INFLUENCE OF REFLECTIVE AND IMPULSIVE COGNITIVE STYLES ON ACADEMIC SELF-EFFICACY AMONG SENIOR SECONDARY STUDENTS IN KADUNA STATE, NIGERIA

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APRIL, 2016

DECLARATION

I declare that the work in the thesis entitled "INFLUENCE OF REFLECTIVE AND IMPULSIVE COGNITIVE STYLES ON ACADEMIC SELF-EFFICACY AMONG SENIOR SECONDARY STUDENTS IN KADUNA STATE, NIGERIA" has been written by me in the Department of Educational Psychology and Counselling under the supervision of Dr. Y. Umaru and Professor Musa Balarabe. The information derived for the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at any University

Abubakar HASSAN	……..	……
P13EDPC8038	Sign	Date

CERTIFICATION

This thesis entitled "INFLUENCE OF REFLECTIVE AND IMPULSIVE COGNITIVE STYLES ON ACADEMIC SELF-EFFICACY AMONG SENIOR SECODARY STUDENTS IN KADUNA STATE, NIGERIA" by Abubakar HASSAN meets the regulations governing the award of Master's Degree (Educational Psychology) of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This thesis is dedicated to my Father, Mallam Abubakar Usman and my late Mother Khadija Abubakar.

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ABSTRACT

This study investigated the influence of reflective and impulsive cognitive styles on academic self-efficacy among senior secondary students in Kaduna state, Nigeria. The ex-post factor research design was used for the study. The population of the study was 156,230 whereas 320 students were selected by means of multi-stage and proportionate stratified random sampling technique. The instruments used for the study were the reflective and impulsivity scale (RIS) and the academic self-efficacy scale (ASES). Data collected were analyzed using descriptive statistics such as frequency distribution, and percentages for bio-data analysis. To analyze the hypotheses, Pearson Product Moment Correlation and t-test statistics was used. The findings reveal that, significant relationship exist between students reflective and impulsive cognitive styles and academic self-efficacy among senior secondary students, with the impulsive students having a higher academic self-efficacy than the reflective students (p= 0.885) and (p = 0.000). Another finding revealed that significant difference does not exist between male and female students on the influence of impulsive and reflective cognitive styles on academic self-efficacy among senior secondary students (p= 0.866) and (t= of 0.169).And that significant difference exist between male and female students on their academic self-efficacy with male students having significantly higher academic self-efficacy than the female students. (t = 1.148, p = 0.000)

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OPERATIONAL DEFINITION OF TERMS

Reflectivity:- a slow , unspontaneous and planned performance in cognitive tasks.

Impulsivity:- a fast, spontaneous and unplanned performance in cognitive tasks.

Academic self-efficacy:- people's judgment of their own capabilities to organize and execute courses of action required to attain designated types of performances.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Learning is a never ending process, beginning from the moment of birth, through the entire life span. Learning takes place at homes, in schools and even at places of work. Learning requires not just regurgitation of facts but understanding as to how knowledge acquired can be applied. Gagne (2002) defined learning as "a change in human disposition or capability that persists over a period of time and is not simply ascribable to processes of growth". Learning produces permanent change in an individual`s behavior and this change is brought about by previous experience. Learning takes place every day in every situation and circumstance. However, formal learning takes place mostly in schools where instructional strategies are devised to assist learning. Parents send their children or wards to schools to ensure that they acquire learning, which will enable them fit into society and contribute to the societal progress.

Education, no doubt, remains the most outstanding development priority area in the world today. The core purpose of education, unquestionably, is human development. Other things being equal, an educated person who is well or relevantly positioned in the socio-economic, cultural and political milieu is expected to be a valuable asset to the society than another individual who is illiterate and perhaps ignorant. This simple fact explains why researchers and scholars, all over the world, continue to do research into ways of improving human knowledge and development. Debates on education and human development more generally can hardly be a boring exercise. The socio-political, economic and technological developments, which bring about a high frequency of innovations and reforms, have all combined to make discussions or debates on

education and human development trendy, exciting and unending (Ogundokun and Adeyemo, 2010).

Currently however, the emphasis in the teaching learning process has shifted from how teachers teach to how learners learn. The learner is encouraged to play an active part in the learning process; as how he learns what he learns has come under sharp locus. This means that learners are now required to make conscious efforts to learn. The learner is no longer expected to sit in a classroom as a passive participant and wait for information to be "thrown" at him by the teacher, information which he may be expected at some point to regurgitate and learner to this end may be a reflective or impulsive receiver of information.

Studies on reflectivity and impulsivity domain began in the early 1960s with several researches, such as Jerome Kagan. Kagan (1965) defined this variable as a conceptual tempo, or decision time variable. He proposed two criterions to classify the subjects; response time and errors. Impulsive learners reach decision and report them very quickly with little concern for accuracy. On the other hand, the reflective ones are more concerned with accuracy and take more time to reach a decision and consequently make fewer errors. The implications of this cognitive style for learning are numerous. Brown (2000) defined reflective/impulsive style as the degree to which, in the cognitive domain, a person tends to make either a quick and gambling (impulsive) guess at an answer to a problem or a slower and more calculated (reflective) decision. For example, Kagan as cited in Brown (2000) found that children who are conceptually reflective tend to make fewer errors in academic tasks than impulsive children. Over the past several decades, educators and educational psychologists have been interested in students' self-perceptions. This concerted attention to students' views of themselves is quite understandable. From the perspective of an educator, enhancing the positive self-perceptions of learners is an important educational goal.

Educators desire students to become autonomous individuals who have strong and positive feelings about themselves as they engage in the myriad responsibilities and demands of school and life.

Self-efficacy is a central construct in Albert Bandura's social-cognitive learning theory. It is defined as an expectation that one holds regarding one's capabilities to accomplish a particular task or goal. Self-efficacy is an important part of one's feelings of personal agency and a crucial element of agential views of motivated learning. Self-efficacy is an expectation that is related to a given task. As such, it is a specific self-perception that is directed toward accomplishing a goal.

For educators who are concerned with improving students' self-efficacy, the most crucial aspect of Bandura's theory is concerned with the four sources of efficacy (Bandura, 1997). Firstly, enactive mastery experiences give students the opportunity to prove to themselves that they are able to undertake a task. This is the most immediate, effective, and enduring source of self-efficacy, but it is potentially also the most difficult to attain, for it requires a student to attempt and complete a task in the first place. Secondly, students are able to derive self-efficacy from vicarious sources: essentially, observing others (especially peers) perform a task is evidence that the task can be completed with the appropriate application and effort. This is what we know as "modelling". Thirdly, verbal persuasion can have positive effects on a student's self-efficacy: the role of positive feedback is already well-known, but explicitly seeing it as an source of self-efficacy helps to refine feedback approaches. Finally, students derive a sense of self-efficacy from physiological and affective states that are aroused when confronted with a given task or performance situation. Examples of the latter could be stress, anxiety, or excitement, any of which could have positive or negative effects.

Obemeata and Gallaghan as cited in Ogundokun and Adeyemo (2010) show that using students' achievement alone as a measure for assessing the quality of schools is inadequate, and that the low level of students' academic performance is related to the decline in the availability of teaching resources in schools. The research also identified psychological, social and school-related factors as being associated with poor performance of students in Nigeria. Hence, low academic self-efficacy is one of the major problems of secondary school students which were as a result of students' sense of self efficacy from psychological and affective states of students, that could be resolved if there is strong sense of cognitive development.

1.2 Statement of the Problem

It is obvious from various researches that an individual's unique and preferred way of attending to information, perceiving and interpreting situations, way of thinking, remembering and problem solving, all add up to determine individual cognitive style. This suggests that individual differences in cognitive style abound, Indeed, people hardly perceive and react to a situation in exactly the same way. To reflect means to turn back one's though upon anything to think at length or consider seriously and to resolve matters in the mind. Impulse refers to a sudden desire to do something or act in a particular way. To be impulsive then means that one tends to act or decode impetuously, one is incited to action, one's response is actuated by mental impulse instead of reflection, a person is swayed by emotional or involuntary impulse rather the after reflection (Kogan, 1980) and this may trigger student or individual competence in an academic endeavor.

Therefore, the problem of this research is to investigate the influence of reflective and impulsive cognitive styles on Academic Self-Efficacy among secondary school students in Kaduna State, Nigeria.

1.3 Objectives

The following objectives were designed to direct the study:

1. To find out the influence of students' Reflective and Impulsive cognitive style on academic self-efficacy among senior secondary students in Kaduna state.
2. To find out gender difference in students' cognitive style of Reflective and Impulsive on academic self-efficacy among senior secondary students in Kaduna state.
3. To find out gender difference in students' self-efficacy among senior secondary students in Kaduna state.

1.4 Research Questions

The following research questions were formulated to guide the study

1. Is there influence of students' Reflective and Impulsive cognitive style on academic self-efficacy among senior secondary students in Kaduna state.
2. Is there gender difference in students' cognitive style of Reflective and Impulsive on academic self-efficacy among senior secondary students in Kaduna state.
3. Is there gender difference in students' self-efficacy among senior secondary students in Kaduna state.

1.5 Hypotheses

The following research hypotheses were formulated to guides the study:

1. There is no significant influence of students' Reflective and Impulsive cognitive styles on academic self-efficacy among senior secondary students in Kaduna state.
2. There is no significant gender difference in students' cognitive style of Reflective and Impulsive on academic self-efficacy among senior secondary students in Kaduna state.
3. There is no gender difference in students' self-efficacy among senior secondary students in Kaduna state.

1.6 Basic Assumptions

This study is based on the assumptions that:

1. Significant influence of reflective and impulsive cognitive style on academic self-efficacy among senior secondary students in Kaduna state.
2. Significant influence may exist of reflective cognitive style on academic self-efficacy among male and female senior secondary students in Kaduna state.
3. Significant influence may exist of impulsive cognitive style on academic self-efficacy among male and female senior secondary students in Kaduna state.

1.7 Significance of the Study

This work is significant because it will be of benefit to students, teachers, parents, examination bodies, school administrators and counsellors. For the students, it is hoped that the study will create awareness for them on the cognitive style they belong to and the influence it has on their academic self-efficacy thereby make adjustment in their learning activities to suit it. The study

also provides teachers with the awareness of the cognitive style of the children they interact with in the teaching and learning process which give them the opportunity to utilise various methods and techniques that suit the different cognitive styles of the children. It also provide parents with the knowledge of the cognitive style of their children and provide them with the needed support in their learning activities. This study also provide examination bodies with the necessary awareness on how to cater for students with different cognitive styles when setting examinations. Beside that, the research work provides a source of literature for those that want to conduct research in the area of cognitive styles and academic self-efficacy.

1.8 Scope and Delimitation of the Study

The scope of this study examined the influence of Reflective and Impulsive cognitive styles on Academic Self-Efficacy among senior secondary schools in Kaduna State, Nigeria. It involve all senior secondary students in Kaduna State. The study is however delimited to Senior Secondary two (SS2) student of some selected secondary schools in the state.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter presents review of literature related to the topic of this study. The review is done under the following headings: Conceptual framework under which the concept of Cognitive Style, Concept of Reflectivity and impulsivity, Concept of Academic Self-Efficacy are discussed. Theoretical Framework, which consists of Piaget theory of cognitive development and Brunner theory of cognitive development. As well as review of empirical studies and Summary of literature review.r+9

2.2 Conceptual Framework

2.2.1 Concept of Cognition

Cognition by definition refers to an individual plays a role with the outside world via sensation, perception, memory, imagination, judgment, reasoning, thinking, and other known functions, through the understanding of a variety of things or nature of scenes existed in outside world in order to have a full grasp of the relations among these things and scenes or roles of rules as well as behaviors. Overall, the process of cognition includes the obtainment of mental skills, formation of knowledge, development of language, processing and application of information, high-level mental activities, and growth of mental structure. In short, cognition refers to the process of how men "obtain the knowledge" (Shu-Yang 2012).Cognition can be described as broad dispositions and higher order meta-strategies that assist individuals to make sense and interact with their environments (Al-Soulami, 2004). Cognition is the set of all mental abilities

and processes related to knowledge: attention, memory and working memory, judgement and evaluation, reasoning and computation, problem solving and decision making, comprehension and production of language, etc. Human cognition is conscious and unconscious, concrete or abstract, as well as intuitive and conceptual (Blomberg, 2011). He further explain that, the term's usage varies across disciplines; for example, in psychology and cognitive science, "cognition" usually refers to an information processing view of an individual's psychological functions. It is also used in a branch of social psychology called social cognition to explain attitudes, attribution, and group dynamics. In cognitive psychology and cognitive engineering, cognition is typically assumed to be information processing in a participant's or operator's mind or brain. Cognition is a group of mental processes that includes attention, memory, producing and understanding. (Allison & Haves, 2011). It is the mental process of knowing including aspect such as awareness, perception, reasoning and judgment (Allison & Hayes 2011).

2.2.2 Concept of Cognitive Style

Cognition is an act of knowing, a perception or insight. Style on the other hand is discovered as the distinguished way in which something is done, said, written, made, and accepted. Cognitive style therefore is a style in cognition. The term has been variously defined by psychologists and other scholars to mean- individuals variation in modes of attending, perceiving, remembering and thinking patterns that govern our ways of processing information (Brown, 2000).

Cognitive styles or thinking styles is a term used in cognitive psychology to describe the way individual think, perceive and remember information. Cognitive style differs from cognitive ability (or level), the later being measured by aptitude test or intelligence tests. Controversy exists over the exact meaning of the term cognitive style and also as to whether it is a single or

multiple dimension of human personality (Allison & Hayes 2011) Cognitive style has also been defined as characteristics and self-consistent mode of intellectual and perceptual functioning (Colman, 2003). It is obvious from these definition that an individual's unique and preferred way of attending to information perceiving and interpreting situations, his way of thinking, remembering and problem solving, all add up to determine his cognitive style. This suggests that individual differences in cognitive style abound, Indeed, people hardly perceive and react to a situation in exactly the same way. To reflect according to Bazargani and Larsen (2013) means to turn back one's though upon anything to think at length or consider seriously and to resolve matters in the mind. Impulse refers to a sudden desire to do something or act in a particular way. To be impulsive then means that one tends to act or decode impetuously, one is incited to action, one's response is actuated by mental impulse instead of reflection, a person is swayed by emotional or involuntary impulse rather than after reflection (Kogan, 1980). In all reflectivity and impulsivity deal on how rapidly people make decisions. They seek to know whether people sit down and think over an issue or consider their responses before acting (reflectivity) or whether they act quick or immediately without first thinking about the issue (impulsivity), (Redmond, & Willis, 2013).

Cognitive styles such as ability to elaborate, synthesize apply, analyze and evaluate specific learning information are very necessary to achieve academic success and adjustment in life. Onu (as cited in Umaru 2010). Higher order cognitive styles help leavers to think more effectively, manage conflict by themselves, engage in practical thought and experiment and question their basic assumptions (Brown, 2000).This view is very relevant to teaching and learning in schools. As said earlier, an individual's cognitive style is related to how he process information, how he learns and how much he achieves from learning. It is necessary therefore to study learners,

cognitive styles, as this will enable teachers adapt teaching towards modalities in which people learn best (Brown 2000).

Problem solving involves several cognitive processes, including the categorization, storage within memory, and transformation or elaboration of Information. Individual differences in these cognitive skills have often been viewed only as indicative of differences in levels of intelligence (Amir, &Boroghani, 2013). Within the past fifteen years, however, psychologists and educators have considered other possible explanations and have, therefore, sought understanding of the differences between individual cognitive processes. The varied approaches taken to problem solving, called cognitive style, might provide a clue to the understanding of how problem solving occurs. An understanding of the cognitive styles of children would enable educators to structure learning environments suited to each child's unique manner of information-processing.

Kozhenikov (2007) described several basic cognitive styles which represent typical modes of perceiving, remembering, thinking, and problem solving. These "information processing habits" emphasize an individual's manner of responding to a problem rather than emphasizing the content of the response. The cognitive style characterized by a continuum from reflection to impulsivity is called cognitive tempo and will be the focus of the present study. It involves the individual's consistent method of consideration of alternative solutions to a problem.

Cognitive styles illustrate the "process" versus "product" approach to explaining problem solving. Thus, if cognitive style is viewed as a 1 predictor and qualifier (process) of behavior (product) it allows the researcher or the educator to derive information about the subject beyond the obvious information inherent in the correct or incorrect response. Kozhenikov (2007) listed three important reasons for determining information about an individual's cognitive style:

1. Identification of cognitive style is important since aspects of personality related to cognitive style might interact with treatment variables to moderate learning, memory, and transfer of information.
2. Definition and observation of a subject's cognitive style may allow the educator or tester to monitor negative effects of programming and testing.
3. Identification and encouragement of cognitive styles that contribute to an individual's achievement and performance may be fostered through appropriate programming.

Most modes of cognitive style have been studied through research with adults. In the very young child, however, cognitive skills are largely developed through spontaneous play behavior. Therefore, it would appear that the study of cognitive styles and their relationship to cognitive development in young children must necessarily involve observations of the child at play. Children's involvement in transitional activities, such as the free choice of activities for play, most closely resembles adults' planning behavior. Observation of such behaviors might provide clues to reflection or impulsivity—a cognitive style dealing specifically with decision-making processes. This cognitive style, referred to as cognitive tempo or conceptual tempo, describes the process of evaluating or failing to evaluate the alternative solutions to a problem before responding. Definitions of cognitive style cover a considerable area and link with personality, although style is independent of personality. However, cognitive style is not static; a person's thinking can change depending on their social learning and situational factors (Adams, 2001; Price, 2004). For example, cognitive style test results can be affected by examination conditions and in this manner individual differences affect learning and achievement (Williams &Anshel, 2000).

When students solve problems, Kagan et al (1964), posit that impulsive children make quick decisions, with more errors, while reflective children take longer to make decisions, and make fewer errors. They term this set of individual differences the Reflective-Impulsive (RI) dimension. They developed the Matching Familiar Figures Test (MFFT) to measure the RI cognitive style (Kenny, 2009).

The term cognitive tempo has been used to describe reflective or impulsive behavior in problem solving situation. Kagan et al(1964) defined such behavior as the degree of consideration given to alternatives where high response uncertainty is present. After extensive research, Kagan concluded that if a great amount of reflection is given to alternate hypotheses, there is little chance for error. Conversely, error is most likely when little reflection is given to the alternative solutions.

2.2.3 Concept of Impulsivity VS Reflectivity

It is common for us to show in our personalities certain tendencies toward reflectivity sometimes and at other times impulsivity. Psychological studies have been conducted to determine the degree to which, in the cognitive domain, a person tends to make either a quick or gambling (impulsive) guess at an answer to a problem or a slower, more calculated (reflective) decision (Brown, 2000).

Impulsive and reflective cognitive styles are considered to be an individual's different style of forming concepts, solving problems, and thinking. They are ways in which individuals select hypotheses and process information. R/I describes the disposition to reflect on the solution to a problem where several alternatives are possible and there is high uncertainty over which is correct. As Kagan (1965) explained, the "impulsives" reach decisions and report them very

quickly with little concern for accuracy. Others, of equal intelligence, are more concerned with accuracy and consequently take more time to reach a decision. These are "reflectives."

As a cognitive style impulsivity is a dimension of fast, spontaneous and unplanned performance in cognitive tasks. According to Hinckley and Alden (2013), impulsives in psychological literature are described as those easily carried away by new and exciting ideas, and by the prospects of immediate gratification. They tend to act quickly without thinking through the consequences of planning ahead. Reflectives, on the other hand, like to stand back to ponder experiences and observe them from many different perspectives. They tend to postpone reaching definite conclusions for as long as possible. They are thoughtful people who like to consider all possible angles and implications before making a move. Moreover, they tend to adopt a low profile and have a slightly distant, tolerant unruffled air about them. People process information in various ways. The majority of the research literature tends to favor some factors related to information processing behaviors as the likely antecedent (s) of R/I. In a number of studies analytic and global processing has been the main concern.

Zhang (2002) states that reflective children by attending to the detailed information of a stimulus tend to process information analytically. On the other hand, impulsive children tend to process information globally by attending to a stimulus as a whole. This result was revealed in a series of experiments. In the first, reflective children recalled significantly more detailed information from five sentences than the impulsive ones. In the second, a variant of the Matching Familiar Figures Test was given which included stimuli that could be processed either analytically or globally. Again reflectives were better at analytic processing while impulsives were better at global processing. In the final experiment, impulsive children used a large number of dimensions

(global processing) as a first hypothesis in a concept attainment task. However, reflective children were more likely to focus on a single dimension (analytic processing).

Carretino (2009) in another study administered a conceptual style task with a modification in which children were reinforced specifically for either global or analytic processing. The results indicated that both impulsive and reflective children were capable of offering either a global or an analytic hypothesis under appropriate reinforcement. Inductive reasoning as a means of processing information, in a study was found to be more effective with reflective persons (Kagan, Pearson, and Welch, in Amir and Boroghani (2013), suggesting that generally reflective persons could benefit more from inductive learning situations. Perhaps the success of inductive teaching methods therefore varies depending on the I/R index of individual students.

Impulsivity (I) and Reflectivity(R) are two characteristic of human beings in cognitive domain. Kagan in Nietfield and Bosma (2003) classifies reflective person as "the individual who takes relatively longer respond and make fewer errors" and believes that "impulsive attitude begins its growth during the preschool years and may be a deeply entrenched habit". Block and Harrington in Nietfield and Bosma (2003) believe that reflective learners are "slow deciders in uncertain situations" while impulsive ones are "quick deciders in uncertain circumstances" (p.611). Zelinker and Jeffrey in Zhang (2002) believe that reflectivity may not always be the most optimal style. They found that "reflective children do reflective. They take longer to respond, and they also become more accurate. It has been found that children who are conceptually reflective tend to make fewer errors in reading than impulsive children (Kagan.1965). Messer in Amir and Boroghani (2013) considers that "Reflectivity/Impulsivity is the extent to which a person reflects on a solution to a problem for which several choices are potential" (p.532). Brown (2000) states that impulsivity is a person's quick or gambling guess at an answer to a

problem and Reflectivity is a person's slower and more calculated decision. Brown (2000) further asserts that "impulsive persons are usually faster readers, and eventually master the psycholinguistic guessing game of reading such that their impulsive style of reading may not necessarily deter comprehension." According to Kagan in Brown (2000), the impulsive child places a greater value on "quick success" than on "avoided failure". In contrast a reflective child demonstrates higher standards for mastering intellectual tasks and attempts to solve problems in a deliberate and correct way.

The impulsive/reflective styles, also referred to as conceptual tempo involves a student's tendency either to act quickly and impulsively or to take more time to respond or reflect on the accuracy of an answer. Impulsive students often make more mistakes than reflective students (Kagan in Santrock (2001)). Research on reflectivity/impulsivity has implication for education, for example, Jonassen and Grabowski in Santrock (2001) mentioned that reflective students are likely to do well at these tasks:

- Remembering structured information
- Reading comprehension and text interpretation
- Problem solving and decision making.

Reflective students also are more likely than impulsive students to set their own learning goals and concentrate on relevant information and they usually have higher standards for performance. The evidence is strong that reflective students learn more effectively and do better in school activities than impulsive students.

Santrock (2001) emphasized that in thinking about impulsive and reflective styles, keep in mind that although some children learn better when they are reflective rather than impulsive, some

children are simply fast and accurate learners and decision makers. Reacting quickly is a bad strategy only if the learner comes up with wrong answers. Also some reflective children might ruminate forever about a problem and have difficulty getting closure.

2.2.4 Concept of Academic Self-Efficacy

Self-efficacy refers to people's judgment of their own capabilities to organize and execute courses of action required to attain designated types of performances (Bandura, 1986). According to Bandura (1997), self-efficacy strongly influences the choices people make, the effort they expend, and how long they persevere in the face of challenge. Much research shows that self-efficacy influences academic motivation, learning, and achievement (Bong, 2001). Self-efficacy beliefs influences task choice, effort, persistence, resilience, and achievement (Bandura, 1997).

Academic self-efficacy refers to individuals' convictions that they can successfully perform given academic tasks at designated levels. Academic self-efficacy is defined as students' belief in their abilities to activate and regulate motivation and cognitive resources needed to attain a desired educational goal (Bandura, 1995). Academic self-efficacy is also defined and measured within the context of a specific behaviour and situation, i.e., domain specific, rather than general traits or global self-concepts (Zimmerman &Schunk 2003).

Hence, academic self-efficacy is the totality of individual belief and choice for successful performance of a given academic task or situation.

2.3 Theoretical framework

2.3.1 Witkin's Field dependence/independence Theory

Field dependence/independence is a concept in the field of cognitive styles. It is a one-dimensional model of variation in cognitive style. The concept was first proposed by Herman Witkin (an American psychologist) in 1962. Field dependence/independence was the earliest studied area in the study of cognitive styles. In general, people who exhibit field dependence tend to rely on information provided by the outer world, the field or frame of a situation and their cognition (toward other things) is based on this overall field.

Measures

Field Dependence or Independence are indicated by the Tilting Rod and Frame Test and the Tilting Room, Tilting Chair Test. The tilt of the frame or room provided a field and the degree of independence from it was shown by the accuracy with which the subject had the experimenter adjust the rod or chair. Their interpretation and the concept of field dependence/independence was initially presented by Witkin and his group in his book Personality Through Perception . As its title suggests, other tests were studied and reported on. A field dependence/independence factor was reported in his later book, Psychological Differentiation .Later, Witkin and his group developed an Embedded Figure Test and did more work with human development. The EFT figured prominently in Psychological Differentiation .Differentiation was shown by an ability to trace a figure "embedded" within a more complex figure. Field-independent people were generally more differentiated, but differentiation was a broader concept than field dependency. Witkin's group participated in developing their concepts and were given coauthor credit in their two books. The group included the psychoanalyst Helen Block Lewis, the psychologist Hanna

Fatterson, and the experimental psychologist Don Goodenough. More independently, Witkin wrote a Journal of Abnormal Psychology review of relationships between Field Dependency/Psychological Differentiation and types of psychopathology. For example, field-independent people appeared to be more likely to develop delusions while field-dependent people were more likely to have scattered hallucinations. Educational Testing Service (ETS) produced a Group Embedded Figures Test, suited for testing a classroom of students. It correlated with the EFT, but was not exactly the same in its other correlations. After his work on the books and review, Witkin went to ETS and published some ETS reviews of the thousands of studies related to Field Dependency/Psychological Differentiation. A rating scale was developed for the Draw a Person Test by Witkin's clinicians, described in Psychological Differentiation , and was widely used as another measure of psychological differentiation. In it greater psychological differentiation was shown by more sophisticated detail, demonstrating more specific identity.

Less differentiated people were usually also more field-dependent and were more inclined to use what Witkin's clinicians in Psychological Differentiation called "massive global repression." Since his experienced clinicians could also recognize field dependence and lack of psychological differentiation upon meeting subjects, however, their conclusion about subject's use of repression was open to possible contamination. Their repression hypothesis was more objectively supported for group extremes by studies of "perceptual defense"—the tendency to recognize emotionally significant, disturbing words less easily than more neutral words. Such "defense" had been shown by numerous studies to be correlated with a tendency to repress as shown by measures such as the MMPI.

Those average in Differentiation/Field Independence had been given little specific attention since it was assumed they would simply be intermediate in repression. In their perceptual defense, however, they were not intermediate. People who were average (statistically "normal")were more able to recognize words if they were emotionally significant. That was defended as making more sense in evolutionary/survival terms. It seems reasonable to suppose that average ("normal") subjects can confuse the results of a study that includes them without recognizing their particular contribution.

Rod and Frame Test (RFT) Main article: Rod and frame test To be more specific, in the RFT, examinees are required to sit in a completely dark room without reflecting surfaces where a 3.5 foot luminous square frame with one inch wide sides contains a rod much like one of the sides. The test is properly given after brief (120-second) dark adaptation and the large glowing RFT is seven feet from the subject so it is a dramatic visual display filling much of the visual field. If the test is given with insufficient dark adaptation, many subjects will see the luminous stimulus disappear or fragment when they fixate it visually and a large proportion of them will not happen to report that. The test's validity then is not known. Hebb and others have written about the fragmentation phenomenon. The RFT is presented with the tilt of rod and tilt of frame in every possible order (RR, LL, RL, LR). The examinee is then asked to tell the examiner how to adjust the rod to "straight up and down like the flagpole outside." Scores are based the number of degrees away from 90.A less commonly used task was the tilting-room-tilting-chair test, which was similar to the RFT but involved rotating the participant in a chair within a room that also rotated.

Embedded Figures Test (EFT) Examinees are shown a simple geometric figure and then asked to find the simple figure embedded or hidden in a relatively complex figure. Examinees may circle

the figure and are scored based on identifying the full, correct figure. The underlying learning style theory is that field-independent people can better ignore the influence of the background image and find the hidden figure, while field-dependent people will find it harder to ignore the irrelevant field and will be slower to locate the figure. The Witkin EFT was first developed by Herman Witkin as suggested by the figures of Kurt Gotschaldt and described in his book Psychological Differentiation by Witkin's group. Thurston had an earlier Hidden Figures Test which correlated with the EFT but had a different pattern of other correlations. Researchers since Witkin's group have extended the use of this measure to other concepts, including components of memory and logic. These measures may also be sensitive to traits of Autism Spectrum Disorder, where individuals with ASD are quicker to solve EFT tasks.

2.3.2 Jerome Kagan's Reflection-Impulsivity Theory

Jerome Kagan was born in 1929. He is a psychologist and Professor Emeritus of the Psychology department at Harvard University. He is also the co-director of the Mind/Brain/Behavior Interfaculty Initiative at Harvard (Yale Press, 2007).

DESCRIPTION OF THE THEORY

Reflection-impulsivity theory sometimes referred to as conceptual tempo theory, is a dimension within an individual's cognitive style. Dramatic individual differences have been observed in the time a subject takes to select an alternative in problem situations with high response uncertainty (Kagan, 1965, p. 154). The reflection-impulsivity dimension is concerned with the degree to which the subject reflects on the validity of his solution hypotheses in problems that contain response uncertainty (Kagan & Kogan, 1970, Kagan & Messer, 1975). According to Kagan (1976) Reflection-impulsivity can influence the problem-solving process during the encoding of

original information or the selection and implementation of a solution hypothesis. The greater the number of reasonable alternatives the child must select from (i.e., the greater the response uncertainty), the more relevant the reflection-impulsivity dimension. When there is minimal uncertainty or little or no concern with error, as is often the case with children under 5 years of age, the dimension loses its validity. Despite the fact that most children become more reflective with age, there is major variation in that disposition at every age". Kagan (1965) argued "The process of selecting one of many response alternatives affects response time when the amount of stimulus uncertainty is controlled". In studying reflection and impulsivity of children, Kagan and Kogan (1970) found "Some children accept and report the first hypothesis that is printed on the screen of awareness and act upon it with only the barest consideration for its appropriateness or validity. Others devote a long period of time to study and reflection and censor many hypotheses. This individual-difference dimension is apparent in children as early as 2 years of age" (p. 1309). Kagan (1976) believed "impulsive children approach discrimination, memory, and inferential tasks in both pictorial and verbal contexts in a global manner, while reflectives focus on analytic details".

According to Kagan et al. (1964) "Reflection is defined semantically as the consideration of alternative solution hypotheses (either classifications or problem solving sequences) when many are available simultaneously. Reflection does not refer to delay that is the result of fear of failure, timidity, or inability to generate a solution" (as cited in Kagan & Messer, 1975). In contrast, impulsivity is the tendency to respond spontaneously without deliberation, especially in situations of uncertainty. Kagan and Kogan (1970) found the "tendency to be reflective or impulsive is stable over both time and tasks and is somewhat modifiable". They claimed "Decreases in an impulsive style of responding have been obtained by means of experimental

instructions deliberately discouraging guessing under conditions of uncertainty". They further stated that an impulsive or reflective strategy can be the result of anxiety, but the source of anxiety is different in the two types of child. For the reflective, the source of anxiety derives from the expectation that the social environment will regard the person as incompetent because he has made a mistake. For the impulsive, the source of anxiety derives from the expectation that he will be judged incompetent if he responds too slowly.

THEORY MEASUREMENT OR INSTRUMENTATION

The specific test used most often to determine the reflection-impulsivity dimension is the Matching Familiar Figures Test (MFFT) developed by Jerome Kagan in 1966. In the Matching Familiar Figures test, the subject is shown a familiar object (standard) and six similar variants. Only one of the variants is identical to the standard. The subject is asked to select the variant that is identical to the standard. The score is the average of the number of errors and response time to the first selection across the 12 test items. Colman (2001) explained "people with below-median errors and above-median response times were classified as reflective; while those with above-median errors and below-median response times were deemed impulsive.

See figure 1, below for a sample of Matching Familiar Figure task items.

Figure 1.

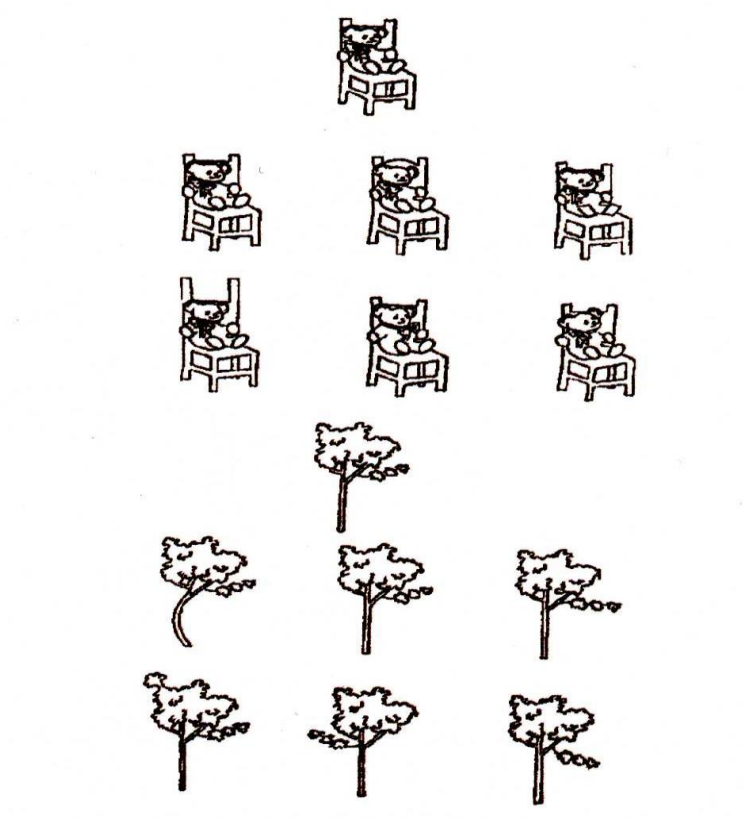


Figure 2.1 Example of Matching Familiar Figure Test

Source: Kagan, J. (1965). Individual differences in the resolution of response uncertainty. Journal of Personality and Social Psychology 2(2), 156.

2.3.3 Piaget's Cogntve development Theory

Piaget (J. Piaget, 1896-1980) is best known for his research on cognitive development. He was a Swiss scholar, who spent most of his life studying the development of children and conducted the significant "theory of cognitive development", which laid him the guru status in the field of

children's development. Piaget's research placed importance on two major issues, "formation of knowledge" and "increase of knowledge". He believed that the process of thinking is generated from proceedings from the concrete to the abstract, and his research on stages of the cognitive development describes types of frameworks for children at different ages. Because each stage of children's development is different, thus learning will be limited as well as learning patterns.

Jean Piaget was one of the most important and influential people in the field of Developmental Psychology. He believed that humans are unique in comparison to animals because we have the capacity to do "abstract symbolic reasoning." His work can be compared to Lev Vygotsky, Sigmund Freud, and Erik Erikson who were also great contributors in the field of Developmental Psychology. Today, Piaget is known for studying the cognitive development in children. He studied his own three children and their intellectual development and came up with a theory that describes the stages children pass through during development (Zangwill, 2004).

Piaget's four stages of cognitive development

Piaget believed that infants after birth would use innate behavioral patterns to react to the surrounding environment. As he/she encounters a situation, he/she then collates and deals with through some sort of corresponding cognitive structure, and such behavior is called "schema".

Schema is not innate nor acquired through experience, but through a series of actions. In the process of adaptation to the environment, schema can achieve the expansion of knowledge through assimilation, accommodation, and equilibration. These behavioral patterns go through continuous integrations and form a network structure, which is called cognitive structure, and the cognitive structure changes along with the cognitive development of subject, and hence the "theory of cognitive development" will be formed via such a series of changes. According to

Piaget's theory, cognitive development can be divided into four stages, characteristics of each development stage will be described below.

1. **Sensorimotor stage:** Refers to the period from birth to age 2. In this stage, children are inclined to perceive the outside world through movements and behaviors, for children must learn to adjust their senses, such as vision, hearing, and touch, etc., in order to form them into a single action or behavior. The major concept completed in this stage is "object permanence".

2. **Preoperational stage:** Refers to the period from ages 2 to 7. Children in this stage are able to form stable concepts by acting on objects, the most important developmental characteristics include the massive use of languages and symbols, features lie in concreteness, egocentrism, focusing on certain details, and specious logic reasoning.

3. **Concrete operational stage:** Refers to the period from ages 7 to 11. Through a series of mental changes, the egocentrism occurred in the preoperational stage will gradually disappear, and children are more willingly to perceive from others' viewpoints. Able to disperse attention, observe relations among objects, perform logical reasoning, and form the concept of conservation. Contains the ability to reverse, solve specific and real problems but limited to the actual context of the moment; however, unable to perform abstract and text logical reasoning.

4. **Formal operational stage:** Children begin to enter into the formal

operational stage after age 11, during this period children's cognitive development reaches the peak for the abstract reasoning is present. They begin to think reversely with logics, can operate thinking in concrete objects, and rationally implement abstract and correlative reasoning using objects.

Major aspects of Piaget's stages of cognitive development Ideas concerning the stages of cognitive development are considered the most important part in his theory. Piaget's main aspects are described as follows:

1. Piaget believed that each stage comprises of a unique and basic cognitive structure. In other words, different cognitive structures show obvious class differences in how students solve problems in terms of cognitive performance.

2. Sequence of class development is fixed, cannot be crossed or reversed for Piaget called it the "invariant developmental sequence". Each stage is a must basis of the formation of later stage. All normal children must follow the sequence of development. Therefore, each stage is universal.

However, fixed sequence does not necessarily mean every child is able to reach the formal operation stage at age 11. Cognitive development of each individual varies along with his/her won social experience, physical maturity, and physical experience.

3. Each stage is non-contact or static, but continuous developmental and overlapping. There is no sudden interruption or brand new start. Piaget believed that an absolute beginning could never be spotted during the process of development for new findings were resulted from gradual

differentiation or progressive coordination. Teaching principles of Piaget's cognitive development. Piaget believed that an individual's cognition began to develop at infancy and manifest in childhood. The development of education derived though the basis of the theory was called "positive teaching." The main task for teachers was to inspire students, teachers should not only act the role of knowledge instructor, but an innovator and researcher, the purpose was to

enable children to receive natural and comprehensive developments along with complete personalities.

In Piaget's theory, the cognitive development of children is initiative, he stressed that knowledge was the result from the interaction between cognitive individual and environment, which was continuous development and continuous construction during the interaction.

By applying the theory to teaching, four principles in the followings will be resulted:

1. Have a full grasp of the characteristics of initiative learning: To design innovative, novel, and confirmative curriculum or teaching principles to stimulate children's potentials towards learning.

2. Match up the sequence the cognitive development of children: The sequence of the cognitive development of children is fixed, hence curriculum or teaching shall base on the cognitive structures in the development to promote the learning effect.

3. Make good use of cognitive conflicts: Refers to cognitive conflicts occurred as the incoming new knowledge is inconsistent with students' current cognitive structures. Hence the design of teaching must comply with children's developments of cognitive structures and to provide new curriculum accordingly, this way curriculum can be absorbed effectively and become more challenging.

4. Adopt interactive principles of learning: Students should be allowed to communicate and exchange ideas with each other in order to establish objective cognition and enable the moral and emotions to go smoothly.

From the above, we may find out that cognitive development is structural, connected with a ring after a ring, it is seemingly independent, but in fact it connects with each other and affects each other. Children must go through the above-mentioned four stages and none can be skipped, but children will develop a series of procedures in different pace. Children require real understanding of learning, they cannot rely on teachers to understand the process of dance postures and developmental actions, but through themselves and spontaneous developments. Therefore, you must comply with children's cognitive development in order to help them learn how to dance, teachers must be familiar with the theory of cognitive development to arrange various structural and non-structural curriculum to go along with each stage of development, must know how to make use of reversal hints, an environment full of resources and a group bathing in the atmosphere of freedom are equally important, teachers need to provide the proper stimuli to promote students' cognitive abilities. In dance teaching, teachers must grasp the process of children's body development, understand their thinking process, master cognitive characteristics of children's learning, and design curriculum in accordance with children's ages and developmental stages.

2.3.4 Bruner's theory of cognitive development

Bruner is best known mainly for his contribution to education. In "The Process of Education" (Bruner, 1960), he claimed that knowledge of any subject could apply efficient teaching to any child at any stage of development via certain reasonable ways. He is an educational learning theorist, who conducts considerable contributions and enlightenment in the construction of educational theories that gives far-reaching influence on researchers concerning human thinking, learning, motivation, stages of cognitive development and knowledge structure, and modern curriculum and teaching.

Bruner's stages of cognitive development

Influenced by Piaget's theory of cognitive development, Bruner as well conducted a number of experiments in terms of children's intellectual development. The contribution of Bruner's theory of cognitive development lies in helping people understand how children learn and be assisted to learn, and he believed that mental information could be carried out by expressing completed tasks or things to do through the language, and selections and alternatives could be generated right away. Therefore, he took a further step to focus on the fields of perception, reasoning and thinking, cognitive characteristics, education, motor skills in infanthood and childhood. In the light of the cognitive development of children, Bruner proposed "three modes of representation", three processes of three types of step-by-step thinking mode, representing three stages and learning methods of the cognitive development respectively:

a. Enactive representation stage

The most common cognitive approach for children from ages 1 to 2 that they learn and understand about the world around themselves through movements and actions. In terms of the surrounding objects, children whether touch them with their hands or bit or lick them with their mouths. They tend to form associations with objects in the surrounding environment through actions like grabbing, pushing, taking, lifting, and walking, and acquire knowledge through explorative activities comprised of senses and motors, in his world, there were no specific differences between internal and external objects, hence he adopted an intuitive view and stored it first, and then make it into a movement skill later. Enactive representation is the basis of

acquiring knowledge; although it first appears in early childhood, but can be extended to life-long.

b. Iconic representation stage

For children at ages 2 to 6, they learn through visual perceptions and can substitute explanations with pictures or imaginations of objects appeared in front of eyes, that is, children can express objects or things through iconic images instead of senses and controls of movements. Knowledge acquirement goes from the concrete to abstract in the image representation.

c. Symbolic representation stage

For children above 6 years old, in this stage children comprehend the world around themselves though language skills, works, and abstract symbols, are able to perform reasoning, and express using words, languages, or linguistic symbols as well as interact with the environment. Bruner believed that these three stages coexisted in a parallel pattern and contained uniqueness, the relationship among them is complementary rather than replacing. As enter into the "iconic stage" from the "enactive stage", cognitive functions of movement representation still exist, and in the "symbolic stage", cognitive methods of various movements and images are included as well. In Bruner's view, the cognitive development of human has been proceeding by following these three stages. In fact, each of us continues to use these three modes of representation from time to time. In other words, we have at least three varied ways to express our learning and thinking, and if teachers could design the subject teaching curriculum in accordance with this approach, the purposes of promoting students' wisdom or cognitive growth could then be achieved.

2.3.5 Bandura's Social Cognitive Theory

Self-efficacy beliefs are an important aspect of human motivation and behavior as well as influence the actions that can affect one's life. Regarding self-efficacy, Bandura (1995) explains that it "refers to beliefs in one's capabilities to organize and execute the courses of action required to manage prospective situations" (p. 2). More simply, self-efficacy is what an individual believes he or she can accomplish using his or her skills under certain circumstances. Self-efficacy has been thought to be a task-specific version of self-esteem (Lunenburg, 2011). The basic principle behind Self-Efficacy Theory is that individuals are more likely to engage in activities for which they have high self-efficacy and less likely to engage in those they do not (Van der Bijl&Shortridge-Baggett, 2002).

In the theoretical framework developed by Bandura, the concept of perceived self-efficacy occupies a central place.

"Perceived self-efficacy is defined as people's judgments about their capabilities to organize and execute courses of action required to attain designated types of performance. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses. Judgments of personal self-efficacy are distinguished from response-outcome expectations. Perceived self-efficacy is a judgment of one's capability to accomplish a certain level of performance; whereas outcome expectation is a judgment of the likely consequence such behavior will produce…. Efficacy and outcomes judgments are differentiated because individuals can believe that a particular course of action will produce certain outcomes, but they do not act on that outcome belief because they question whether they can actually execute the necessary activities". (Bandura 1986, p. 391-392).

Bandura conceives self-efficacy beliefs (SEB) as another important facet of the self-system which is circumscribed to self-referent thoughts that determine psychological functioning. Self-referent thoughts are translated into appropriate courses of action required for accomplished performance; and self-perceptions of efficacy and how people judge their capabilities determine both their motivation and behaviour. In Bandura's view, there is a marked difference between the skills a person possess, the beliefs about the possessing sub skills and being able to use them well under diverse circumstances. For example, two persons with similar skills, let's say, two manufacturing employees, may perform poorly, adequately, or extraordinary, depending on their self-referent thoughts on their cognitive, social, and behavioural sub skills that they must organize into courses of action to reach their work-related goals. Competent functioning –for example at work- requires both skills and self-beliefs of efficacy to use the own skills in a competent manner. Initiation and regulation of transactions with work environment are, subsequently, in part governed by what employees think they can do to cope with work-related demands.

Previous definition has striking theoretical implications in terms of the concept of human accomplishments and well-being. While a strong sense of efficacy may improve human accomplishment and personal well-being in many ways, a weak sense of efficacy could promote a mediocre accomplishment as well as a less fortunate physical and psychological quality of life and well-being. High self-efficacious individuals tend to approach difficult tasks as a challenge to be mastered rather than a threat that must be avoided. On the contrary, those who easily disengage from difficult tasks, which are normally perceived as a threat, have a low sense of self-efficacy and serious self-doubts about their potential. High SEB promote a deeper involvement in activities conducing to goal attainment, whereas low SEB downgrade the level of aspirations

and compromise with the goals that have been selected to pursue. In the face of difficulties, that is, when dealing with highly demanding transactions, high self-efficacious individuals reinforce and maintain their efforts longer, and they quickly recover their sense of efficacy after having experienced setbacks or breakdowns. On the whole, high self-efficacious subjects attribute their own failures to a lack of effort, insufficient information, or deficient skills that are acquirable. In coping with threatening situations, they select direct ways of action instead of evasive strategies, in order to exercise control over the situation. As a result of an efficacious outlook of transactions and interactions with the environment, they get personal accomplishments, and consequently they reduce stress and diminish vulnerability to develop depressive symptoms.

Conversely, individuals who have serious doubts about their own capabilities concentrate on their personal deficits, on the difficulties they will encounter and on the adversity they have to face, instead of executing plans of action with the aim of performing successfully. In other words, they seem to be worse copers when hard times arise. In the face of difficulties low self-efficacious individuals give up quickly and are low to recover their sense of self-efficacy after the experience of failure or setbacks. These persons lose promptly the faith in their capabilities, since they attribute their own insufficient performance to a lack of aptitude in executing the tasks, instead of a lack of effort or information. Bandura (1995) sustains that low self-efficacious individuals are easily the victim of stress and its consequences such as depression. The basic idea behind the Self-Efficacy Theory is that performance and motivation are in part determined by how effective people believe they can be (Redmond, 2010; as cited in Redmond& Willis, 2013).

Sources of Self-Efficacy

Bandura (1977) outlined four sources of information that individuals employ to judge their efficacy, and they are: performance outcomes (performance accomplishments), vicarious experiences, verbal persuasion, and physiological feedback (emotional arousal). These components help individuals determine if they believe they have the capability to accomplish specific tasks. Williams and Williams in Redmond& Willis (2013) note that "individuals with high levels of self-efficacy approach difficult tasks as challenges to master rather than as threats to be avoided" (p. 455).

1. **Performance Outcomes**– According to Bandura, as cited in Redmond& Willis (2013). Performance outcomes, or past experiences, are the most important source of self-efficacy. Positive and negative experiences can influence the ability of an individual to perform a given task. If one has performed well at a task previously, he or she is more likely to feel competent and perform well at a similarly associated task. For example, if one performed well in a training workshop they are more likely to feel confident and have high self-efficacy in another training workshop. The individual's self-efficacy will be high in that particular area, and since he or she has a high self-efficacy, he or she is more likely to try harder and complete the task with much better results. The opposite is also true. If an individual experiences a failure, self-efficacy is likely to be reduced. However, if these failures are later overcome by conviction, it can serve to increase self-motivated persistence when the situation is viewed as an achievable challenge.

2. **Carious Experiences**– People can develop high or low self-efficacy vicariously through other people's performances. A person can watch another perform and then compare his own competence with the other individual's competence. If a person sees someone similar to them succeed, it can increase their self-efficacy. However, the opposite is also true; seeing someone similar fail can lower self-efficacy. An example of how vicarious experiences can increase self-

efficacy in the work place is through mentoring programs, where one individual is paired with someone on a similar career path who will be successful at raising the individual's self-efficacy beliefs. An example of how the opposite can be true is in a smoking cessation program, where, if individuals witness several people fail to quit, they may worry about their own chances of success, leading to low self-efficacy for quitting (Redmond& Willis 2013).

3. **Verbal Persuasion–** According to Redmond& Willis (2013), self-efficacy is also influenced by encouragement and discouragement pertaining to an individual's performance or ability to perform; such as a manager telling an employee, "You can do it. I have confidence in you." Using verbal persuasion in a positive light leads individuals to put forth more effort; therefore, they have a greater chance at succeeding. However, if the verbal persuasion is negative, such as a manager saying to the employee, "This is unacceptable! I thought you could handle this project" can lead to doubts about one self-resulting in lower chances of success. Also, the level of credibility directly influences the effectiveness of verbal persuasion; where there is more credibility there will be a greater influence. In the example above, a pep talk by a manager who has an established, respectable position would have a stronger influence than that of a newly hired manager. Although verbal persuasion is also likely to be a weaker source of self-efficacy beliefs than performance outcomes, it is widely used because of its ease and ready availability.

4. **Physiological Feedback (emotional arousal) –** People experience sensations from their body and how they perceive this emotional arousal influences their beliefs of efficacy. Some examples of physiological feedback are: giving a speech in front of a large group of people, making a presentation to an important client and taking an examination All of these tasks can cause agitation, anxiety, sweaty palms, and/or a racing heart. Although this source is the least

influential of the four, it is important to note that if one is more at ease with the task at hand they will feel more capable and have higher beliefs of self-efficacy (Redmond& Willis 2013).

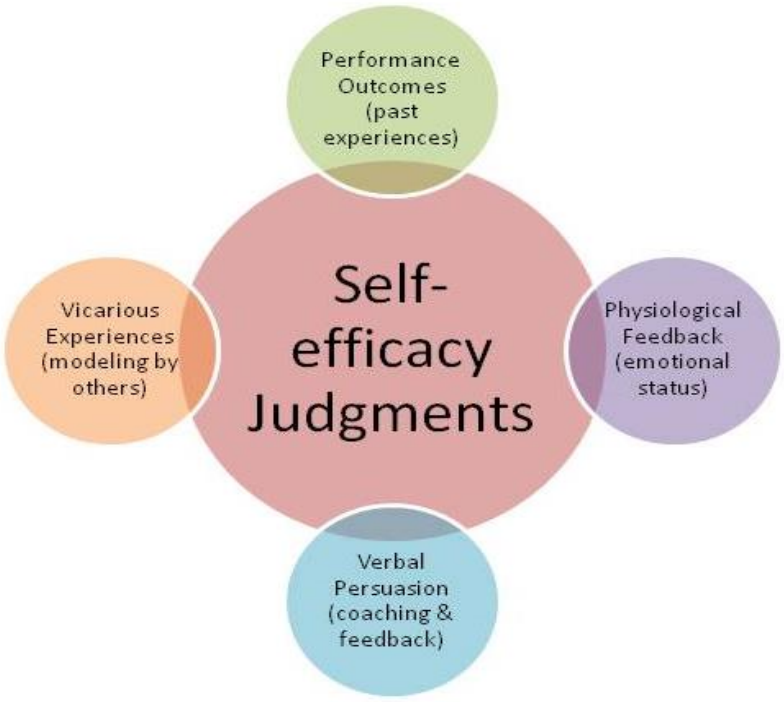


Figure 2.2: Self Efficacy sources of Information
Redmond & Willis (2013)

Dimensions of Self-Efficacy Beliefs: Level, Generality and Strength

Self-efficacy beliefs vary on three dimensions that are important for their implications in analysing human functioning or performance, namely level, generality, and strength. The **level** dimension refers to self-judgments or perceived self-efficacy with regard to task's difficulty level, which may vary from simple tasks and extended to moderate ones, or even to the most tasking performance into a specific area or domain of functioning. The generality dimension concerns the fact that people may judge themselves to be efficacious only in certain domains of functioning or across a wide range of activities and situations. The other dimension is the

strength, which determines whether a person will persevere in his/her coping efforts despite mounting difficulties. The stronger the perceived self-efficacy, the more likely are persons to select challenging tasks, the longer they persist at them, and the more likely they are to perform them successfully (Bandura, 1986).

2.3 Review of Empirical Studies

It has been found that children who are conceptually reflective tend to make fewer errors in reading than do conceptually impulsive children (Kagan, 1965). However, impulsive persons are usually faster readers than the reflective ones, and eventually master the "psycholinguistic guessing game" of reading in a way that their impulsive style of reading may not necessarily deter comprehension.

A study conducted at the University of Michigan by Cassidy (2004) sought to examine the relationship between R/I and reading proficiency in students of English as a Second Language (ESL). Kagan's Matching Familiar Figures test was used to measure R/I in a sample of ESL students; Doron then administered reading tests of comprehension and speed to the same subjects to determine the correlation between R/I and reading. She discovered that reflective students were slower and more accurate than impulsive students, and suggested that this fact be taken into account in the teaching of reading in ESL.

Umaru (2013) investigated the influence of reflective and impulsive cognitive styles on students` achievement in mathematic. The study was guided by four research questions, two null hypotheses that were tested at 0.05 levels of significant. The population consisted of all the 40 senior secondary schools in Bida Local Government Area of Niger State. Three hundred (i.e 150 reflective and 150 impulsive) students, drawn from the senior secondary schools, using multi-

stage and purposive sampling technique, constituted the sample of the study instruments for data collection included the Students Cognitive Styles Questionnaire (SCSQ) and Mathematics Achievement Test (MAT). Data collected were analysed using mean (X), Standard Deviation (SD) and T-test. The finding of the study shows that reflective students achieved significantly higher than their impulsive counterpart in Mathematics.

Jantan (2014) examined the relationship between students' cognitive styles with student's achievement in mathematics among year 6 students from selected primary schools in Selangor (Malaysia). The methodology of study was survey. Data were collected using the Group Embedded Figures Test (GEFT). GEFT was used to identify students' cognitive styles either Field-Dependent (FD) or Field-Independent (FI). A total of 150 students in year 6 from selected schools were selected as participant of study. Data were analysed using SPSS version 17.0. There were two types of analysis used in this study, descriptive and inferential statistical analysis. The finding showed that 112 students were of Field-Dependent (FD) cognitive styles compared to 38 students of Field-Independent (FI) cognitive styles. The study also showed that there was a low positive correlation between students' cognitive styles and their mathematics achievement. There was also a significant difference in cognitive styles between boys and girls in the school. The Ministry of Education should cautioned teachers about the importance of cognitive styles during learning and teaching process. The Mathematic teachers should take into consideration students' cognitive styles during preparing their lesson plan and teaching aids.

Cassidy (2004) carried out studies on assessing the usefulness of the dynamic testing approaches to optimize testing procedures by reducing or eliminating bias, conceived of as error in measurement attributable to factors entering into performance which were not the target of the assessment. The study examined:(1) whether the dynamic assessment approach yields

information which is a more appropriate indicator of cognitive competence than standard approaches based on static test theory; (2) why and for whom the dynamic assessment approach is effective; and (3) for what reason the procedures should be used. The sample of 147 fourth- and fifth-grade students from 15 elementary schools in the San Bernardino, California, area included 67 Anglo Americans, 37 Black Americans, and 43 Hispanic Americans randomly assigned to standard, verbalization, or elaborated feedback test conditions. Measures of cognitive and perceptual functioning, cognitive style and personality (e.g., impulsivity-reflectivity, motivation and planning, and school achievement) included Raven's Coloured Progressive Matrices, the Matching Familiar Figures Test. The Cattell Culture Fair Test of "g," Harter's Perceived Competence Scale for Children, and Trail Making and Visual Search Tasks. It was found that the testing condition which seemed to be most effective in increasing performance of all groups was verbalization; a type of compensatory effect for initially observed differences was brought about by subject verbalization.

Altun&Cakan (2006)investigated the cognitive styles, achievement scores and attitudes toward computers among university students. Field dependence/field independence is a dimension of cognitive style that has been researched with various student groups as well as with attitudes. Nevertheless, there appears to be adearth of published research in this area relevant to teacher trainees in an international setting. In this study,the standardized Group Embedded Figures Test was used to assess field dependency among 130 teachertrainees. Overall, it was found that there was no significant relationship between cognitive styles andacademic achievement ($r = .14$, $p = .15$); cognitive styles and attitudes toward computers ($r = .01$, $p = .84$);and, cognitive styles and attitudes toward computers when their academic achievement scores werecovariated ($F(2,126) = .40$, $p > .05$). The findings indicate that students' attitudes toward computers are notassociated

with field dependency, even when their achievement levels were controlled. Attitude toward computers is found to function independently from cognitive styles.

Ewumi(2008)explained that,Educators have expended tremendous efforts in the study of personal factors on students' academic achievement. Sex related problems have contributed greatly to the creation of gender crisis by providing unequal opportunities for males and females. Similarly, the state of the home environment or family structure is supposed to have important significance on the child's academic achievement. This study investigated gender and socio-economic status as correlates of students' academic achievement in senior secondary schools. Two major hypotheses were formulated and tested at 0.05 level of significance. Pearson Moment Correlation Co-efficient was used to analyze the data. The participants were 108 students drawn from three senior secondary schools in Nigeria. Their ages ranged between 14 and 21 with a mean age of 17.1 years. Two validated instruments were used to elicit responses from the participants. Results revealed (i) negative significant relationship between gender and academic achievement ($r = -.260$; $p<.05$), (ii) no significant relationship between socioeconomic status and academic achievement ($r = .083$; $p<.05$).

Umaru and Tukur (2011) studied the influence of dependent and independent cognitive styles on students' achievement in Mathematics. The study employed ex-post-facto design and was guided by four research questions, two null hypotheses that were tested at 0.05 levels of significance. The population of the consisted of all the 40 senior secondary schools in Bida Education Zone of Niger State. One Hundred (49 dependent and 51 independent cognitive style) students, were drawn from the senior secondary schools, using multi-stage sampling technique that constituted the sample of the study. Instruments adopted for data collection were the Student Group Embedded Figures Test was used to determine the participants' Cognitive Styles Questionnaire

(PCSQ) and Mathematics Achievement Test (MAT). Data collected were analyzed using mean, standard deviation and t-test. The findings of the study show that independent cognitive style students achieved significantly higher than their dependent cognitive style counterpart in Mathematics Achievement Test. It was also not consistent across gender levels. Recommendations among which include, that teachers should use independent strategies in integrating with students in the classroom, especially in mathematics, and other science related subjects.

Kheirzadeh and Kassaian (2011) conducted a studythe purpose of which was to determine if Field-dependence/Field-independence (FD\FI) cognitive style was related to the performance of Iranian English as a Foreign Language (EFL) learners on listening comprehension sub-skills. More specifically, the study attempted to focus on three listening comprehension sub-skills, namely listening for main idea, listening for specifics, and making inference. The choice of these sub-skills was based on Weir's taxonomy. The study also tried to investigate the effect of FD\FI on listening comprehension in general. In the first stage of the study eighty freshmen students majoring in English literature in Isfahan University took the First Certificate of English (FCE) test, the listening section. A homogenized group of fifty two students were selected as the sample group for the study. To determine the degree of FD\FI, the Group Embedded Figures Test (GEFT) was run and based on the results of this test the subjects were divided into two groups, FD and FI. The results of the t-tests showed that there was no difference in the performance of FD and FI students on general listening comprehension; furthermore, no difference was observed in the performance of the two groups, FD vs. FI, considering the listening comprehension sub-skills which were the focus of this study.

Kozhenikov (2007) carried out the research to determine the main cognitive tempo (reflection vs. impulsivity) effect on the approach to hypermedia instruction, learning achievement, and self-efficacy in a hypermedia leaning environment. The study also investigated the main training (training vs. no training) effect on navigation patterns, leaning achievement, and self-efficacy in a hypermedia leaning environment. In addition, the interaction effects of cognitive tempo (reflection vs. impulsivity) and training (training vs. no training) on navigation patterns, leaning achievement, and self-efficacy were investigated in a hypermedia leaning environment to determine which type of leaners benefit more from training treatment.

One hundred and eleven college students from a state university in northwest. Texas voluntarily participated in this experiment. This quasi-experimental study involved a 2 X 2 factorial design. Results found no significance on navigation patterns measured by number of resource nodes visited, time spent at resource nodes, and nonlinearity of navigation sequence between students with different cognitive styles. However, relatively reflective students visited more resource nodes and stayed longer on resource nodes than the relatively impulsive students. No significant results were found on students` leaning achievement. It was shown that the relatively impulsive students performed as well as the relatively reflective students. The results found that the reflective students had a significantly higher self-efficacy score than relatively impulsive students. No significant results were obtained for the training effect. Students with different cognitive styles did not significantly benefit from different treatments (training vs. no training).

Achoka, Nafula, and Oyoo (2013) studied the significant role of empowering girls and women through education in order to combat poverty, hunger, diseases besides stimulating sustainable economic development has been well documented. However, research has established that African culture has not been supportive of girls' and women's rights especially the right to

education. It is for this reason that Africa is bound to revolve around the 21st Century challenges which are not limited to but include gender inequalities, HIV/AIDS, poverty, hunger besides lack of education. In order for Africa to curb this menace, girls must have access to quality education besides attainment of quality grades in exams in order to compete effectively with boys in the job market. However, academic achievement of girls in Bungoma County girls' secondary schools in the KCSE is a dismal. This effectively called for an investigation of the influence of Culture on students' performance in girls' secondary schools in Bungoma County, Kenya. To this end, a descriptive survey design was carried out. 8 Girls' Secondary Schools were randomly selected to provide a sample of 278 students, 8 head teachers and 8 heads of guidance and counseling department who were purposively selected. Besides, 6 DQASOS also formed part of a sample of 300 respondents. Data was collected using questionnaires and interview schedules. Data was analyzed using both quantitative and qualitative techniques. It was found that stereotypic gender role dispositions, early marriages and female genital mutilation were among the traditional and cultural beliefs which eventually made girls to perform dismally in their academic endeavors. The study recommended enhancement of sensitization of parents on the significance of girls' education, provision of sanitary towels to girls in secondary schools by the government and enhancement of affirmative action and enforcement of laws on girls' rights among others. It is hoped that the study will equip education stakeholders with information on how to enhance the academic performance of girls not only in Secondary Schools but throughout the entire education system.

Billington, Baron-cohen, & Wheelwright (2007) conducted a study as to why fewer women enter science. The study assesses whether a cognitive style characterized by systemizing being at a higher level than empathizing is better than sex in predicating entry into the physical sciences

compared to humanities. 415 students in both types of discipline (203 males, 212 females) were given questionnaire and performance measures of systemizing and empathy. 59.1% of the science students were male and 70.1% of the humanities students were female. There were significant sex differences on the Empathy Quotient (EQ) (females on average scoring higher) and on the Systemizing Quotient (SQ) (males on average scoring higher), confirming earlier studies. Scientists also scored higher on the SQ, and scored lower on the EQ, compared to those in the humanities. Thus, independent of sex, SQ was a significant predictor of entry into the physical sciences. Results from questionnaire data and performance data indicate an SNE profile for physical science students as a group, and an ENS profile for humanities students as a group, regardless of sex. We interpret this as evidence that whilst on average males show stronger systemizing and females show stronger empathizing, individuals with a strong systemizing drive are more likely to enter the physical sciences, irrespective of their sex.

According to Flad (2010), participation with technology for social purposes has become the mainstream communication method for many people in the past several years. In particular, adolescents in high school have adopted these forms of communication as the paramount way to keep in touch with family and friends. Social Networking websites, such as Facebook and MySpace are the most popular places for these students to spend their time, and are the primary focus of this study. The researcher examined the impact of social networking participation among a sample of high school students to determine how this involvement affects academic performance, future plans, and overall attitude towards school. Differences between male and female students regarding academic achievement, performance, and social networking use will also be identified and discussed. Recommendations for school counselors and further studies will be offered.

Feij (2002) studied the interrelationships of field independence, impulsiveness, and type of previous high school education in 15 female and 45 male undergraduates. Relationships between these variables and several measures of academic achievement were also investigated. The participants were given 7 cognitive-perceptual tests and asked to complete a questionnaire measuring emotionality and impulsiveness. Results indicate that paper-and-pencil tests of field independence might partially measure different abilities among math- and art-trained Ss. Math-trained students were relatively field independent and low impulsive. Although field dependence and impulsiveness were unrelated measures, it appeared that highly anxious impulsives were relatively field dependent. A negative correlation between impulsiveness and grades in statistics was found. Results support the view of Witkin et al that cognitive styles might have relevance in predicting academic evolution.

Hiroharu(2012) Viewed Reflectivity/impulsivity as a cognitive style that is related with the processing of stimulus information. Much previous research on education or educational psychology reported that the difference of this cognitive variables has an influence upon academic achievements or behaviors by learners. In the study, the relationship between this cognitive variable of 94Japanese junior high school students and their usage of English learning strategies was investigated. The results showed that reflective or efficient learners of English would consult a dictionary, check their ways of studying , and ask for help from others more often than impulsive or inefficient ones. In addition learners with impulsivity could use images or pictures when they had to memorize new words. This impulsive feature could be found more remarkably in male students.

Hinckley and Alden (2013) conducted a pilot study, funded from a 5-year grant from the U.S. Department of Education Titled Strengthening Institutions Program, explores the factors identified by women with Attention Deficit/Hyperactivity Disorder (AD/HD) that are necessary to their achieving college success. The results of this study, based on 13 in-depth interviews with women who are both academically successful and have AD/HD, highlight the influence of motivation, attitude, support systems, self-reflection, and social-academic balance on academic success. The article concludes with implications that may help instructors and institutions better serve women with attentional issues in the college setting.

Peklag (2003) investigated the effects of cooperative learning on achievement in Mathematics and native language and to analyse students` achievement in cooperative learning according to their gender, abilities and cognitive style. Three hundred and seventy three (170 in the experimental and 203 in the control group) fifth grade students from nine different primary schools participated in the study. In experimental group, cooperative learning was introduced in one quarter of the hours dedicated to mathematics and Slovene languages during the school year. Control group received the traditional way of teaching in both courses. The result were analysed with ANOVA. Positive effect of cooperative learning were found in both courses. Results in cooperative learning group were further analysed according to the students` gender, abilities, and cognitive style. No significant interaction between students` cognitive style and achievement were found in both courses. Field-dependent students benefited most from cooperative learning.

Awofala, Balogun, and Olagunju (2013) investigated the effects of modes of personalisation of instruction crossed with two levels each of verbal ability and cognitive style as moderator variable on the mathematical word problems achievement of 450 junior secondary Nigerian students. Personalisation was accomplished by incorporating selected information with students`

personal preferences into their mathematics word problems content on either group basis, individual or self-referencing format. Students were randomly assigned to one of four treatment conditions: self-referencing, individual personalisation, group personalization, and non-personalisation versions of an instructional programme on mathematics word problems. Results showed that treatment, verbal ability and cognitive style had significant main effects on students` achievement in mathematical word problems. Thus, students exposed to group personalisation performed significantly better than those in other group followed by individual personalisation, self-referencing and non-personalisation in that order. High verbal ability students performed significantly better than low verbal ability counterparts. Also, analytic cognition style students significantly outscored their non-analytic cognitive style counterparts. There were significant two-way interactions effect of treatment and verbal ability, treatment and cognition style, and verbal ability and cognition style on students` achievement in mathematics word problems. These finding suggest in part that group personalisation; individual personalisation and self-referencing modes enhanced students` achievement in mathematics word problems than the non-personalisation strategy. This impact was however sensitive to the cognitive style and verbal ability of the students. These finding show the need for choosing improved strategies for mathematical word problems teaching and the recognition of the influence of verbal ability and cognitive style on students` achievement in mathematical word problems.

Oh and Lim (2005) examined how students` cognitive styles are correlated with their attitudes toward online education and learning behaviours in online learning environments. The Group Embedded Figures Test (GEFT) and the attitude survey towards online instruction were administered to 104 students enrolled in various online courses at the University of Tennessee. The study findings revealed that students` cognitive styles were not significantly correlated with

their attitudes and preference for instructional delivery modes while other factors such as previous online learning experience and computer competency were significantly correlated with students` learning outcomes and attitudes towards online instruction.

Li-Fang (2001) identified individual differences in academic achievement attributable to thinking styles over and above what can be explained by self-rated abilities. Participants were 209 university students from Hong Kong and 215 university students from mainland China. Participants responded to the Thinking Styles Inventory (Chinese version) that is based on Sternberg's theory of mental self-government (Sternberg, 1988). They also rated their own analytical, creative, and practical abilities on a 10-point scale based on Sternberg's (1985) triarchic theory of human intelligence. Participants' academic achievement scores were also used. The prediction that thinking styles statistically predict academic achievement was supported by data from both Hong Kong and mainland China. Academic achievement and thinking styles are related differently in the two groups. Implications of these findings for both teaching and research are discussed.

Davies and Martin (2005), explored the influence of a reflective–impulsive approach on wholist and analytic processing, by counterbalancing presentation of the embedded figures and matching figures subtests of Riding`s cognitive styles analysis (CSA). One hundred and ninety three participants completed a variation of the CSA test. The results revealed that the wholist-analytic ratio is extremely sensitive to the order in which each subtest is presented. Significantly higher ratios are produced when the matching figures subtest is presented first and lower ratios are produced when the embedded figures subtest is presented first. This reflects a general tendency for respondents to react more slowly to early test items. However, this tendency to produce slower response times during early test items is greater for individuals with a reflective style.

There was significant interaction between the presentation order of the subtests and individual differences in reflective–impulsive style. Reflective individuals were significantly more analytic than the impulsive individuals when the matching figures subtest was presented first and were marginally but not significantly more wholist when presentation order was reversed. The implication is that the methodology of the CSA is likely to inflate differences between wholist and analytic individuals by comparing differences in part whole processing and concomitant differences in reflective–impulsive style.

Zajacova, Lynch, and Espenshade (2005), in their study on self-efficacy, tress, and academic success in college, investigated the joint effects of academic self-efficacy and stress on the academic performance of 107 non-traditional, largely immigrant and minority, college freshmen at a large urban commuter institution. The researchers developed a survey instrument to measure the level of academic self-efficacy and perceived stress associated with 27 college-related tasks. Both scales have high reliability, and they are moderately negatively correlated. Researchers estimated structural equation models to assess the relative importance of stress and self-efficacy in predicting three academic performance outcomes: first-year college GPA, the number of accumulated credits, and college retention after the first year. The results suggest that academic self-efficacy is a more robust and consistent predictor than stress of academic success.

Recent evidence has been provided by cross-cultural research suggesting the universality and uni-dimensionality of a sense of generalized self-efficacy. Schwarzer (2002) found that there is an optimistic sense of personal competence that exhibits variations in strength depending on the country and gender. This study which demonstrated the uni-dimensionality of the construct across 25 countries around the world-, showed that a sample of Costa Rican students were the

ones who reported the highest rate in perceived general self-efficacy, whereas a sample of Japanese were the ones who perceived themselves as less efficacious.

Ahmed and Elmasri (2012) conducted a study that was aimed to investigate the effect of Self-Awareness education on the self-efficacy and sociotropy autonomy characteristics of nurses in a psychiatric inpatient clinic at Zagazig University Hospitals. The sample was composed of 19 nurses who on the job. Three tools were used for data collection: nurses characteristics data form, self-efficacy scale, and sociotropy autonomy scale. The study result indicated that the psychiatric nurses self-efficacy was improved at post educational program, a significant difference was observed between the pre-test and post-test mean scores for the total nurses autonomy and total nurses sociotropy ($P<0.05$). However the mean score of total Sociotropy autonomy didn't differ significantly at pre and post educational program ($P=0.488$), and a highly significant correlation was present between total of self-efficacy and total of sociotropy autonomy at pre and post educational program ($P<0.05$).

2.4 Summary of Literature review

This chapter reviewed some literature related to the study. In the study, Conceptual framework under which the concept of Cognition, concept of Cognitive Style, Concept of Reflectivity and impulsivity, Concept of Academic Self Efficacy are discussed. Theoretical Framework, which consists of Kagan theory of reflective and Impulsive Cognitive Style, Piaget theory of cognitive development, Brunner theory of cognitive development and Bandura's Social Cognitive Theory as well as review of empirical studies were carried out. Furthermore. Most of the empirical studies were done outside Nigeria and this could serve as a missing links that necessitate this study. This study therefore, seek to investigate the Influence of reflective and impulsive

cognitive style on academic self-efficacy among secondary school students in Kaduna state, Nigeria.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter is about the methodology employed in carrying out this work and it contains a description of the methods, strategies and instruments used to conduct this research. Specifically, it consist a description of the design of the study, population of the study, sample and sampling procedure, instruments for data collection including validation and reliability, procedures for data collection and data analysis.

3.2 Research Design

The research design that is adopted for this study is Ex-post Factor. This is because it is an efficient way of gathering data to help address the research question. It is critical in determining the quality of research. It is a method that is characterized by the selection of samples from a large and small population to obtain empirical knowledge of contemporary nature (Nwogu, 2009). For Kerlinger in Ezeh (2005) Ex-post Factor design in research is a systematic empirical inquiry in which the scientist does not have direct control on independent variebles because they are inherently not manipulable. In this design inferences are made about causal relationships among variables without direct intervention or manipulation for variation in independent variables. The purpose in ex-post factor research is to find out the factors that seem to be closely associated with certain behaviors occurrences, prevalence or conditions.

This design was adopted because the study investigates Influence of Reflective and Impulsive Cognitive Styles on Academic Self-Efficacy among Senior Secondary Students in Kaduna State, Nigeria. The reason why SS 2 students are considered worthy of study in this research is that at

this stage they should be preparing for their WAEC and NECO examinations as such they would have a strong sense of judgement on their academic capabilities.

3.2 Population of the Study

The population for this research was all the senior secondary students in Kaduna state. In all, there is one hundred and fifty six thousand two hundred and thirty (156,230) students in senior secondary schools in Kaduna state. (Kaduna State School Census report 2013/2014).

The table 3.1 shows a total enrolment of 63,172 for Boys and 46,213 for Girls in SS 1-3 in Public senior Secondary School in the 23 LGAs

Table 3.1: Enrolment in Public senior secondary school by level, gender and L.G.A.

LGA	SS1			SS2			SS3		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
BIRNIN GWARI	405	74	479	475	38	513	399	159	558
CHIKUN	1,521	1,525	3,046	1,362	1,143	2,505	737	670	1,407
GIWA	436	275	711	461	250	711	434	235	669
IGABI	1,498	724	2,222	1,437	540	1,977	1,213	440	1,653
IKARA	528	225	753	609	133	742	613	110	723
JABA	356	322	678	343	326	669	406	358	764
JEMA'A	739	646	1,385	850	653	1,503	945	593	1,538
KACHIA	999	831	1,830	1,090	836	1,926	953	633	1,586
KADUNA NORTH	1,171	2,172	3,343	1,208	1,957	3,165	963	1,568	2,531
KADUNA SOUTH	1,018	1,820	2,838	1,135	1,833	2,968	588	1,583	2,171
KAGARKO	1,040	763	1,803	1,097	775	1,872	978	680	1,658
KAJURU	681	641	1,322	855	787	1,642	706	678	1,384
KAURA	454	223	677	578	392	970	368	156	524
KAURU	646	557	1,203	5,786	532	6,318	684	464	1,146
KUBAU	581	354	935	520	338	858	615	398	1,013
KUDAN	389	111	509	410	95	505	494	141	635
LERE	1,403	684	2,087	1,166	797	1,963	823	559	1,382
MAKARFI	636	135	771	658	187	845	669	160	829
SABON GARI	1,232	996	2,228	1,116	1,402	2,518	1,023	751	1,774
SANGA	843	681	1,524	884	745	1,629	920	781	1,701
SOBA	310	69	379	472	72	544	381	55	436
ZANGON KATAF	1,050	1,108	2,158	1,047	1,074	2,121	755	778	1,533

ZARIA	1,713	1,558	3,271	2,244	1,413	3,657	2,044	1,453	3,497
TOTAL	19,658	16,494	36,152	25,803	16,318	42,121	17,711	13,401	31,112

Source: Kaduna state school census report 2013/2014

Local Government Area. The table shows the enrolment of 2,908 for boys and 1,406 girls in SS 1-3 in public science and technical secondary schools.

Table 3.2: Enrolment in Public science and technical senior secondary school by level, gender

	SS 1			SS2			SS3		
LGA	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL
BIRNIN GWARI	57	0	57	52	0	52	40	0	40
CHIKUN	58	3	61	51	0	51	66	0	66
GIWA	0	0	0	0	0	0	0	0	0
IGABI	0	0	0	0	0	0	0	0	0
IKARA	110	0	110	139	0	139	102	0	102
JABA	0	128	128	0	215	215	0	230	230
JEMAA	0	0	0	0	0	0	0	0	0
KACHIA	0	0	0	0	0	0	0	0	0
KADUNA NORTH	0	0	0	0	0	0	0	0	0
KADUNA SOUTH	0	0	0	0	0	0	0	0	0
KAGARKO	0	0	0	0	0	0	0	0	0
KAJURU	130	0	130	140	0	140	120	0	120
KAURA	0	0	0	0	0	0	0	0	0
KAURU	25	3	28	62	2	64	57	1	58
KUBAU	40	0	40	76	0	76	98	10	108
KUDAN	0	0	0	0	0	0	0	0	0
LERE	0	0	0	0	0	0	0	0	0
MAKARFI	30	25	55	31	14	45	30	24	54
SABON GARI	39	35	74	25	16	41	45	21	66
SANGA	30	0	30	42	0	42	39	0	39
SOBA	70	163	233	93	157	250	87	160	247
ZANGON TAKAF	224	54	278	250	87	337	255	58	313
ZARIA	72	0	72	61	0	61	62	0	62
TOTAL	885	411	1,296	1,022	491	1,513	1,001	504	1, 505

Source: Kaduna state school census report 2013/2014

3.3 Sample and Sampling Techniques

The sample size in this study is 320 students, drawn from three (3) senior secondary schools that were selected randomly. This size was determined using Krejcie and morgan (1970) table for determining sample size from a given population. The multi-stage and proportionate stratified random sampling techniques were employed. A multi-stage sampling is a complex form of cluster sampling in which the target population is divided into clusters, and then further sampling takes place within each cluster and so on until individual participants are sampled (Bichi in Muhammad 2014). Therefore, a multi-stage sampling was used to divide Kaduna state into three senatorial zones (i.e., zone A, zone B and zone C), and then into local government areas. On this basis, three local governments were selected randomly (1 representing each senatorial zone) and from each local government area, one school is randomly selected, out of which a sample of the respondents for the study is obtained. Giving the heterogeneous nature of the population, proportionate stratified sampling is used. The frame of the population is organized into separate strata at the school level. In this case the population is divided into male and female students. In each stratum, a sample of the individual participants is selected randomly but proportionately for fair representation.

3.4 Instrumentation

To ensure effective and adequate data generation and collection, a scale known as The Impulsive/Reflective cognitive style scale was adapted from America Psyciatric Association's statistical manual of mental disorders (fourth edition) and used for this study. Reflective and Impulsive scale (RIS) which requires subjects to respond to the statements in the scale whether they: Always; Usually; Sometimes; Rarely or Never (see appendix A) measure the student cognitive style. There are eighteen (18) items in the scale and the respondent can score a

maximum of 90 points and a minimum of 18 points if responded to the whole items in the scale. People who are lower than the median are considered to be reflective. Those who are higher than the median are considered impulsive (See appendix A).

The other instrument adopted for this study was the Academic Self Efficacy Scale (ASES) for secondary school students adopted from the work Bandura (1966). All the Items in Academic Self Efficacy Scale (ASES) were measured on a 5 point Likert scale; the students were expected to indicate whether they strongly agreed (SA), agreed (A), not sure (NS), disagreed (DA), or strongly disagreed (SD) to statements on the scale (see appendix B).

3.5 Validation of Instrument

The instruments in this study were validated through content validity. Experts from the Ahmadu Bello University, Zaria under Educational Psychology and Counselling Department evaluated the contents of the items on the instrument, scrutinize them and made necessary corrections and modifications to ascertain their appropriateness and content coverage with reference to the research objectives. Thus, the final copies of the instruments were produced in the light of the experts observations, opinions and corrections that were harmonized.

3.6 Reliability

To establish the reliability of the data collection instruments they wereanalysed the data collected from the pilot test using Cronbach's alpha reliability coefficient using SPSS v20 Statistical package. The result shows thus: Academic Self-Efficacy Scale .93. A reliability coefficient of .70 or higher is considered acceptable in most of the social science research environment.

3.7 Procedure for Data Collection

A letter of introduction was obtained from the department of Educational Psychology and Counselling by the researcher, the copies of the letter were delivered to the principals of the selected schools for approval. After the approval, the researcher and his research assistants will establish a rapport with the selected students before the administration of the instrument. The research assistants would be acquainted with the content of the instrument. Each of the instruments was discussed in details so as to enable the research assistants help respondents who might have difficulty with any item. They were fully briefed on the protocol to observe and the procedure of administering the instruments. The results of the instruments will be returned to the researcher through a coordinator among the research assistants.

3.8 Scoring of the Instruments

Scoring of the Impulsive/Reflective cognitive style scale

All the Items in Impulsive/Reflective cognitive style scale are measured on a 5 point Likert scale; the students are expected to indicate whether they: Always; Usually; Sometimes; Rarely or Never (see appendix A) conduct certain behavior. There are eighteen (18) items in the scale and the respondent can score a maximum of 90 points and a minimum of 18 points if responded to the whole items in the scale. The higher the points scored, the more impulsive the respondent is, the lower the points the more reflective the respondent is.

Scoring of the Academic Self-efficacy Scale (ASES)

The items on the Academic Self-efficacy Scale (ASES) would be measured on a 5 point Likert Scale as follows: Strongly Agreed (SA) 5, Agreed (A) 4, Not Sure (NS) 3, Disagreed (DA) 2, and Strongly Disagreed (SD) 1. The scale has 18 items where the respondents can score the minimum of 18 points and the maximum of 90 points. The higher the score, the stronger the Academic Self-efficacy and the lower the score the weaker it become.

3.9 Procedure for Data Analysis

To analyze data, both descriptive and inferential statistics were used. Descriptive statistics such as frequency distribution, and percentages, were used for bio-data analysis. In order to answer the research questions each item in the instrument were analyzed using mean and standard deviation. To analyze the hypotheses, inferential statistics is used. Thus, a Pearson Product Moment Correlation statistics is used to test for relationship between variables while t-test statistic is used to test for differences that may occur between respondents and in the variables of interest.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The chapter deals with the analyses of the data collected for the study. The study is to find out the influence of Reflective and Impulsive cognitive styles on Academic self-efficacy of senior secondary school students in Kaduna state Nigeria. A total of 320 students were used for the study. The instruments used consist of 18 items on Academic self-efficacyscale and another 18 items on Impulsive/Reflective cognitive style scale. Their responses form the basis of the statistical analysis using the SPSS X version 20. The chapter presents the data in 3 segments; the first section presents the bio data variables of sex in frequencies and percentages. The second section answers the research questions while the third section tests the null research hypotheses using the Pearson Product Moment Correlation (PPMC) statistics at 0.05 alpha level of significance and t-test. Summary of findings was also presented.

4.2 Presentation of Bio-data of the Respondents

Table 4.2.1: Distribution of respondents by Sex

Gender	Frequency	Percent
Male	130	40.6
Female	190	59.4
Total	320	100.0

The table above showed the gender status of the respondents. It showed that while 130 representing 40.6% of them are males, the rest 190 representing 59.4% are females.

4.4 Hypotheses Testing

Hypothesis One: The null hypothesis state that there is no significant influence of students reflective and impulsive cognitive styles on academic self-efficacy among Senior Secondary students.

Table 4.4.1: Pearson Product moment correlation (PPMC) relationship between students reflective and impulsive cognitive styles on academic self-efficacy among senior secondary students.

		reflective	impulsive	Efficacy
reflective	Pearson Correlation	1	.013	.361**
	Sig. (p)		.885	.000
	N	193	127	193
impulsive	Pearson Correlation	.013	1	.489**
	Sig. (p)	.885		.000
	N	127	127	127
Efficacy	Pearson Correlation	.361**	.489**	1
	Sig. (p)	.000	.000	
	N	193	127	320

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

The table shows that 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 0.361 and 0.489 for Reflective and Impulsive students respectively. This shows that students' academic self-efficacy is influenced by their impulsive and reflective cognitive styles therefore the null hypothesis which states that there is no significant relationship between students reflective and impulsive cognitive styles on academic self-efficacy among senior secondary students, is hereby rejected.

Hypothesis Two: The null hypothesis states that there is no significant difference in the influence of male and female students impulsive and reflective cognitive styles on academic self-efficacy among senior secondary schools students in Kaduna state.

Table 4.4.2: Independent t-test statistics of difference in influence of male and female students impulsive and reflective cognitive styles on academic self-efficacy among senior secondary schools students in Kaduna state.

Variables	Sex	N	MEAN	STD.DEV	Std.er	Df	T	P
Impulsive reflective/cognitive styles	Male	130	45.0000	3.3424	.4176	318	1.96	866
	Female	190	45.1250	5.6776	.3548			

Calculated p > 0.05 calculated t < 1.96 at df 318

The above table shows that the calculated p value of 0.866 was found to be higher than the 0.05 alpha level of significance, while the calculated t value of 0.169 is lower than the 1.96 t critical at df 318.Their computed impulsive and reflective cognitive styles levels are 45.0000 and 45.1250 by male and female students respectively. This shows that both male and female students have almost the same level of impulsive reflective and cognitive styles. Consequently, the null hypothesis which states that there is no significant influence of male and female students impulsive and reflective cognitive styles on academic self-efficacy among senior secondary schools students in Kaduna state, is hereby accepted and retained.

Hypothesis Three: The null hypothesis states that there is no significant influence of male and female students' reflective and impulsive cognitive styles on academic self-efficacy among senior secondary students in Kaduna state.

Table 4.4.4: Independent t-test statistics on the influence of male and female students on academic self-efficacy among senior secondary students in Kaduna state

	Gender	N	Mean	Std. Deviation	Std. Error Mean	Df	T	P
reflective_efficacy	Male	106	2.1592	.58887	.05720	191	1.148	.000
	female	87	2.2448	.40973	.04393			
impulsive_efficacy	Male	84	3.8552	.75483	.08236	125	3.112	.002
	female	43	3.4107	.77551	.11826			

Calculated p < 0.05 calculated t > 1.148 at df 191

The above table shows that the calculated p value of 0.000 was found to be lower than the 0.05 alpha level of significance, while the calculated t value of 6.074 is higher than the 1.148 t critical at df 191. Results of the independent t test above showed that significant influence exist between male and female impulsive students on their academic self-efficacy. And that the calculated p value of 0.000 was found to be lower than the 0.05 alpha level of significance, while the calculated t value of 3.112 is higher than the 1.148 t critical at df 125.

Their computed r mean academic self-efficacy level were 85.5000 and 81.1250 by male and female students respectively. This shows that male students have significantly higher academic self-efficacy than their female counterparts. Consequently, the null hypothesis which state that

there is no significant influence of male and female students Academic self-efficacy among senior secondary schools students in Kaduna state, is hereby rejected..

4.5 Summary of the Findings

The study which investigated the influence of Reflective and impulsive cognitive styles on academic self-efficacy of senior secondary students in Kaduna state has come up with findings based on the hypotheses tested and are therefore summarized below:

1. Significant relationship exist between students reflective and impulsive cognitive styles and academic self-efficacy among senior secondary students, with the impulsive students having a higher academic self-efficacy than the reflective students (p= 0.885) and (p = 0.000).
2. Significant difference does not exist between male and female students on the influence of impulsive and reflective cognitive styles on academic self-efficacy among senior secondary students p value of 0.866 was found to be higher than the 0.05 alpha level of significance, while the calculated t value of 0.169 is lower than the 1.96 t critical at df 318.
3. Significant difference exist between male and female students on their academic self-efficacy with male students having significantly higher academic self-efficacy than the female students.. (t = 1.148, p = 0.000)

4.6 Discussion of the Results

Significant relationship exists between students' reflective and impulsive cognitive styles and academic self-efficacy among senior secondary students. This is an indication that students' academic self-efficacy is influenced by their impulsive and reflective cognitive styles.This finding agrees with the position of Kozhenikov (2007) who found that the reflective students had a significantly higher self-efficacy score than relatively impulsive students.

To Brown (2000) saw reflective/impulsive style as the degree to which, in the cognitive domain, a person tends to make either a quick and gambling (impulsive) guess at an answer to a problem or a slower and more calculated (reflective) decision. For example, kagan as cited in brown (2000) found that children who are conceptually reflective tend to make fewer errors in academic tasks than impulsive children. Over the past several decades, educators and educational psychologists have been interested in students' self-perceptions. This concerted attention to students' views of themselves is quite understandable. From the perspective of an educator, enhancing the positive self-perceptions of learners is an important educational goal.

This impulsive feature could be found more remarkably in male students. However, the findings contradicts that of Oh and Lim (2005) where they examined how students` cognitive styles are correlated with their attitudes toward online education and learning behaviours in online learning environments. The study findings revealed that students` cognitive styles were not significantly correlated with their attitudes and preference for instructional delivery modes.

Another finding showed that there is no influence of sex on the impulsive and reflective cognitive styles of students.. This shows that both male and female students have almost the same level of impulsive and reflective cognitive styles. This finding is contrary to the position of

Jantan (2014) who stated that there was no significant difference in cognitive styles between boys and girls in the school due to a low positive correlation between students' cognitive styles and their mathematics achievement. Ewumi (2008)also supported this when he stated that sex related problems have contributed greatly to the creation of gender crisis by providing unequal opportunities for males and females. This study investigated gender and socio-economic status as correlates of students' academic achievement in senior secondary schools.

Another finding of this study revealed that there is significant difference between male and female students on their academic self-efficacy. This position of Ewunmi (2008) who found that negative significant relationship exists between gender and academic achievement. This finding also collaborate with Peklag (2003) investigated the effects of cooperative learning on achievement in Mathematics and native language and to analyse students` achievement in cooperative learning according to their gender, abilities and cognitive style. Positive effect of cooperative learning were found in both courses. Results in cooperative learning group were further analysed according to the students` gender, abilities, and cognitive style. No significant interaction between students` cognitive style and achievement were found in both courses. Field-dependent students benefited most from cooperative learning.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the work, conclusions and recommendations as well as suggestions for further studies.

5.2 Summary

Studies on reflectivity and impulsivity domain began in the early 1960s with several researches, such as Jerome kagan. Kagan (1965) defined this variable as a conceptual tempo, or decision time variable. He proposed two criterions to classify the subjects; response time and errors. Impulsive learners reach decision and report them very quickly with little concern for accuracy. On the other hand, the reflective ones are more concerned with accuracy and take more time to reach a decision and consequently make fewer errors. The implications of this cognitive style for learning are numerous. Therefore, this study is carried out to determine the influence of reflective and impulsive cognitive styles on academic self-efficacy among senior secondary students in Kaduna state Nigeria. Significant relationship exist between students reflective and impulsive cognitive styles and academic self-efficacy among senior secondary students, significant influence does not exist between male and female students on their impulsive and reflective cognitive styles on academic self-efficacy among senior secondary students and that significant difference exist between male and female students on their academic self-efficacy.

5.3 Conclusion

Base on the findings of the study, it was concluded that significant relationship exist between students reflective and impulsive cognitive styles and academic self-efficacy among senior secondary students, with the impulsive students having a higher academic self-efficacy than the

reflective students, significant difference does not exist between male and female students on the influence of impulsive and reflective cognitive styles on academic self-efficacy among senior secondary students and that significant difference exist between male and female students on their academic self-efficacy with male students having significantly higher academic self-efficacy than the female students.

5.4 Recommendations

The following recommendations were put forward:

1. The reflective students should be provided with the necessary assistance to boast their academic self-efficacy.
2. The female students should also be provided with the necessary assistance to boast their academic self-efficacy.
3. Psychologists, counselors and teachers should sesitised on the reflective and impulsive cognitive styles of students as it influence their academic self-efficacy.
4. Impulsive students should be given opportunity to explore in their cognitive style to become reflective to enhance their academic self-efficacy
5. Workshops, conferences and seminars should be organized to parents and subject teachers on students reflective and impulsive cognitive styles trait and ways to improve the academic self-efficacy.
6. Curriculum planners, educators and stake holders should bear in mind to inculcate students characteristics base on their reflective and impulsive cognitive styles to enhance their academic self-efficacy.

5.5 Suggestions for Further Studies

Base on the findings and recommendation of this study, the following suggestions are made:

1- Studies on influence of Reflective and Impulsive cognitive styles on Academic self-efficacy base on age group should be emphsised.

2- Influence of Reflective and Impulsive cognitive styles on Academic self-efficacy base on socio-economic background should be looked at.

3- Similar studies to include other variables such as environment (urban and rural) and across the geo political zones of Nigeria should be given priority.

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Appendix A

REFLECTIVE/ IMPULSIVE SCALE (RIS)

Dear Respondent,

This study intended to find out the Influence of Reflective and impulsive cognitive styles on Academic Self-Efficacy of Secondary School Students. The study has been instituted as an Academic study. Please, respond to the following items objectively as possible. The confidentiality of your responses will be strictly maintained, for that your name is not required.

Thank you in advance.

SECTION 'A'

Gender: Male ☐ Female ☐

Name of School……

Directions: Listed below are statements about your cognitive style (Impulsivity/Reflectivity),

five numbers follow each statement (1, 2, 3, 4, 5), and each number means the following:

* 1 means "**I never or almost never do this**."

* 2 means "**I do this only rarely**."

* 3 means "**I sometimes do this**"(about50%of the time).

* 4 means "**I do thisUsually.**"

* 5 means "**I always or almost always do this.**"

After reading each statement, circle the number(1, 2, 3, 4, or 5) that applies to you using the scale provided. Please note that there are no right or wrong answers to the statements in this scale.

s/n	Statement	never	rarely	sometimes	usually	Always
1	I don't give close attention to details	1	2	3	4	5
2	It is difficult for me to sustaining attention in tasks or play activities.	1	2	3	4	5
3	I do not seem to listen when spoken to directly	1	2	3	4	5
4	I do not follow through on instructions and fail to finish schoolwork.	1	2	3	4	5
5	I have difficulty organizing tasks and activities	1	2	3	4	5
6	I avoid, dislike, and become reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)	1	2	3	4	5
7	I loss things necessary for tasks or activities at school or at home (e.g. toys, pencils, books, assignments)	1	2	3	4	5
8	I easily get distracted by extraneous stimuli	1	2	3	4	5
9	I am forgetful in daily activities	1	2	3	4	5
10	I make careless mistakes in schoolwork.	1	2	3	4	5
11	I fidget with hand or feet or squirm in seat	1	2	3	4	5
12	I leave seat in classroom or in other situations in which remaining seated is expected	1	2	3	4	5
13	I run about or climb excessively in situations in which it is inappropriate.	1	2	3	4	5
14	I have difficulty playing or engaging in leisure activities quietly	1	2	3	4	5

15	I talk excessively and act as if 'driven by a motor'	1	2	3	4	5
16	I have difficulty awaiting turn in games or group situations	1	2	3	4	5
17	I blurt out answers to questions before they have been completed	1	2	3	4	5
18	I interrupt or intrude on others, e.g. butts into other children's games	1	2	3	4	5

Source: Diagnostic and Statistical Manual of Mental Disorders, (2000).

Appendix B

ACADEMIC SELF-EFFICACY SCALE

Dear Respondent,

This study intended to find out the Influence of Reflective and Impulsive cognitive styles on Academic Self-Efficacy of Secondary School Students. The study has been instituted as an

academic study. Please, respond to the following items objectively as possible. The confidentiality of your responses will be strictly maintained, for that your name is not required.

Thank you in advance.

SECTION 'A'

Gender: Male ☐ Female ☐

Name of School……

INSTRUCTION

This questionnaire measures Academic self-efficacy which is your belief that you can handle situations so as to successfully attain your goals. Below is a list of statement you will probably agree or disagree with. Please read carefully and indicate by ticking (√) to show the extent each statement describes your feelings.

Keys: SA (Strongly agree) A (agree) U (undecided) D (disagree) SD (strongly disagree)

S/n	STATEMENT	SA	A	U	D	SD
1	I can remain calm when facing difficult academic tasks.					
2	When I set academic targets for myself, I am confident I can achieve them.					
3	If something looks too complicated, I will not even bother to try it.					
4	I avoid trying to learn new things when they look too difficult to me.					
5	Failure just makes me try harder.					
6	I feel insecure about my ability to succeed in academic endeavours.					
7	When I make plans, I am certain I can execute them.					
8	I believe I can cope with the demand of my course of study.					
9	I have a lot of confidence in my ability to excel in my studies.					
10	I believe I can make use of my study time wisely.					
11	I keep trying to learn difficult things because I know I can make it.					
12	I give up easily on things I consider impossible to do.					
13	When something doesn't work for me, I try another way.					
14	I always try to know what went wrong so that I can correct it.					
15	I can withstand any difficult academic task.					
16	I am always late to class.					
17	I find it difficult to cope with my studies.					
18	I make sure I have enough time for study and leisure.					

Bandura, (1997)

Appendix C

Distribution of respondents by Sex

Gender	Frequency	Percent
Male	130	40.6
Female	190	59.4
Total	320	100.0

Appendix D

Reflective/Impulsive cognitive Style Responses

s/n	Items	Response categories					Mean	Stddev
		Always	usually	Some Times	Rarely	never		
1	I don't give close attention to details	4	20	32	200	64	1.90	.539
2	t is difficult for me to sustaining attention in tasks or play activities	10	10	128	32	140	1.90	.944
3	I do not seem to listen when spoken to directly	-	16	64	192	48	2.15	.727
4	I do not follow through on instructions and fail to do schoolwork	-	80	144	48	48	2.80	.981
5	I have difficulty organizing tasks and activities	-	16	48	176	80	2.05	.922
6	I avoid dislike and become reluctant to engage in tasks that require sustained mental efforts	-	64	32	96	128	2.1	1.137
7	I loss things necessary for tasks or activities	16	16	144	132	12	2.7	.782
8	I easily get distracted with extraneous stimuli	23	96	128	57	16	2.95	.865
9	I am forgetful in daily activities	16	80	64	128	32	2.75	1.091
10	I make careless mistakes in schoolwork	16	48	64	144	48	2.5	1.074
11	I fidget with hand or feet or squirm in seat	16	34	142	80	48	2.55	.922
12	I leave seat in classroom or in other situations in which remaining seated is expected	26	32	32	118	112	1.9	.944
13	I run around or climb excessively in situations in which it is inappropriate	16	48	176	32	48	2.85	1.015
14	I have difficulty playing or engaging in leisure activities quietly	32	64	64	128	32	2.8	1.168
15	I talk excessively and act as if driven by a motor	48	48	144	32	48	3.05	1.205
16	I have difficulty awaiting turn in games or group situations	16	64	32	192	16	2.60	1.0214

17	I blurt out answers to questions before they have been completed	48	32	96	48	96	2.650	1.390
18	I interrupt or Intrude on others eg butts into other children games	20	92	112	48	48	2.90	1.045
	Cumulative mean						***2.505***	

Appendix E

Academic Self-Efficacy Responses

s/n	Items	Response category					Mean	Stddev
		Always	Usually	Some Times	Rarely	Never		
1	I can remain calm when facing different academic tasks	32	200	44	40	4	4.100	.300
2	when I set academic targets for myself I am confident I can achieve them	160	64	80	10	6	4.150	.964
3	if something looks too complicated I will not even bother to try it	112	176	16	11	5	4.200	.749
4	I avoid trying to learn new things when they look too difficult to me	80	80	112	40	8	3.600	1.021
5	failure just makes me try harder	80	160	32	42	6	3.850	.964
6	I feel insecure about my ability to succeed in academic endeavours	64	144	60	45	7	3.700	.955
7	when I make plans I am certain I can execute them	78	140	80	16	6	3.900	.831
8	I believe I can cope with he demand of my course and study	128	80	64	16	32	3.800	1.290
9	I have a lot of confidence in my ability to excel in my studies	64	128	110	2	16	3.700	.955
10	I believe I can make use of my study time wisely	80	112	96	16	16	3.700	1.055
11	I keep trying to learn difficult things because I know I can make it	128	64	64	60	4	3.800	1.168
12	I give up on things I consider impossible to do	96	144	48	30	2	3.950	.922
13	when something doesn't work for me I try another way	32	112	128	32	16	3.350	.964
14	I always try to know what went wrong so that I can correct it	112	160	30	2	16	4.100	.944
15	I can withstand any difficult academic tasks	112	112	64	16	16	3.900	1.092
16	I am always late to class	48	112	64	64	32	3.250	1.22
17	I find it difficult to cope with my studies	128	80	80	16	16	3.900	1.13
18	I make sure I have enough time for study and leisure	64	32	64	80	80	2.750	1.44
	Cumulative mean						**3.761**	