among students of Colleges of Education in North Western Nigeria

Table 4.19 Pearson Product Moment Correlation (r) statistics on the relationship between the achievement goals and the academic success of colleges of education students in North Western Nigeria.

Variables	N	Mean	S.D	Corr. Index r	Df	P
Achievement Goals	358	66.9832	9.7299	0.554		
Academic Success	358	3.51	1.089		356	0.004

** Correlation is significant at the 0.01 level (2-tailed).

The analysis of Pearson Product Moment Correlation presented in table 4.19 above revealed that there is statistically significant relationship between achievement goals and academic success of

students of Colleges of Education in North Western Nigeria. This is because the calculated significant (p) value of 0.004 is lower than the 0.05 alpha level of significance at a correlation index level of 0.554 at df of 356. The relationship between the two is directly proportional where the data shows that the two sets of scores increase together and also decrease together. This shows that the Academic success is significantly affected by achievement goals. Hence, the null hypothesis which states that there is no significant relationship between the achievement goals and the academic success of students of Colleges of Education in North Western Nigeria is hereby rejected.

Further analysis of the above result indicates that the strongest relationship was between mastery goals and performance goals (r = .565) which indicates that mastery goals and performance goals tend to positively correlate among students of Federal and State Colleges of Education. The positive correlation here means that as the student's mastery goals increases, so does performance goals at least by 56.5%.

Hypothesis 2: There is no significant relationship between Metacognitive Awareness and academic success among students of colleges of education in North Western Nigeria.

Table 4.20: Pearson Product Moment Correlation (r) analysis on the relationship between Metacognitive Awareness and Academic Success.

Variables	N	Mean	S.D	Corr. Index r	Df	p
Metacognitive Awareness	358	205.7458	31.4168			
Academic Success	358	3.51	1.089	0.673	356	0.001

At 0.01 Level (1-Tailed).

The analysis shown in Table 4.02 reveals that there is statistically significant relationship between the metacognitive awareness and the academic success of students of Colleges of Education in North

Western Nigeria. This is because the calculated significant (p) value of 0.001 is lower than the 0.05 alpha level of significance at a correlation index r level of 0.673 at df of 356. The relationship between the two is directly proportional. This shows that the Academic success is significantly affected by students' level of Metacognitive awareness. Hence, the null hypothesis which states that there is no significant relationship between students' Metacognitive awareness and their academic success is hereby rejected.

Further, the analysis indicates that declarative knowledge has significant relationship with Academic Success as the calculated p-value of 0.013 is lower than the 0.05 level of significance. At the same time the p-values of other metacognitive awareness subscales have no significant relationship with academic success. The calculated p-values are higher than the 0.05 alpha level of significance. This is an indication that declarative knowledge can be used to predict students' academic success.

Hypothesis 3: *There is no significant relationship between students' achievement goals and their metacognitive awareness.*

Table 4.21: Pearson Product Moment Correlation (r) analysis on the relationship between the Achievement goals and Metacognitive Awareness of students.

Variables	N	Mean	S.D	Corr. Index r	Df	p
Achievement Goals	358	66.9832	9.7299	0.771		
Metacognitive Awareness	358	205.7458	31.4168		356	0.000

**. Correlation is significant at the 0.01 level (1-tailed).

The information in table 4.21 above indicates a statistically significant relationship between the Achievement goals and Metacognitive awareness students of Colleges of Education in North Western Nigeria because the calculated significant p value of 0.000 is lower than the 0.05 alpha level of significance at a correlation index r level of 0.771 at df of 356. The relationship between the two is

directly proportional. This shows that students' achievement goals have strong link with their metacognitive awareness. On the account of this finding, the null hypothesis is hereby rejected.

Hypothesis 4: *There is no significant relationship between Metacognitive knowledge and Metacognitive Regulation among students of Colleges of Education in North Western Nigeria.*

Table 4.22: Pearson Product Moment Correlation (r) analysis on the *relationship between Metacognitive knowledge and Metacognitive Regulation among students of Colleges of Education in North Western Nigeria.*

Variables	N	Mean	S.D	Corr. Index r	Df	p
Metacognition knowledge	358	31.5978	5.56451			
Metacognitive Regulation	358	28.2598	4.85326	0.717	356	0.000

**. Correlation is significant at the 0.05 level (2-tailed).

According to table 4.22 above, Pearson Product Moment Correlation analysis revealed a statistically significant relationship between the Metacognitive knowledge and Metacognitive Regulation of college students in North Western Nigeria ($r=0.717$, $df=356$, $p<0.05$). This is because the calculated significant (p) value of 0.000 is lower than the 0.05 alpha level of significance at a correlation index r level of 0.717 at df of 356. This shows that the students' Metacognitive knowledge is significantly affected by their metacognitive regulation. Based on this finding, the null hypothesis which states that there is no significant relationship between Metacognitive Knowledge and

Metacognitive Regulation of students of colleges of education in North Western Nigeria is hereby rejected.

Hypothesis 5: *Gender has no significant effect on students' achievement goals, metacognitive awareness and academic success.*

Table 4.23: Independent t test Analysis of students' Assessment of Achievement goals, Metacognition and Academic Success by Gender

Variable	Gender	N	Mean	SD	t-value	Df	p-value
Achievement Goals	Male	222	66.49	9.63			
	Female	136	67.78	9.86	1.213	356	0.226
Metacognitive Awareness	Male	222	205.76	30.74			
	Female	136	205.72	32.59	0.12	356	0.991
Academic Success	Male	222	3.45	1.10			
	Female	136	3.63	1.06	1.513	356	0.131

Calculated p > 0.05, calculated t< 1.96 at df 356

Results from table 4.23 above showed no significant gender difference in students Achievement goals ($p=0.226 > 0.05$, t-cal=1.213<1.96 at 356 df), Metacognitive awareness ($p=0.991 >0.05$, t-cal=0.012 < 1.96 at 356 df) and Academic Success ($p=0.131 > 0.05$, t-cal=1.513 < 1.96 at 356 df). Based on the obtained data, the mean difference of Achievement goals by both males (M=66.4955) and female students (M=67.7794) was insufficient to reject the null hypotheses. This implies that male and female students have almost the same level of achievement goals. Similarly, the same t-test analysis indicates insignificant mean difference of Metacognitive awareness scored by males (M=205.7613) and females (M=205.7206). According to the analysis, male and female students have almost the same Metacognitive Awareness which implies that their reflecting upon their cognitive activities during learning is the same. It can be explained that biological differences between male and female does not concede to any meaningful advantage towards metacognitive awareness. The table also showed no gender difference in students Academic Success. Going by calculated mean scored for Academic Success by both male (M=3.45) and female (M=3.63), the difference is also insufficient to reject the null hypothesis. Thus, the null hypothesis which states that there is no gender effect in students Achievement goals, Metacognitive awareness and academic success is hereby retained.

Hypothesis 6: *College type has no significant effect on students' achievement goals, metacognitive awareness and academic success.*

Table 4.24: **Independent t-test Analysis on difference between students of State Colleges and Federal Colleges of Education in their Achievement goals, Metacognitive awareness and Academic success**

Variable	College	N	Mean	SD	t-value	Df	p-value

Achievement Goals	FCEs	144	69.97	7.68			
	COE's	214	64.96	10.43	4.933	356	0.000
Metacognitive Awareness	FCE's	144	214.27	24.70			0.000
	COE's	214	200.00	34.09	4.313	356	0.000
Academic Success	FCE's	144	3.97	.87			
	COE's	214	3.21	.76	6.950	356	

Calculated p > 0.05, calculated t< 1.96 at df 356

Results of the above independent t-test statistics showed that significant differences exist between students of State Colleges and Federal Colleges of Education in their Achievement goals. The fact that the calculated p value (0.000) is below the threshold of 0.05 level of significance which means that college type has mediating effect on students' achievement goals. Also the calculated t value of 4.933 is higher than the 1.96 critical t value at df 356. Mean calculated for Achievement goals were 69.9792 and 64.9673 by students of Federal and State Colleges of education respectively. This implies that Students of Federal Colleges of Education had significantly higher Achievement goals than their counterparts in state Colleges of Education Therefore, the null hypothesis which state that there is no significant difference between students of state colleges and Federal Colleges of Education in their Achievement goals, is hereby rejected.

The independent t-test analysis in table 4.24 above revealed that significant difference exist between students of state colleges and Federal Colleges of Education in their Metacognitive Awareness. The calculated p value of 0.000 is lower than the 0.05 level of significance while the calculated t value of 4.318 is higher than the 1.96 critical t value at df 356. Mean of metacognitive awareness were 214.27 and 200.00 by students of Federal and State Colleges of Education respectively. This implies that

Students of Federal Colleges of Education had significantly higher metacognitive awareness than their counterparts in state colleges of education. Thus, the null hypothesis is rejected.

Similarly, analysis of independent t-test above showed that significant difference exists between students of state and Federal Colleges of Education in their Academic success. The p value of 0.000 is lower than the 0.05 level of significance while the calculated t value of 6.95 is higher than the 1.96 critical t value at df 356. The calculated mean of Academic success scored by students of Federal Colleges (M=3.97) surpassed that of State Colleges (M=3.21). This implies that Students of Federal Colleges of Education had significantly higher academic success than their counterparts in State Colleges of Education Therefore, the null hypothesis which state that there is no significant difference between students of state colleges and Federal Colleges of Education in their mean Academic success is hereby rejected.

Hypothesis 7: *There is no significant effect between Arts and Science students in their achievement goals, metacognitive awareness and academic success.*

Table 4.25: **Independent t test statistics on significant effect between NCE arts and NCE Science students in their Achievement goals, Metacognitive awareness and Academic Success**

Variable	Programme	N	Mean	SD	t-value	Df	p-value

Achievement Goals	NCE Arts	166	68.21	8.65			
	NCE Science	192	65.91	10.47	2.243	356	0.026
Metacognitive Awareness	NCE Arts	166	208.28	31.24			
	NCE Science	192	203.54	31.47	1.426	356	0.155
Academic Success	NCE Arts	166	3.45	1.22			
	NCE Science	192	3.57	.95	1.102	356	0.271

Calculated p < 0.05, calculated t > 1.96 at df 356

In the table 4.25 above, independent t-test analysis revealed that significant differences exist between NCE Arts and NCE Science students in their Achievement goals. When the calculated p value (0.026) is below the level of significance (0.05) and the same time the calculated t value was 2.243 higher than the 1.96 critical t value at df 356. In the analysis, mean of achievement goals scored by NCE Arts (M=68.2169) surpassed that of NCE Science (M=65.91). This implies that NCE Arts students had significantly higher achievement goals than their counterparts in NCE Science programme. Thus, the null hypothesis is hereby rejected.

The same table above revealed no significant differences between NCE arts and NCE Science students in their metacognitive awareness (p value = 0.155 at 0.05 level of significance). The calculated t value of 1.426 is lower than the 1.96 critical t- value at df 356 while the calculated means were 208.289 and 203.546 by NCE Arts and NCE Science students respectively. This result implies that both students of Arts and Science NCE programme have almost the same level metacognitive awareness. Consequently, the null hypothesis which states that there is no significant effect between NCE Arts and NCE Science students in their metacognitive awareness is hereby retained.

Similarly, the independent t-test analysis indicates that no significant differences between NCE arts and NCE Science students in their mean Academic success. The result is that the calculated p-value of 0.271 is above the 0.05 level of significance while the calculated t value of 1.102 is lower than the 1.96 critical t value at df 356. The two groups obtained mean scores for academic success (3.45 and 3.57) by NCE Arts and NCE Science students respectively. This result implies that both students of Arts and Science NCE programme have almost the same level of mean in their Academic success. Consequently, the null hypothesis which states that there is no significant difference between NCE Arts and NCE Science students in their mean of Academic success is hereby retained.

Hypothesis 8: *Parent education has no significant effect on students' achievement goals, metacognitive awareness and academic success.*

Table 4.26: Analysis of variance (ANOVA) on the effect of Parent education on students' achievement goals, metacognitive awareness and academic success

Variable	Source	SS	Df	MS	F	Sig.
Achievement Goals	Between Groups	184.321	2	92.160	0 .973	0 .379
	Within Groups	33613.579	355	94.686		
Metacognitive Awareness	Between Groups	2512.747	2	1256.374	1.275	0.281
	Within Groups	349853.121	355	985.502		
Academic Success	Between Groups	0.972	2	0.486	0.408	0.655
	Within Groups	422.458	355	1.190		

A look at table 4.26 showed that there is no significant effect of parent education on students' achievement goals. Reason being that the calculated p value of 0.379 is higher than the 0.05 alpha level of significance and the calculated F value of 0.973 is higher than the 2.6o F critical value. Their calculated mean achievement goals were 67.50, 68.03 and 66.42 by students whose parent education level were primary, secondary and tertiary education respectively, implying that their fathers education do not significantly affect students achievement goals. Therefore the null hypothesis which state that parent education has no significant effect on students' achievement goals, is hereby retained

In the case of metacognitive awareness, the Analysis of variance (ANOVA) in the table above also showed that parent education has no significant effect on students' metacognitive awareness,

reason being that the calculated p value of 0.281 is higher than the 0.05 alpha level of significance and the calculated F-value of 1.275 is lower than the 2.60 F critical value. Means calculated scores for metacognitive awareness were 212.00, 206.64 and 204.03 by students whose parent educational qualifications were primary, secondary and tertiary education respectively, implying that their fathers education do not significantly affect students metacognitive awareness. Therefore the null hypothesis which states that parent education has no significant effect on students' metacognitive awareness, is hereby retained

Further analysis on the academic success aspect in the table also shows that there is no significant effect of parent education on students' academic success. The calculated p value of 0.665 is higher than the 0.05 alpha level of significance and the calculated F value of 0.408 is lower than the 2.60 F critical value. The mean of academic success scored by the groups were 3.57, 3.59 and 3.47 for students whose fathers' education was primary, secondary and tertiary education respectively. This implies that the fathers education do not significantly affect students' academic success. Therefore the null hypothesis which states that parent education has no significant effect on students' academic success, is hereby retained.

Hypothesis 9: *Students' accommodation location does not have significant effect on their achievement goals, metacognitive awareness and academic success.*

Table 4.27: **t- test Analysis on the effect of students Accommodation Location (of college hostel and off campus) on their Achievement goals, Metacognition and Academic Success**

Variable	Accommodation	N	Mean	SD	t-value	Df	p-value

Achievement Goals	College Hostel	117	69.34	8.12			
	Off campus	241	65.83	10.23	3.238	356	0.001
Metacognitive Awareness	College Hostel	117	215.05	23.44	3.989	356	0.000
	Off campus	241	201.22	33.76			
Academic Success	College Hostel	117	3.69	0.96	2.170	356	0.031
	Off campus	241	3.43	1.13			

Calculated p < 0.05, calculated t > 1.96 at df 356

Results from table 4.27 above showed that significant differences exist between students of college hostel and off campus accommodation in their achievement goals. This is because the calculated p value of 0.001 is less than the 0.05 level of significance while the calculated t value of 3.238 is higher than the 1.96 critical t-value at df 356. The mean calculated values for achievement goals were 69.34 and 65.83 by students of college hostel and off campus accommodation location respectively. By implication, students of college hostel accommodation location had significantly higher achievement goals than their counterparts in off campus accommodation location. Therefore, the null hypothesis is hereby rejected.

Also, the independent t-test analysis above showed that significant differences exist between students of college hostel and off campus accommodation location in their Metacognition. This is because the calculated p value of 0.000 is lower than the 0.05 level of significance while the calculated t value of 3.98 is higher than the 1.96 critical t value at df 356. Mean scores of metacognitive

awareness are 215.05 and 201.22 by students of college hostel and off campus accommodation location respectively. This implies that Students of college hostel accommodation location had significantly higher Metacognition than their counterparts in off campus accommodation location. Therefore, the null hypothesis is rejected.

Moreover, the table revealed that significant difference exists between students of college hostel and off campus accommodation location in their Academic success. This is because the calculated p value of 0.031 is lower than the 0.05 level of significance while the calculated t value of 2.170 is higher than the 1.96 critical t value at df 356. With respect to academic success, students of college hostel had a mean of 3.69 while those living off campus had 3.43. This implies that Students of college hostel accommodation location had significantly higher Academic success than their counterparts in off campus accommodation location. Therefore, the null hypothesis which state that students' accommodation location does not have significant mediation effect on their Academic success, is hereby rejected.

Hypothesis 10: *Students' internet usage has no significant effect on their achievement goals, metacognitive awareness and academic success.*

Table 4.28 (a): Analysis of Variance (ANOVA) on the effect of students' internet usage regularity on their achievement goals

Source of Variance	Sum of Squares	Df	Mean Square	F-value	p
Between Groups	870.402	2	435.201	4.692	0.010
Within Groups	32927.497	355	92.754		
Total	33797.899	357			

At 0.05 level of significance

The Analysis of variance (ANOVA) in table 4.4.01 shows existence of statistically significant effect of students' internet usage regularity on their achievement goals. Reason being that the calculated p value of 0.010 is lower than the 0.05 alpha level of significance and the calculated F value of 4.692 is higher than the 2.60 F critical value. Their calculated mean achievement goals were 67.6500, 68.1505 and 64.6875 by students whose internet usage regularity were intense user, moderate user and light user respectively, implying that internet intense users and moderate users have higher achievement goals than the internet light users. Therefore the null hypothesis is hereby rejected

Hypothesis 10 (b): *Students' internet usage has no significant effect on their metacognitive awareness.*

Table 4.28 (b): Analysis of variance (ANOVA) on the effect of students internet usage regularity on their Metacognitive Awareness.

Source of Variance	Sum of Squares	Df	Mean Square	F-value	p
Between Groups	2125.145	2	1062.573	1.077	0.050
Within Groups	350240.724	355	986.594		
Total	352365.869	357			

At 0.05 level of significance

The Analysis of variance (ANOVA) above showed no statistically significant effect of students' internet usage regularity on their Metacognitive awareness. Reason being that the calculated p value of 0.342 is higher than the 0.05 alpha level of significance and the calculated F value of 1.077 is lower than the 2.60 F critical value. The calculated mean for metacognitive awareness were 208.63, 206.91 and 202.25 by students whose internet usage regularity were intense user, moderate user and light user respectively, implying that their internet usage status does not significantly affect their metacognitive awareness. Therefore the null hypothesis which states that there is no significant effect of students internet usage regularity on students metacognitive awareness is hereby retained.

Hypothesis Ten (c): This null hypothesis states that students' internet usage regularity has no significant effect on their Academic success

Table 4.28 (c): Analysis of variance (ANOVA) statistics on the effect of students' internet usage regularity on students' Academic success.

Source of Variance	Sum of Squares	Df	Mean Square	F-value	p
Between Groups	7.094	2	3.547	3.024	0.050
Within Groups	416.336	355	1.173		
Total	423.430	357			

The Analysis of variance (ANOVA) statistics showed that there exists significant effect of students' internet usage regularity on their Academic success. Reason being that the calculated p value of 0.050 is equal to the 0.05 alpha level of significance and the calculated F value of 3.024 is higher than the 2.60 F critical value. Their calculated mean Academic success were 3.68, 3.58 and 3.31 by students whose internet usage regularity were intense user, moderate user and light user respectively, implying that internet intense users and moderate users have higher Academic success than the internet light users.

Therefore the null hypothesis which states that there is no significant effect of students' internet usage regularity on students' Academic success, is hereby rejected.

Post hoc Analysis

The rejection of the hypothesis that says students' internet usage regularity has no significant effect on their achievement goals and academic success calls for further analysis. In attempt to determine the source of the variation among the three groups of internet users (i.e., light, moderate and intense users), Scheffe model was used as a post hoc analysis. Thus, below is the further analysis of hypothesis 10 a, b and c.

Table 4.29a Scheffe Multiple comparisons of Internet use regularity on Students' Achievement Goals

Variable	N	Internet use Regularity (I)	(J)	Mean Difference (I-J)	sig.
Achievement Goals	60	Intense Users	Moderate Users	-.50054	.941
			Light Users	2.96250*	.159
	186	Moderate Users	Intense Users	.50054	.941
			Light Users	3.46304*	.012
	112	Light Users	Intense Users	-2.96250	.159
			Moderate Users	-3.46304	.012

* The mean difference is significant at 0.05 level of significance

The result showed that the mean difference between students who were internet intense users and light users was significant in relation to their achievement goals while no significant mean difference exists between intense and moderate users. This implies that students who are intense and moderate

internet users have higher achievement goals than those who are light internet users. Thus the homogeneous subsets indicate that the t-calculated is significant.

Table 4.29b Homogenous Subsets of Students' Achievement Goals

Internet Use Regularity		N	Subset for alpha = 0.05	
			1	2
Scheffe	Light Users	112	64.6875	
	Intense Users	60	67.6500	67.6500
	Moderate Users	186		68.1505
	Sig.		.103	.937

The homogenous subsets above used Harmonic Mean Sample size of 96.863, indicating that the mean difference according to the t-calculated is significance between internet intense users and light users, and also between internet moderate users and light users. This suggests that students' achievement goals are affected by user regularity level.

Table 4.29c Scheffe Multiple comparisons of Internet use regularity on Students' Metacognitive Awareness

Variable	N	Internet use Regularity (I)	(J)	Mean Difference (I-J)	sig.
Metacognitive Awareness	60	Intense Users	Moderate Users	1.72	.935
			Light Users	6.38	.447
	186	Moderate Users	Intense Users	-1.72	.935

		Light Users	4.66	.463
112	Light Users	Intense Users	-6.38	.447
		Moderate Users	-4.66	.463

* The mean difference is insignificant at 0.05 level of significance

The above shows that internet usage status does not significantly affect their metacognitive awareness because the difference in the means of internet intense and moderate users is insignificant while differences were seen between intense users and light users (6.38); and between moderate and light users (4.66). Other observed differences were negative among the compared groups.

Table 4.29d Homogenous Subsets of Students' Metacognitive Awareness

Internet Use Regularity		**N**	**Subset for alpha = 0.05**
			1
Scheffe	Light Users	112	202.25
	Moderate Users	186	206.91
	Intense Users	60	208.63
	Sig.		.369

Table 4.29e Scheffe Multiple comparisons of Internet use regularity on Students' Academic Success

Variable	**N**	**Internet use Regularity (I)**	**(J)**	**Mean Difference (I-J)**	**sig.**

Academic Success	60	Intense Users	Moderate Users	.103	.816
			Light Users	.371	.103
	186	Moderate Users	Intense Users	-.103	.816
			Light Users	.268	.119
	112	Light Users	Intense Users	-.371	.103
			Moderate Users	-.268	.119

* The mean difference is significant at 0.05 level of significance

Table 4.29e above has shown that the differences among the groups of intense, moderate and light internet users are significant.

Table 4.29f Homogenous Subsets of Students' Academic Success

Internet Use Regularity		**N**	**Subset for alpha = 0.05**
			1
Scheffe	Light Users	112	3.31
	Moderate Users	186	3.58
	Intense Users	60	3.68
	Sig.		0.60

According to the table the calculated means of academic success were 3.68, 3.58 and 3.31 by students whose internet usage regularity were intense user, moderate user and light user respectively, implying that internet intense users and moderate users have higher Academic success than the internet light users. The t at 0.05 level is significant in favour of intense and moderate internet users.

4.4 Summary of Major Findings

The following are the summary of the major findings of the analysis:

1. Students' achievement goals are positively related to their academic success (r = 0.544, P =0.004) particularly the role of their mastery goals as a predictor of academic success.
2. Students' metacognitive awareness significantly correlated with their academic success (r = 0.673, p = 0.001) particularly the role of declarative knowledge in predicting their academic success.
3. The more students' pursue achievement goals orientation, the greater their likelihood of developing their metacognitive awareness (r = 0.771, p = 0.000) and also the less students adopt achievement goals orientation, the lower their chances for controlling and manipulating their own cognitive processes.
4. Students successful regulation of their cognition relies on their own knowledge about how the cognition works (r = 0.717, p = 0.000) such that poor knowledge about cognition will result to poor regulation of cognition.
5. There is no significant difference between male and female students in their Achievement goals (t = 1.213, p = 0.226), Metacognitive awareness (t = 0.12, p = 0.991) and Academic Success (t = 1.513, p = 0.131).
6. Students of Federal Colleges of Education had significantly higher Achievement goals (t = 4.933, p = 0.000), Metacognitive awareness (t = 4.31, p = 0.000) and academic success (t = 6.95, p = 0.000) than their counterparts in state colleges of education.
7. NCE Arts Students had significantly higher Achievement goals than their counterparts in Science programme (t = 2.243, p = 0.026), while no significant effect of academic discipline was

established on students' metacognitive awareness (t = 1.426, p = 0.155) and academic success (t = 1.102, p = 0.271).

8. Parent's education (fathers education and mother education) do not significantly influence students' Achievement goals (p = 0.379, F cal. = 0.973), Metacognitive awareness (p = 0.281, F cal. 1.275 and Academic success (p = 0.665, F cal. 0.408).
9. Students who live in hostel accommodation had significantly higher Achievement goals (t = 3.238, p = 0.001), metacognitive awareness (t = 3.98, p = 0.000) and Academic success (t = 2.170, p = 0.031) than their counterparts who live in off campus accommodation.
10. Internet intense users and moderate users have higher Achievement goals (p = 0.010, F cal. = 4.692) and Academic success (p =0.050, F cal. = 3.024) than the internet light users while in terms of metacognitive awareness there is no significant influence of internet use regularity (p = 0.342, F cal. = 1.077).

4.5 Discussion of Findings

The purpose of the present study was to examine the relationship between achievement goals and metacognitive awareness on academic success among students of colleges of education in North Western Nigeria. This section therefore discusses the findings of the study. In terms of the hypothesis tested in this study, results revealed a statistically significant relationship exist between achievement goals and academic success (r = .554) among students of colleges of education in North Western Nigeria. This suggests that the level of students' achievement goals has significant correlation with their academic success. In other words, having achievement orientation determines students' level of academic success. While several researches like Roebken, (2007); Ndidiamaka, (2010), Coutinho, (2007) etc. have paid much attention about the particular aspect of achievement goals (mastery or performance orientation) that correlated with students' academic success, the present study looked at achievement goals indices as a whole and compared them with the index of students' academic success.

However, the results obtained from regression analysis (post hoc analysis) are in consonant with the previous findings of Coutinho, (2007); Ndidiamaka, (2010), and Roebken, (2007) in that strong relationship exists between students' mastery goals and their academic success. In fact, knowing the index of student's mastery orientation can be used to predict his academic success. The findings also revealed that students' mastery goals correlated with performance orientation. From the literature, achievement goal theorists have long posited a negative relationship between performance goals and academic success (Elliot & Church, 1997; Nicolls, 1984; Marine, 2005; etc.), and in this context, the findings (r = .071) appear to concur with the literature. This result may simply be attributable to the dispositions of students that pursued performance goals during learning (i.e., withdrawal of effort in the face of failure), but it is also important to note that in the literature reviewed it was found that performance goals positively correlated with students' academic success in subjects that have to do practice (such as pharmacy). Taken this as a whole, the results do provide support to the importance of goal orientations in determining students' academic success.

The results of this study also signify the importance of metacognitive awareness on students' academic success where the findings are in line with the previous studies of Coutinho (2007), Zulkiply (1999), Ebra, Beharooz and Mahmood, (2014), Onovughe and Hannah (2011) etc. Using Pearson product moment correlation the result indicates a direct significant positive relationship between metacognitive awareness and academic success (r=0.67, p=0.001) suggesting that the relationship between the two is directly proportional. It seems that students who have good CGPA are better on metacognitive awareness and vice versa. This Implies that students' metacognitive awareness is no doubt an important aspect of students learning process. This result further explained that metacognitive awareness is one of the characteristics of a successful student because he knows the best strategies that work for him and also know when and why to use such strategies. More importantly, metacognitive aware students are very good at their planning, monitoring their progress and learning strategies and evaluating their

learning strategies, learning output, self-strengths and weaknesses throughout the whole learning process which study also supports. The results have also shown that students with high metacognitive awareness generally outperform those who score low on the scale i.e., they have tendency to become successful learners than their counterpart. It was further revealed (using regression analyses) in this study that the index of metacognitive awareness which can positively predict students' academic success was declarative aspect of metacognitive knowledge ($p = 0.013$ at 0.05 level of significance). This shows that declarative knowledge can be used as a tool for encouraging students and lecturers to have awareness during any cognitive activity since doing so, will influence their grades.

Similarly, the results have shown existence of strong correlation between achievement goals and metacognitive awareness which is in line with the literature reviewed earlier. The findings support the assertion made by Ndidiamaka (2010), Coutinho (2006) and Dina and Effklides (2009) that achievement goals correlate with students' metacognitive awareness particularly the influence of mastery orientation. This suggests the students who have mastery orientation towards academic activities are likely to have good metacognitive awareness than those that pursue performance goals. If students possess good performance goals, it does not necessarily mean that they will have good metacognitive awareness. In other words, mastery goals can be used to predict student' metacognitive awareness. The results further give useful tips for the need to assess and modify goals to meet the required students' self-regulation of their learning.

Regarding the relation between students' metacognitive knowledge and metacognitive regulation, the results showed an existence of a positive relationship. As was expected and found in previous research (Schraw & Dennison, 1994; Sperling, 2004 Fry & Young, 2008) there was a significant correlation between the metacognitive knowledge and the metacognitive regulation. Literally this result provides support for the validity of the MAI as a measure of metacognition which means that MAI is a

useful tool for assessing and promoting of the underlying processes involved in learning. The findings suggest that the inventory is suitable for use in Nigeria. Technically, the results imply that students' knowledge; about how they learn, use of effective procedures and strategies, and the conditions of various cognitive activities have influence on how they plan, monitor and evaluate their learning. This means that a student who has low scores on the metacognitive knowledge is likely to have poor coordination of any cognitive task which consequently will affect his overall learning. In other words, a high score on the awareness or knowledge of cognition has a link on students' monitoring and regulation of their cognition.

Results of findings did not establish any significant gender interaction in determining students' achievement goals, metacognitive awareness and academic success. This implies that male and female NCE III students of colleges of education have the same desire to achieve, control of cognition and performance - at an average level. In other words no clear advantage of any particular gender over the other was established. In the previous studies reviewed earlier, inconsistent results were established on the influence of gender in determining achievement goals, metacognition and academic success. According to some studies (Tahir, Ghayas & Adil; 2012) there is a significant gender effect on students' achievement goals, where females outperformed their males counterpart. The reason for this variation in the result is that in their study, achievement goals were examined along with sociability as predictors of academic success. The other reason may include that the study was carried out in different societies.

Moreover, the study did not reveal any significant difference between male and female assessment of their metacognitive awareness. This result is in line with the previous findings (Rani & Goril, 2013; Chukudi, 2013) that gender does not influence students' metacognitive awareness. On the other hand, the results contradict that of Niemivirta (1997), Bidjerano (2005) and Liliana and Lavinia (2011) who reported that male students use more superficial learning strategies than females and also

differ significantly in metacgnitive knowledge and skills during their learning process. Reason that could be advance for this variation in the finding may be due to the fact that the present study and those that concurred with it have examined students' metacognitive awareness as an entity while those investigators that established some differences have looked at gender influence on certain aspects of metacognitive skills/awareness.

Furthermore, prior research reports have revealed inconsistent findings regarding the differences in academic success of students by their gender. For instance, Jacobs (2002) and Blume (2011) found that female students outperform males at spelling, tests of literacy, writing and general knowledge, while male students outperform their female counterpart in spatial skills tasks such as mental rotation, spatial perception and displayed greater confidence in mathematics skills (Voyer et al, 1995; Casey et al, 2011), though these findings are observed to be subject-specific. Nonetheless, the present study indicates that there is no gender difference in terms of students' index of overall academic success

implying that both male and female students have almost the same measure of academic success.

This study shows that college type was found to have positive effect on students' achievement goals, where students of Federal Colleges had scored significantly higher achievement goals than those in state colleges. This finding has some implications. Thus, looking at the characteristics of students from both federal and state colleges, the following deductions may be applied on the results. One, the composition of students in Federal Colleges (i.e., from different parts of the country) may create a competitive atmosphere for students to have higher desire to achieve. Two, students in the state owned Colleges of Education may be reluctant because they are predominantly indigenes and those from their catchment. This group might have got so many friends that indirectly influence their motive to achieve compared to students had come from far

distance and have gotten few friends. Three, certainly availability of infrastructure, courses, adequate staff, etc., might have give students of federal colleges some advantages over their counterparts.

Similarly, college type was found to have significant effect on students' metacognitive awareness. Again, the students of Federal Colleges have high metacognitive awareness compared to those in state Colleges. This result aligns with the findings that achievement goals correlate with metacognitive awareness (Coutinho, 2007; Ndidiamaka, 2010, etc.). Since the result has shown that students of Federal Colleges have higher achievement goals, it can be predicted that they equally have higher metacognitive awareness compared to those in Colleges of Education. Still a t-test analysis of the data revealed a significant effect. Concerning the mediation effect of college type on students' academic success, result showed

that students of Federal Colleges had better index of academic success (M=3.97) compared to those in state colleges (3.21). According to the findings students who attend Federal Colleges tend to have higher academic success above those in State Colleges. The results also suggested that at a final year stage of NCE programme, federal colleges of education in North Western Nigeria, produce graduate that have high orientation to achieve, good CGPA, and understand to manipulate their thinking processes.

Regarding the difference in achievement goals between Arts and Science, the findings of the current study showed that NCE Arts students (t=2.243, p=0.026) had significantly higher achievement orientation than NCE science students. In other words, NCE students who are in Arts (M=68.21) tend to study for understanding and demonstrating their ability more effectively than those in sciences (M=65.91). According to the

results, their achievement goal is far superior by comparison. The role of other psychological variables may have been responsible the lower achievement orientation of the science group. Possible reason for the difference could attributed to the flexibility nature of Arts subjects while in Science learning depends on retention of facts. On the contrary, the t-test analysis showed no significant difference between NCE Arts and Science students in their metacognitive awareness ($t=1.426$, $p=0.155$). This finding implies that the use of metacognition is independent of academic discipline of Arts or Science. This means that both Arts and Science students have equal index of metacognitive ability. This result supports the assertion of the proponents of formal theories of metacognition (Reich et al, 1994; Kuhn, 1989) which states that students are the producers of their own development. They purposefully construct

and modify beliefs about how their memories work.

Furthermore, another result in this study demonstrated that academic discipline of Arts or Science did not have any effect in determining students' academic success, implying that both Arts and Science students can obtain their maximum performance in academic success. This finding is in consistent with the propositions of the System' theory of input-output model which states that the input determines the output. On the whole, both groups of students (Arts and Science) ca be said to have good achievement orientation, metacognitive awareness and other variables (such as high admission points, high socioeconomic background, good school background, etc.) which all contribute to academic success a position Atkinson called the 'incentive value for success.'

Regarding the assessment of the effect of parent's education on students' achievement

goals, metacognitive awareness and academic success, the result revealed that father's education did not significantly affect all the variables. Support for these findings could be gleaned from the three separate one-way analyses of variance, treating achievement goals, metacognitive awareness and academic success against three indices of father's educational qualification (i.e., primary, secondary and tertiary). According to results gained from this particular study, that no statistically significant difference was found among the three groups of parent's education with regards to students' achievement goals ($p=0.379$, $f=0.973$ at 0.05 level of significance). This may have practical significance for all stakeholders in education particularly the student who is to determine which goal orientation should he pursue and at what point should he modify his goals in order to meet them. The results have further given insight to the classroom teachers that they can

encourage students of whatever parental educational background to develop their goals in order to achieve their future careers. Findings of insignificant effect of parent's education on achievement goal are in consistent with the previous studies (Read, 2010; Alyssa, Gordon & Jin; 2008) who have also reported a negative correlation. Furthermore, the above finding suggests that students who actively understand their knowledge about their own cognition and who engage in monitoring, evaluation and planning may be more successful regardless of their fathers' educational qualification. The results (f=1.275, p=0.281 at 0.05 level of significance) have further ascertained the assumptions of Flavell (1979) which states that the variable or factors that interact to affect the cause and outcome of cognitive enterprises are the person, the task and the strategy used. Thus, parent's education is something external to the students which have no

effect in the process of metacognition. It is also important to consider that the present study find it that parent's education has not significantly affected students' academic success. A one-way analysis of variance was performed on the data to determine which of parent education group attained higher academic success, but the results revealed no significant effect (f=0.408, p=0.665 at 0.05 level of significance) all the indices of parent's education on academic success. Contrary to the finding of this study, previous studies like Steveson and Baker (1992), Ogunshola and Adewale (2012), and; Barry (2005) have found significant effect of parent' education on students' academic success. The implication here lies in the fact that other sources of effect or factors may be there playing the role of students learning other than their parental educational statuses. Many reasons could be advanced for the difference in these findings. One, parent educational status as

an indicator of SES reflects the potential for social and economic resources such as household income that are available to the student. The findings of this study refute the assumption that more educated parent creates environments that facilitate learning and involve themselves in their ward's school experiences and school environment. Here the level of the students (NCE III) studied reveal that many are not under the care of the parent while some have already formed their own families. This result therefore support the view of Jacob and Havey (2005) that in some cases, students may come from homes where the parents are highly educated and involved in their children's education, yet achieve poorly at school. One, explanation may be on the means used in eliciting information about student's socioeconomic status. Another may be due to the nature of learning environment (colleges of education) which may also determine the social

class of students under the study. This finding therefore support the assertion made by Sun and Bradley (2004) stating that family SES are largely determined by the location of the child's neighborhood and the school. It is also pertinent to note here that apart from the parent's educational qualification, their active or passive involvement and support are also likely to affect the outcome of investigating the role of such qualification in determining students' academic success.

A further analysis in the present study has showed a significant effect of students' accommodation location on their achievement goals, metacognitive awareness and academic success. According to the results, the scores of achievement goals of students residing in college hostels (M=69.34) was higher than the group who have their accommodation location outside the college premises (M=65.83) as indicated by t-test analysis (t=3.238, p=0.001 at 0.05 level of

significance). However significant difference was found in metacognition and academic success when compared in respect of students residing in college hostel accommodation and those outside the college. This implies that students' who live in hostel accommodation are likely to have higher achievement goals orientation, developing higher cognition and academic achievement than those living off campus. There are possible reasons for these results. For example, proximity and accessibility to college facilities that the hostel group has might have affected their general wellbeing which could contribute to higher achievement goals, metacognition and academic success. Another possible reason for the difference is that students staying off campus might have a lot of difficulties ranging from transportation problem to lack of basic amenities which could make them unable to manage their academic activities successfully while battling with societal demands

and expectations, and a host of other issues that may hinder maintenance of positive attitude towards academic activities.

A look at the findings revealed that use of internet on the regularity level on the students has also showed significant effect on their achievement orientation and academic success of the students. The results suggest that increase in the educational input through the use internet can produce the desired outcome of school achievement particularly integrating internet use into effective instructional activities such as assignment; project writing and research. Previous researches have shown conflicting information on this issue. Some researchers suggest significant effect of moderate internet use on academic success (Wesley & Michael, 2011; Kubey, Lavin & Barrows, 2001; Fasae & Aladeniyi, 2012) while other researchers suggest that students use of internet has no significant effect on their academic

success (Munoz & Montoliu, 2008). The present findings of this study therefore support the former research findings which reported that among intense and moderate users of internet have positive effects on students' academic success. The implication of this is that intense and moderate uses of internet for academic purpose by students are likely to improve their learning and this can manifest in their Cumulative Grade Point Averages. By only measuring students' internet use for academic purposes, this study might not have taken into account that those students found to be 'light' internet users on campus might be 'intense' users at home. This might make them report academic impairment due to extensive internet usage for no-academic purposes. In the same vein, the analysis of variance based on the regularity of students' use of internet has revealed a no clear difference in metacognitive awareness among the three groups of users (intense, moderate

and light) because the calculated p-value was 0.342 higher than the alpha level of 0.05. This suggests that higher order thinking among final year students of the programme is independent of any level of internet usage. Therefore, from the foregoing, one can say that internet use at whatever level of usage, is a neutral factor in determining students' awareness of their thinking processes as they learn to know their dispositions and talents in academic endeavors.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In this chapter the summary, conclusion and recommendations based on the results of findings in this study is hereby presented.

5.2 Summary

The study titled: "Relationship between Achievement goals, Metacognitive Awareness on Academic Success among Students of Colleges of Education in North Western Nigeria draws its participants from 12 Colleges of Education. In line with the research objectives, research questions, null hypotheses, as well as basic assumptions were also formulated to guide the research.

In chapter two, literature reviews on the concepts of achievement goals, metacognitive awareness and academic success was captured. From the conceptual perspective, the review highlighted students' academic motivation through mastery and performance orientation. The literature also sheds light on the goals students seek out to correspond with the quality and intensity of their behavior which amenable to change, as they change their goals. The concept of 'metacognitive awareness was discussed with a view of understanding how students self-reflection of their cognition through observing, monitoring, evaluating and regulating their thinking processes tend to explain their academic success. The theoretical framework on achievement goals such as normative theory; metacognitive awareness such as tacit and classical model; and academic success such as Atkinson's model and the ludwig's system theory were critically reviewed as they relate to the study. Moreover, relevant empirical works that relate to the present study were equally reviewed.

In chapter three, a correlation survey design was used for the study. Four sets of questionnaires were employed to illicit data from respondents. The questionnaires were:

a) Demographic information

b) Achievement Goals Inventory developed by Roedel, Schraw and Plake (1994).

c) Metacognitive Awareness Inventory developed by Schraw and Dennison (1994).

d) Academic Success Measure (Students' CGPA).

The questionnaires were pilot tested for validity and reliability. The reliability results have shown .85 and .89 for the questionnaire respectively. Students were sampled from a population of 22,021 NCE III students in 12 colleges of Education in the North Western Nigeria. For the analysis filled and retrieved questionnaires were analysed using parametric statistical tools. Pearson Product Moment Coefficient (r), Analysis of Variance (ANOVA), the t-test for independent samples and Regression Analysis were used to analyze the data obtained from the respondents.

In the final analysis, it was found that significant correlation exists between: Achievement goals and academic success; Metacognitive awareness and academic success; Achievement goals and metacognitive awareness and; Metacognitive knowledge and metacognitive regulation among students of Colleges of Education in North Western Nigeria.

In addition, significant effect of the College type and academic discipline of the students on their achievement goals, metacognitive awareness and academic success where Federal Colleges and NCE Arts had significant edge over the N.C.E Science. However, no significant difference was observed as a result of students' gender and parent's education in terms achievement goals, metacognitive awareness and academic success.

The findings of the study finally revealed that mastery goals of students' achievement goals can be used to predict student's academic success. Also, assessing students' metacognitive knowledge can be an index for determining their academic success.

5.3 Conclusion

On the basis of the findings of this study, the following conclusions are made. N.C.E. students' achievement goals correlate with their academic success which implies that students with high academic success have strong achievement goals orientation. Students' metacognitive awareness also correlates with their academic success which implies that high achievement students are frequently aware of their cognitive processes. In terms achievement goals, it correlate with their metacognitive awareness which means that as students have increase or decrease in their desire to achieve such will reflect in their metacognitive awareness. N.C.E. students' metacognitive knowledge correlates with their regulation of cognition, which means students knowledge about how their cognition works enable them to manipulate and control their own cognition.

Gender does not affect N.C.E students' achievement goals, metacognitive awareness and Academic success. Students of Federal Colleges have higher achievement goals, metacognitive awareness and academic success compared to those in State Colleges. NCE Arts students have higher achievement goals than their Science counterparts. Parent educational qualifications have no influence on N.C.E students' achievement goals, metacognitive awareness and academic success. Those students staying in hostel accommodation have higher achievement goals, metacognitive awareness and Academic success than those living in off campus accommodation. The use of internet also enhances N.C.E students' academic success and achievement goals.

5.4 Recommendations

Based on the findings, the following recommendations are made:

1. Since achievement goals positively correlate with students' academic success, students should be given intervention programme to help develop and induce their achievement orientation toward mastery of their course of study and be taught the use of metacognitive strategies in teaching and learning in their curriculum.

2. There is the need for the management of all Colleges of Education to have educational interventions aimed at developing students' metacognitive awareness which will foster purposeful self-regulation of their learning. This could be achieved by periodic assessment of students' metacognition which will serve as feedback as they move from one educational level to another.
3. Based on the fact that students' achievement goals correlate with their metacognitive awareness, they should be encouraged to set goals that will induce more adaptive pattern of cognition giving more attention on the process and value of learning rather than agitation of passing or failing.
4. In order to consider the quality of other means of obtaining data, there is the need for researchers who wish to conduct similar research on achievement goals, metacognitive awareness and academic success to use Metacognitive Awareness Inventory (MAI) across all levels of education and also consider other methods of data collection such as self observation, think aloud etc.
5. There is the need for Colleges of Education to create a competitive environment for students regardless of their gender disparity as this will go a long way in enhancing academic success based on individual's ability.
6. There is the need for National Commission for Colleges of Education to ensure that both the State and the Federal Colleges are provided with the basic infrastructures, facilities and equipments required for teaching and learning. This can be checked during their regular accreditation of NCE programme, so as to tackle the disparity that seems to exist between Federal and State colleges in terms of students' development of achievement goals, metacognitive awareness and academic success.

7. It is also recommended that the curriculum experts should modify the conventional methods of teaching science so that emphasis will based on mastery of the subject rather than demonstration of practical ability as this will go a long way to induce students' desire to pursue mastery orientation.
8. Since father and mother's education have no significant effect on students' achievement goals, metacognitive awareness and academic success, students should be motivated to develop their skills in learning.
9. As indicted in the findings that hostel accommodation enhances students' goal orientation, metacognitive awareness and academic success, standard and adequate hostel facilities should be built to accommodate more students in order to realize the above objectives.
10. There is also the need for both the State and the Federal Colleges of Education to provide functional internet facilities for their students as the regularity of internet usage significantly influenced their academic success and achievement goals.

5.5 Suggestion for Further Research

The study was limited to twelve (12) colleges of education in North Western Nigeria. Future studies could extend it to other geo-political zones or even take the whole country. In addition, future studies could employ a longitudinal survey so that changes in students' achievement goals and metacognitive awareness can be monitored for immediate intervention. This study should be extended to examine all aspects of students' socioeconomic status to see if similar results will be obtained. It is also suggested that a similar study should examine parent's

educational qualification along with their active involvement on students' academic pursuits. The study should be replicated using two by two (2x2) or three by three (3x3) achievement goals framework to see if similar results could be achieved.

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Appendix A

Department of Educational Psychology & Counseling, Ahmadu Bello University Zaria

7th August, 2014.

Dear Respondent,

Student Questionnaire on Achievement Goals, Metacognitive Awareness and Academic Success

The questionnaire is designed to assist in the collection of data for a PhD programme in Educational Psychology. The title of the research work is "Relationships between Achievement Goals, Metacognitive

awareness and Academic Success among students of Colleges of Education in North Western Nigeria”. The objective of the research is purely for educational purpose. You are expected to fill in the questionnaire with utmost sincerity. All information will be strictly confidential.

I am most grateful for your responses,

Thanks.

Yours faithfully,

Gidado Lawal Likko
PhD/EDUC/41835/2012-2013

Appendix B

Demographic Data

Instruction:

This inventory is designed purely for educational purposes. *You are expected to fill in the questionnaire with utmost sincerity*. *All information will be strictly confidential*. For the following, please tick ( ) an option as it applies to you.

Demographic Information

S/N	Items	Response		
1	Gender	Male ( )		Female ( )
2	Programme	NCE Arts ( )		NCE Science ( )
3	Name of the Institution			
4	Parent's level of Education Father's Education Mother's Education	Primary ( ) ( )	Secondary ( ) ( )	Tertiary ( ) ( )
5	Students' Accommodation	College Hostel ( )		Off Campus ( )
6	Internet use for academic purpose in the past 30 days	Intense user ( )	Moderate user ( )	Light user ( )

Appendix C

Achievement Goals Inventory

Mastery Goals						
S/ No.	*Items*					
1	I enjoy challenging school assignments.	*SA*	*A*	*UD*	*D*	*SD*
2	I persevere even when I am frustrated by a task.					
3.	I try even harder when I fail at something.					
4.	I adapt well to changing situations.					
5.	I work hard even when I don't like a class.					

6.	I am very determined to reach my goals.					
7.	Personal mastery of a subject is very important to me.					
8.	I work very hard to improve myself.					
9.	I am naturally motivated to learn.					
10.	I prefer challenging tasks even if I don't do well at them.					
11.	I feel most satisfied when I work hard to achieve something.					
12	I give up too easily when faced with a difficult task.					
	Performance Goals					
13.	It is important to me to get better grades than my classmates.					
14.	I like others to think I know a lot.					
15.	It bothers me the whole day when I make a big mistake.					
16.	I feel angry when I do not do as well as others.					
17.	It is important to me to always do better than others.					

Source: Adopted from Roedel, Schraw and Plake (1994), Achievement Goals Inventory.

Key:

i. *Item 1 – 12: Mastery Goals*
ii. *Item 13-17: Performance Goals*

APPENDIX D

Metacognitive Awareness Inventory (MAI)

1	I ask myself periodically if I am meeting my goals.	*SA*	*A*	*UD*	*D*	*SD*
2	I consider several alternatives to a problem before I answer.					
3.	*I try to use strategies that have worked in the past*.					
4.	I pace myself while learning in order to have enough time.					
5	I understand my intellectual strengths and weaknesses.					
6	I think about what I really need to learn before I begin a task.					
7.	I know how well I did once I finish a test.					
8	I set specific goals before I begin a task.					

9	I slow down when I encounter important information.					
10.	I know what kind of information is most important to learn.					
11	I ask myself if I have considered all options when solving a problem.					
12.	I am good at organizing information.					
13	I consciously focus my attention on important information.					
14.	I have a specific purpose for each strategy I use.					
15.	I learn best when I know something about the topic.					
16.	I know what the teacher expects me to learn.					
17.	I am good at remembering information.					
18.	I use different learning strategies depending on the situation.					
19.	I ask myself if there was an easier way to do things after I finish a task.					

20.	I have control over how well I learn.					
21.	I periodically review to help me understand important relationships.					
22.	I ask myself question about the material before I begin.					
23.	I think of several ways to solve a problem and chose the best one.					
24.	I summarize what I have learned after I finish.					
25.	I ask others for help when I don't understand something.					
26.	I can motivate myself to learn when I need to.					
27.	I am aware of what strategies I use when I study.					
28.	I find myself analyzing the usefulness of strategies while I study.					
29.	I use my intellectual strengths to compensate for my weaknesses.					
30.	I focus on the meaning and significance of new information.					

31.	I create my own examples to make information more meaningful.					
32.	I am a good judge of how well I understand something.					
33.	I find myself using helpful learning strategies automatically.					
34.	I find myself pausing regularly to check my comprehension.					
35.	I know when each strategy I use will be most effective.					
36.	I ask myself how well I accomplished my goals once I've finished.					
37.	I draw pictures or diagrams to help me understand while learning.					
38.	I ask myself if I have considered all options after I solve a problem.					
39.	I try to translate new information into my own words.					
40.	I change strategies when I fail to understand.					
41.	I use the organizational structure of the text to help me learn.					

42.	I read instructions carefully before I begin a task.					
43.	I ask myself if what I am reading is related to what I already know.					
44.	I reevaluate my assumptions when I get confused.					
45.	I organize my time best to accomplish my goals.					
46.	I learn more when I am interested in the topic.					
47.	I try to break studying down into smaller steps.					
48.	I focus on overall meaning rather than specifics.					
49.	I ask myself questions about how well I am doing while I am learning something new.					
50.	I ask myself if I learned as much as I could have once I finished a task.					
51.	I stop and go back over new information that is not clear.					
52.	I stop and reread when I get confused.					

Source: Adopted from Schraw and Dennison (1994), Metacognitive Awareness Inventory.

Key: ***Metacognitive Knowledge***

i. *Item 5, 10, 12, 16, 17, 20, 32 and 46: Declarative Knowledge*

ii. *Item 3, 14, 27 and 33: Procedural Knowledge*

iii. *Item 15, 18, 26, 29 and 35: Conditional Knowledge*

Metacognitive Regulation

iv. *Item 4, 6, 8, 22, 23, 42 and 45: Planning*

v. *Item 9, 13, 30, 31, 37, 39, 41, 43, 47 and 48: Information Management Strategies*

vi. *Item 1, 2, 11, 21, 28, 34 and 49: Comprehension Monitoring.*

vii. *Item 25, 40, 44, 51 and 52: Debugging Strategies.*

viii. *Item 7, 18, 24, 36, 38 and 49: Evaluation.*

Appendix E

Academic Success Measure

S/N	CGPA	CLASSFICATION	POINTS
1	*4.50- 5.00*	*First Class*	*5 ( )*
2	*3.50-4.49*	*Second Class Upper Division*	*4 ( )*
3	*2.40-3.49*	*Second Class Lower Division*	*3 ( )*
4	*1.50-2.39*	*Third Class*	*2 ( )*
5	*<1.00-1.49*	*Fail*	*0 ( )*

Source: Adopted from National Commission for Colleges of Education, NCCE (2013) Minimum standard.