EFFECTS OF TWO INSTRUCTIONAL METHODS ON SELF-EFFICACY, ATTITUDE TO AND PERFORMANCE IN ECONOMICS AMONG SELECTED SECONDARY SCHOOL STUDENTS IN ABUJA, NIGERIA

BY

DIMOGU, TONYE

JULY, 2017

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JULY, 2017

APPROVAL

This research report has been approved for the Department of Educational Foundations, Faculty of Education and School of Postgraduate Studies, University of Lagos.

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CERTIFICATION
This is to certify that the Thesis:

EFFECTS OF TWO INSTRUCTIONAL METHODS ON SELF-EFFICACY, ATTITUDE TO AND PERFORMANCE IN ECONOMICS AMONG SELECTED SECONDARY SCHOOL STUDENTS IN ABUJA, NIGERIA.

Submitted to the
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For the award of the degree of
DOCTOR OF PHILOSOPHY (Ph. D.)
Is a record of original research carried out

By

DIMOGU, TONYE
In the Department of Educational Foundations

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DEDICATION

I dedicate this study to the Almighty God. To the memory of my late father, Mr. Josiah Ekine Horsfall, who throughout his life time etched in the wall of my heart that I am a great woman and called me Ngowari.

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Tonye Dimogu (2017)

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ABSTRACT

The self-efficacy, attitude to and performance of senior secondary students in Nigeria in Economics has declined in recent times. This is apparently attributed to failure of teachers to adopt appropriate teaching methods in teaching the subject. This study was carried out in Abuja, Nigeria to investigate the effects of two instructional methods – cooperative learning and inquiry-based learning on self-efficacy, attitude to and performance of students in Economics. The sample comprised 275 senior secondary school students (134 male and 141 female) who were selected by multi-stage sampling technique. Five research questions and five research hypotheses were raised for the study. Quasi-experimental pre-test and post-test control group design was utilized for the research. The research instruments used for the study were Numerical Aptitude Test (NAT), Economics Achievement Test (EAT), Economics Attitude Scale (EAS) and Self-efficacy Questionnaire (SEQ). The test-retest reliability coefficient of 0.82 and 0.78 respectively was obtained for the two forms of the achievement tests at four weeks interval. The hypotheses were tested at 0.05 level of significance using Analysis of Covariance (ANCOVA) and Multiple Regression Analysis statistical methods were used to analyse the data gathered. The study findings show that there is a significant difference in the post-test in scores in economics among participants exposed to the three experimental conditions. Cooperative learning was more effective in students' performance in economics. There is a significant difference in the post-test scores on self-efficacy due to the intervention strategies. Participants exposed to inquiry-based learning have higher scores in post self-efficacy more than those exposed to the cooperative learning and control. There is a significant difference in the post-test scores on attitude to learning economics among the experimental groups. Inquiry-based learning and cooperative learning successfully improved the participants' attitude to learning economics than those in the control. There is a significant linear relationship between economics performance test scores and a set of dependant variables (attitude to economics and self-efficacy). Both self-efficacy and attitude to learning economics accounted for a significant variation in students' performance in economics. Based on the findings, some recommendations were proffered one of which is the need to engage students in the teaching and learning process in order to help them increase their understanding of the subject.

Key words: *Cooperative Learning, Inquiry-Based Learning, Self-efficacy, Attitude to Economics, Academic Performance*

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Studying Economics might have not given students in-depth knowledge of the subject to enable them apply what they have learnt to real life situations, most students could be passive learners, who merely listen, read and memorize in order to pass examinations. Economics is the study of economies, at both the level of individuals and of society (Krugman & Wells, 2004). Economics is one of the social science subjects expected to be studied at the senior secondary school (SSS) level under the new National Policy on Education (Federal Government of Nigeria, 2013).

Economics forms the bedrock of any society that wants to grow and develop economically (Adesina&Akinbobola, 2005). Basic understanding of Economics could make students smarter consumers, workers and investors. Studying Economics also provides a knowledge base for understanding government actions and world events (Mankiw, 2001). The study of Economics serves a useful purpose in modern life. It gives facts and shows what may be expected to be the outcome of certain lines of conduct; helps to decide which of several alternatives to choose. Economics helps in making wise choices that will satisfy needs in the presence of unlimited wants and limited resources (Adu, 2002).Economics education is vital to the future health of our nation's economy. It gives our students the building blocks for a successful financial future. It empowers consumers by giving them the knowledge and tools to improve their economic wellbeing. It is the best investment we can make to strengthen our nation's economy.

Economists recognize that developing basic economic and financial knowledge is an important goal for a democratic society that relies heavily on informed citizens and personal

economic decision-making. When households are capable of building wealth, they are also capable of building more economically stable neighbourhoods and communities (Santomero, 2003).Economics cuts across all aspects of life from early to old age and affects both human and material resources. The knowledge of Economics could make students to be involved in economic affairs early in life. Economics couldbe applicable to all levels: cultural, social, political, family, etc. Economics is a practical subject that needs to be taught, learnt and applied in various walks of life.

Despite the importance of Economics to individuals and national development, Nigerian students' performance in Economics at the SSCE level has been fluctuating.Ochuba (1994) pointed out that many students perceive economics as very easy subject and thus, may not take it seriously. This problem could be one of the main causes of poor performance of students in Economics in Senior Secondary School external examinations. Mazzi (1989) pointed out some problems that cause students' poorperformance as, "short supply of qualified teachers of Economics, poor teaching method,insufficient use of instructional materials in teaching Economics, and attitude of students towards the teacher and administrators in teaching and learning". The researcher got some information from Agidingbi WASSCE International Office on students'performance in Economics. The Chief Examiner's Report on Economics for May/June 2015 West African Senior Secondary Certificate Examination (WASSCE) confirmed that the standard of the paper was at par with those of previous years. The rubrics were clearly stated and the questions were devoid of any ambiguity. The marking scheme was comprehensive and marks were well distributed. However,there was a slight drop in candidates' performance when compared to those of previous years.

A cursory look at the performance of the students in Economics during the period of 2012 to 2015 revealed this (see table 1 below). Considering the relevance attached to the

study of Economics with respect to its contributions in the National development of a nation, the fluctuating performance in Economics is not encouraging.

Table 1: Statistics of Performance of Candidates in May/June WASSCE in Economics (2012 – 2015)

Year	Total	Credit (1 - 6)	Pass (7 -8)	Fail (9)
2012	1540902 (97.29%)	864273 (56.09%)	409468 (26.57%)	232321 (15.08%)
2013	1532194 (97.72%)	1025703 (66.94%)	310963 (20.30%)	159927 (10.44%)
2014	1363994 (98.05%)	698669 (51.22%)	336624 (24.68%)	302462 (22.17%)
2015	1175348 (98.01%)	511007 (43.47%)	329396 (28.02%)	309757 (26.35%)

Source: WASSCE (2006). Available on http//waec.org/index.pp/economic.

The statistics in Table 1 highlights the performance level of candidates in Economics in West African Senior School Certificate Examination (WASSCE) between 2012 and 2015. There is a fluctuation in the performance of candidates in the four years under review.

Looking at the Chief Examiner's Report, three (3) major candidates' weaknesses were pointed out, (i) poor graphical analysis, (ii) the use of wrong terminologies and (iii) failure to expatiate points.This fluctuating performanceof students' weakness could be linked to many factors, but the most significant for this study is the instructional methods employed by teachers.There are many instructional methods of teaching Economics which are, Cooperative Learning, Inquiry-Based Learning, Problem Solving Method, Discussion

Method, Role Play Method, Lecture Method, Case-study Method etc. The researcher has chosen to adopt Cooperative Learning and Inquiry-Based Learning for the purpose of this studybecause they are student centred methods.

Cooperative Learning entails working together to accomplish shared goals. Cooperative Learning (CL) is the use of small groups so that students can work together to maximize their own learning and that of others (Johnson, Johnson & Smith, 1991). Cooperative Learning is also an instructional method which involves small groups, each with students of different levels of ability using a variety of learning activities to improve the understanding of a topic. According to Odili (1990), the class in Cooperative Learning is divided into groups, and each group has specific work to do. Also, group rewards and individual accountability within the group are essential. The group uses a variety of learning activities in cooperative form to improve their understanding of a particular topic or subject. Each member of a team is responsible not only for learning what is taught but also for helping team mates to learn, thus, creating an atmosphere of achievement (Ronsini, 2000).

Students' search for knowledge involves making inquiry from one person to another. Inquiry-Based Learning (IBL) is another instructional method that can be used in teaching Economics in Secondary Schools. To inquire simply means to get information, to learn by asking in order to find a solution to a problem.Inquiry-Based Learning could be focused on using and learning content as a means to develop information-processing and problem-solving skills. The system is more students oriented, with the teacher as a facilitator of the learning. The more interested and engaged students are with a subject or project, the easier it is for them to construct in-depth knowledge of it. Learning becomes almost effortless when something fascinates students and reflects their interests and goals.Ultimately, the importance of inquiry-based learning is that students learn how to continue learning(Educational Broadcasting Corporation, 2004). The continuous learning is something they could take with

them throughout life:beyond parental help, security, textbook, time of tutelage under a teacher, and beyond school to a time when they will be independent in learning.

However, some personality factors such as self-efficacy and attitudes when improved on could also increase academic performance. Self-efficacy is the belief in one's capabilities in achieving a goal or an outcome. Our sense of self-efficacy has a major influence on how we approach issues and challenges. Students with strong self-efficacy seem to have strong belief in themselves and their ability to accomplish goals successfully. According to Bandura (1995), self-efficacy is the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations. In other words, self-efficacy is a person's belief in his or her ability to succeed in a particular situation. He described these beliefs as determinants of how people think, behave, and feel. Students' belief on their intellectual abilities determines to a large extent their academic performance. Self-efficacy plays an essential role in the development of the self-system (Bandura, 1997). This belief could also arouse their attitude to the subject.

A learner's attitude relates to all the factors of his education. Students' attitude play important roles in their ability to learn and comprehend what they are taught in the classroom. Attitude influences the learner's perception. What a learner considers as important, attractive and worthwhile is determined by his/her attitude. Based on this, there is a need for teachers to know the attitude of students towards the subject they are teaching. According to Odufuye (1985), the attitude of a learner towards a subject will determine the measure of the learner's attractiveness or repulsiveness to it. Invariably, students' attitude influences performance in Economics. Olaosebikan (1985) stated that attitudes are related to the achievement and enrolment in any particular subject. He also said poor or negative attitude leads to poor achievement which in turn leads to low enrolment. Clearly, it follows that for students' to have a better performance in Economics, there is a need to motivate them to have a positive

attitude towards the subject. Students' attitude towards Economics can affect both their participation and performance in class. It is believed that students' attitude towards a subject determines their success in that subject. What this means is that favourable attitude can result to good performance in a subject. There is a relationship between students' performance and their attitude towards a subject. According to Freeman (1997), students' attitude towards a subject is shown to be directly linked to achievement in the subject area.

In a school setting, gender could be seen as an issue because it plays an important role in influencing students' academic performance. Gender seems to bring competition in the classroom as male students appear to view their female counterparts as weaker sex especially in subjects that requires calculations. However, since Cooperative Learning and Inquiry-Based Learning are student centred, it gives both male and female students the leverage to contribute immensely in the class. This, in return, could affect their Self-efficacy and Attitude positively and thus enhance their Academic performance.

The chief examiner of WASSCE suggested that to overcome student's weaknesses in Economics, they need to pay more attention to graphic analysis. He further suggested that teachers should emphasize this aspect in their teaching to improve performance in Economics. It is in view of this that this study is based on the effects of two instructional methods on self-efficacy, attitude to and performance in Economics among selected secondary school students in Abuja, Nigeria.

1.2 Statement of the Problem

The methods of teaching Economics in the senior secondary schools pose some problems. The subject is taught using poor and inappropriate methods by teachers. Also, it is taught in a manner that does not give the students in-depth knowledge of the subject to enable them apply the lessons to real life situation. The conventional method teachers use in teaching the

subject make students to be passive learners who merely listen, read and memorize the concepts for the purpose of passing examination. As Onah (2006) noted, most teachers of Economics did not major in Economics and therefore find it difficult to teach the difficult concepts. Invariably, this does not augur well for the students as they find it difficult to cope with.

Basically, the situation is very grave. It has affected the attitude of the students towards Economics as well as their self-efficacy and performance in the subject. Ochoba, (1994) have rightly noted that students' performance in Economics at the SSCE has declined. This was attributed to short supply of qualified teachers of Economics and poor teaching method among other reasons. Also, available records at West African Examination Council, Ikeja Lagos, suggest that students' performance in the subject has dropped in recent years.Despite the large number of students that offer Economics at both West African Examination Council (WAEC) and National Examination Council (NECO), the performance level has not matched the popularity of the subject. The performance of the candidates was particularly abysmal in 2015.The Chief Examiner's Report of the May/June 2015 Examination attributed the poor performance of candidates to such weaknesses as poor graphical analysis, the use of wrong terminologies and failure to expatiate points.

The poor performance of students in Economics is dangerous to National Economic development. The situation is capable of denying many individuals the power of making successful future. It is also capable of robbing the nation the ability of producing adequate potential economists who will contribute to national development. Therefore, this is a challenge that must be tackled by employing appropriate and relevant instructional methods to teach Economics. This is the essence of this thesis as it appears that no study has been carried out to really and methodically address the matter.

1.3 Theoretical Framework

This study was hinged on the following theories:

- Social Development Theory- Lev Vygotsky (1978)
- Constructivist Theory-Jerome Bruner (1996)

Social Development Theory

Social development theory emphasizes that social interaction plays a fundamental role in the development of cognition. Vygotsky (1978) explains that every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (inter-psychological) and then inside the child (intra-psychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. He believes that young children are curious and actively involved in their own learning, especially in the discovery and development of new understandings and concepts. However, he placed more emphasis on social contributions to the process of development. According to Vygotsky (1978), much important learning by the child occurs through social interaction with a skilful tutor. The tutor may model behaviours and/or provide verbal instructions for the child. He refers to this as a cooperative or collaborative dialogue. The child seek to understand the actions or instructions provided by the tutor (often the parent or teacher) then internalize the information, using it to guide or regulate their own performance.

This theory is relevant to this study because it requires the teacher and students to play untraditional roles as they collaborate with each other to improve academic achievements in Economics. Instead of a teacher dictating her meaning to students for future recitation, a teacher should collaborate with students in order to create meaning in ways that they can create student's meaning (Hausfather, 1996). Learning and teaching becomes an exciting experience for the students and teachers respectively.

Constructivist Theory

This theory states that a learner could create or construct new ideas and concepts of solving problems by using his past and current knowledge (Bruner, 1996). The fulcrum of constructivism is that people construct their own understanding and knowledge of the world by experiencing things and reflecting on those experiences. When people encounter something new, they reconcile it with previous ideas and experiences by constructing new ideas and concepts in solving problems.

The teacher makes sure he/she understands the students' pre-existing conceptions, and guides the activity to address them and then build on them. Therefore, according to Bruner (1966), a theory of instruction should address four major aspects: (1) predisposition towards learning, (2) structuring a body of knowledge so that it can be most readily grasped by the learner, (3) introducing the most effective sequences in which to present material, and (4) recognizing the nature and the pacing of rewards and punishments. Good methods for structuring knowledge should result in simplifying, generating new propositions, and increasing the manipulation of information. In making sure that students go through the processes of independent learning, teachers encourage the students to solve problems posed to them as proof that they understood it. By these activities, the students are encouraged to conceive themselves as problem-solvers, and also design and perform relevant experiments. The theory is relevant to this study because it encourages students to be creative and independent in solving problems.

The theory is also relevant to this study because the underlying principle centres on the individual construction of knowledge based on their own personal experiences. The learning that takes place is described as an active process that is best achieved using a hands-on approach. Furthermore, the focus shifts learning towards experimentation of Economics concepts rather than direction prescribed by the teacher. Consequently, the learners draw

their own conclusions and outcomes based on discoveries and experiences of Economics concepts. Shane and Wojnowski (2005) purported that students learn best when they construct their own knowledge based on multiple experiences with a concept or skill.

1.4 Purpose of study

This study was designed to investigate the effects of Cooperative and Inquiry-Based Learning on self-efficacy, attitude to and performance in Economics among Selected Secondary School two (SS2) students in Abuja, Nigeria. Specifically, the objectives of the study are to:

1. examine the difference in the post-test scores in Economics Achievement Test of participants exposed to the three experimental conditions (Cooperative learning, Inquiry-based learning and Control group).
2. explore the difference in the post-test scores in self-efficacy among participants exposed to the three experimental conditions.
3. establish the difference in the post-test scores in attitude to Economics among participants exposed to the three experimental conditions (Cooperative Learning, Inquiry-Based Learning and Control group).
4. determine whether a linear relationship exists between Economics Achievement test scores and other dependent variables (attitude to Economics, self- efficacy).
5. determine if there is any gender differencein the post-test scores of Economics among participants in the three experimental groups.

1.5 Research Questions

The following research questions guided this study.

1. what would be the difference in the post-test scores in Economics Achievement Test among participants exposed to the three experimental conditions?

2. to what extent would there be difference in the post-test scores in self-efficacy among participants exposed to the three experimental conditions?
3. what would be the difference of the post-test scores in attitude towards Economics among participants exposed to the three experimental conditions?
4. to what extent would there be linear relationship between EconomicsAchievement post-test scores and a set of dependent variables? (attitude to economics, self-efficacy and performance)
5. whatwould be thegender differencein the post-test scores in Economics among participants in the three experimental groups?

1.6 Research Hypotheses

The following hypotheses were raised for the study:

1. there will be no significant difference in the post-test scores in Economics Achievement Test among participants exposed to the three experimental conditions (Cooperative Learning, Inquiry-Based Learning and Control group).
2. there will be no significant difference in the post-test scores in self-efficacy among participants exposed to the three experimental conditions.
3. there will be no significant difference in the post-test scores in attitude to Economics among participants exposed to the three experimental conditions.
4. there will be no significant linear relationship between Economics Achievement post test scores and a set of dependent variables (attitude to Economics, self- efficacy).
5. There will be no significant gender deferential in post-test scores in Economics among participants in the three experimental groups.

1.7 Significance of the study

The findings of this study would be valuable to Educational Psychologists,Guidance Counsellors, Policy Makers,Teachers, Researchers, Evaluation Experts, School Principals, Curriculum Experts andStudents. To the Educational Psychologist and Guidiance councellor the result from this study will provide basesto profer solution to children or young people who are experiencing problems that hinder their successful learning and participation in school and other activities.

To the students', identification of a more effective Cooperative and Inquiry-Based Learning will help them to perform better in Economics. To the teachers and evaluation experts the benefits of Cooperative and Inquiry-Based Learning will make teaching and learning process more interesting because students' performance will improve and their interest sustained, thus enabling the realization of the stated instructional objectives which is the goal of any academic enterprise. To other researchers; the findings and suggestions of this study will create an insight for researchers into other methods of learning, it will also be a base-line data as well as a reference material for future studies and to the school principals, the result from this study will provide bases for developing and implementing the use of Cooperative and Inquiry-BasedLearning that has a greater effect in improving students' performance in Economics.

Finally to curriculum experts in the educational sector. It would bring about a reviewof the present educational policy in the curriculum with the aim of emphasising Cooperative and Inquiry-Based Learning to improve learning abilities. The information gathered through this study would also help institutions and researchers in education to have a better understanding of instructional methods, self-efficacy and attitude to the subject to be able to evaluate students' academic achievement. It will be a contribution to exsisting knowledge in this field of study.

1.8 Scope and Delimitation of the Study

The study was delimited to three selected Senior Secondary Schools in Abuja, Nigeria. It covered two instructional methods (Cooperative Learning and Inquiry-Based Learning), Attitude towards Economics, Self-efficacy, and Performance in Economics. The study was also delimited to public secondary schools in FCT Abuja and students' in Senior Secondary School II in the study area.

1.9 Operational Definition of Terms

Academic Performance: Thisis the extent to which a student, teacher or institution has achieved their short or long-term educational goals.In this study, academic performance refers to the performance of S.S. 2 students in Economics.

Attitude to Economics: This is a way of feeling or acting toward a person, thing or situation.In this study, attitude refers to a positive or negative evaluation of people, objects, events, activities, and ideas in the teaching and learning of Economics.

Cooperative Learning: Thisis an educational approach which aims to organize classroom activities into academic and social learning experiences.In this study, cooperative learning refers to a teaching strategy in which small teams, with students of different levels of ability, using a variety of learning activities improve their understanding of Economics.

Inquiry-Based Learning: Thisis an active learning that starts by posing questions, problems or scenarios—rather than simply presenting established facts or portraying a smooth path to knowledge.In this study, Inquiry-based learning is a process where the teacher creates an environment in which students are free to ask questions, learn concepts and explore possible solutions within a real-world project-based content.

Self-Efficacy: This is belief in one's ability to succeed in specific situations or accomplish a task. In this study, self-efficacy referred to a person's belief in his/her ability to succeed.

Summary of the chapter

This chapter focused on the introduction to the study. Issues considered here include the background to the study, the statement of the problem, theoretical background, and the purpose of the study. Also, the chapter presented the research questions, the hypotheses, the scope of the study, the significance of the study and the operational definition of terms. The chapter has provided ample information to the study that would enhance discussion of subsequent chapters.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The review focused on the following sub-themes.

2.1 The concept of cooperative learning.

2.2 The concept of inquiry-based learning.

2.3 The concept of self-efficacy.

2.4 The concept of attitude.

2.5 Cooperative learning and academic achievement.

2.6 Inquiry-based learning and academic achievement.

2.7 Cooperative learning and attitude to economics.

2.8 Inquiry-based learning and attitude to economics.

2.9 Cooperative learning and self-efficacy.

2.10 Inquiry-based learning and self-efficacy.

2.11 Instructional methods in education

2.12 Methods of changing self-efficacy

2.13 Theories of instruction

2.14 Summary of literature review and gaps in knowledge.

2.1 The Concept of Cooperative learning

Cooperative learning is a teaching approach in which small groups, each with learners of diverse levels of capability, use a range of educational activities to enhance their comprehension of a topic (Dyson & Casey, 2012). Cooperative Leraning is one of the recent remarkable and productive areas of research, theory, and practice in education. It denotes students functioning together to attain the objectives and the instructional events that organize

the students' joint efforts (Gömleksiz, 2007). Cooperative education is learner-centred and has been executed widely and fruitfully in English Language Teaching (ELT). According to Lv (2014), CL has become one of the most common approaches to language teaching in the world. Lv used secondary data to compile the findings supporting application of CL in learning English in China. The author demonstrated that the CL strategies had an optimistic influence on the college English education through the factual examples of the college English classroom environment. In her report, she concluded that CL strategies, such as Jigsaw Learning, Group Investigation, etc. that encouraged interaction between peers "Have a positive effect on the college English learning" (Lv, 2014). Lv also found that students who were exposed to CL strategies were more motivated and enthusiastic. Other advantages included an increase in communicative competence, language knowledge and skills, as well as a higher level of enthusiasm and cooperation within the class. Furthermore, advanced students were able to help those students whose fluency was less developed. In a similar study, Hua (2014) found that cooperative learning had positive effects on students participating in a large-sized English class in China. Hua (2014) explored the feasibility and effectGiveness of CL learning strategies in Chinese universities, through a pre-test and post-test experiment, where two classes of over 100 students participated. One class was exposed to CL strategies, and the other was taught using more traditional, teacher-centred approach. Data was collected through the use of surveys and questionnaires, as well as a pre-test and post-test assessment of speaking, listening, writing, reading, and vocabulary skills. Hua (2014) found that the experimental group, which had engaged in CL strategies, had higher scores in all domains, but especially in vocabulary, and listening and speaking skills. Cooperative learning is not just a synonym for students learning in groups. A learning practice only qualifies as cooperative education to the degree that the key cooperative learning elements are encouraged, which is: cognitive complexity and the development of

quality teamwork (Cursedieu, & Pluut, 2013). According to Cuseau and Pluut, cooperative learning facilitates the development of cognitive complexity in other words, the level and depth of knowledge a group has regarding a certain subject or area of knowledge. Quality teamwork has many aspects that CL can help develop in a group, including collaboration, cooperation, and group cohesion. Also, CL can be employed in any type of task that can be assigned to students in learning classes, project-based courses, or laboratories (Maceirasa, Cancelaa, Urrejolab, & Sancheza, 2011).

Anaekwe (1997) investigated the effects of students' interaction patterns on cognitive achievement, retention and interest in Chemistry. The investigation found 18 cooperative learning efficacious. Igbo (2004) found peer-teaching effective in improving the learning disabled achievement in mathematics. There is therefore the need to explore the effects of the two child-centered instructional approaches: cooperative learning and peer-teaching on students' achievement and interest in some perceived difficult Chemistry concepts so as to probably improve students' performance in Chemistry and avert the problems of poor achievement and interest in senior secondary school Chemistry.

Cooperative Learning is a teaching arrangement that refers to small, heterogeneous groups of students working together to achieve a common goal (Kagan & Kagan, 1994). Students work together to learn and are responsible for their teammates' learning as well as their own. The basic elements are:

i. Positive Interdependence - occurs when gains of individuals or teams are positively correlated.

ii. Individual Accountability - occurs when all students in a group are held accountable for doing a share of the work and for mastery of the material to be learned.

iii. Equal Participation - occurs when each member of the group is afforded equal shares of responsibility and input.

iv. Simultaneous Interaction - occurs when class time is designed to allow many students interactions during the period.

Hundreds of studies have been undertaken to measure the success of cooperative learning as an instructional method regarding social skills, student learning, and achievement across all levels from primary grades through college. The general consensus is that cooperative learning can and usually does result in positive student outcomes in all domains (Johnson & Johnson, 1999).

A synthesis of research about cooperative learning finds that cooperative learning strategies improve the achievement of students and their interpersonal relationships. In 67 studies of the achievement effects of cooperative learning 61% found significantly greater achievement in cooperative than in traditionally taught control groups. Positive effects were found in all major subjects, all grade levels, in urban, rural, and suburban schools, and for high, average, and low achievers (Slavin, 1991).

Nnaka (2006) sees cooperative learning as a successful teaching strategy in which small groups of students with different levels of ability, use a variety of learning activities to improve their understanding of a topic or subject matter. The teacher who adopts the cooperative learning strategy organizes the students in small groups. Each group should be heterogeneous in abilities and sociocultural background. They work in concert through a given instructional assignment until every member successfully understands, and completes the assignment. This is in line with NTI (2006) view that cooperative learning is an instructional model where learners cooperate with each other to perform or complete a particular task, usually in small groups of between four to six members. Anaekwe (2006) however pointed out that cooperative learning differs from the usual classroom group work whereby the teacher for convenience or because of inadequate materials or large class size directs his students to work together in small groups. Grouping often formed on the bases of

males, females, friends etc not guided by any formal criteria is contrary to the spirit of cooperative learning. The teacher occupies the position of a facilitator but he/she stays in the background and allows the students to actively discuss and debate issues at stake. Children should be grouped together and encouraged to contribute individually in solving the problem at hand. Onyejekwe (1996) suggests that the cooperative method must be 39 planned so as to yield satisfactory result. The teacher must decide whether the problem under consideration can be satisfactorily dealt with in cooperative manner or not. The teacher must be certain that the students have sufficient facts concerning the topic so as to enable them discuss and debate sensibly. The teacher should also ensure that the group work is not dominated by the gifted or bright students, but equal chances of contributing ideas should be given to every member of the group. For cooperative learning to be effective, Anaekwe (2006) enumerated six teacher-characteristics and nine studentcharacteristics that are required as follows: The teacher should:

(a) Assign the learners to their groups; noting the critical variables: ability, sex

(b) Outline tasks/skills to be learnt very clearly for instance, handson activities, process skills, estimation of size, volume.

(c) Assign roles to group members (which must be varied on every new task/exercise) (d) Ensure conducive class room environment (space and needed materials)

(e) Plan ahead to direct learners on materials to improvise for the next days work for instance, Potted seedling

(f) Create opportunities for general class discussion and expression of ideas.

Johnson, Johnson and Stanne (2000) summarize that cooperative learning strategies are widely used because they are based on theory, validated by research, and almost any teacher can find a way to use cooperative learning methods that are consistent with personal

philosophies. In a meta-analysis of 158 studies, Johnson & Johnson report that current research findings present evidence that cooperative learning methods are likely to produce positive achievement results. The studies included eight methods of cooperative learning: Learning Together and Alone, Constructive Controversy, Jigsaw Procedure, Student teams Achievement Divisions (STAD), Team Accelerated Instruction (TAI), Cooperative Integrated Reading & Composition (CIRC), Teams-Games-Tournaments (TGT), and Group Investigation. No studies were found that specifically investigate Kagan's Cooperative Learning Structures. In each case, the achievement levels were significantly higher when cooperative learning methods were used as compared to individualistic or competitive methods of learning.

Grouping is essential to cooperative learning. The most widely used team formation is that of heterogeneous teams, containing a high, two middle, and a low achieving student and having a mix of gender and ethnic diversity that reflect the classroom population. The rationale for heterogeneous groups argues that this produces the greatest opportunities for peer tutoring and support as well as improving cross-race and cross-sex relations and integration. Occasionally, random or special interest teams could be formed to maximize student talents or meet a specific student need (Kagan, 1994).

While many cooperative learning training packages exist, one study found that most teachers who use these methods have been self-taught (Sparapani, Abel, Easton, Edwards, & Herbster, 1997) and that teachers are likely to use a combination of methods. This resulted in very few activities that involved higher-level thinking skills and most of the observations were of drill and review or routine activities. The reason for lack of teacher training is given as lack of funding and/or administrative support. Another study (Nath & Ross 1996) of teachers using Student Teams-Achievement Divisions (STAD) found that if teachers did not strictly adhere to the framework of cooperative learning, the method was unsuccessful and

students spent more time on disagreements or conflict management than they did on academic tasks. Sapon-Shevin and Schniedewind (1989/1990) assert that teacher buy-in is an essential factor for success and that cooperative learning needs to be embraced as a teaching philosophy and a set of principles rather than as a teaching gimmick if it is to reach its full potential.

Factors contributing to achievement effects of cooperative learning are group goals and individual accountability. Providing students with an incentive to help each other and encourage each other to put forth maximum efforts increases the likelihood that all group members will learn. As well as individual grades and evaluations there is strong evidence that group grades and team rewards are most successful for motivation (Slavin, 1995). Others argue that the group grades and team rewards allow for the free rider effect of students who do not participate to the fullest extent of their abilities. Also, it is argued that group grading de-emphasizes the importance of hard-work, personal ability, and perseverance (Kagan, 1995).

Cooperative learning enhances social interaction, which is essential to meet the needs of at-risk students (Slavin, Karweit, & Madden, 1989; Johnson, 1998). Within the framework of cooperative learning groups, students learn how to interact with their peers and increase involvement with the school community. Positive interactions do not always occur naturally and social skills instruction must precede and concur with the cooperative learning strategies. Social skills encompass communicating, building and maintaining trust, providing leadership, and managing conflicts (Goodwin, 1999).

In two studies (Nelson & Johnson, 1996; Prater, Bruhl, & Serna, 1998) researchers found that students with behaviour disorders who did not receive social skills instruction performed better with direct instruction methods rather than cooperative group methods and

that students who did receive social skills instruction performed better with cooperative group methods.

Cooperative learning has been found to be a successful teaching strategy at all levels, from pre-school to post-secondary. The developmental characteristics of middle school students make cooperative learning a good fit of teaching strategy for the needs of the students. Young adolescents need to socialize, be a part of a group, share feelings, receive emotional support, and learn to see things from other perspectives. Cooperative learning groups do not separate students on the basis of class, race, or gender and the goals of middle schools are consistent with the goals of cooperative learning theories. It is a peer-centred pedagogy that promotes academic achievement and builds positive social relationships (Sapon-Shevin, 1994).

Social Studies classes lend themselves to cooperative learning methods due to the skills and values within the curriculum. Students may use their thinking, communication, and information-sharing skills to increase their content knowledge as well as their interpersonal skills. Several suggestions were given by Karnes and Collins (1997) to implement cooperative learning structures within the social studies context.

Integrating cooperative learning strategies have proven to be effective in increasing student achievement across all grade levels and subject areas (Johnson & Johnson, 1989). The use of cooperative learning is an effective teaching and learning strategy. Consequently, which cooperative learning strategies promote a significant increase in student achievement and content literacy? Schools are faced with pressure to produce competent students in an era of standardized tests, which has raised many questions about what is the best way to teach social studies (Soares & Wood, 2010). Educators can choose between lecture style, teacher centred methods and active or cooperative learning strategies. Literacy is a natural

component of social studies and the social studies teacher is the key to successful literacy development (Key, Bradley, & Bradley, 2010). The volume of facts and details contained within social studies textbooks often takes priority over student learning activities (Little, Feng, VanTassel-Baska, Rogers, & Avery, 2007). Due to the volume of content, classroom teachers have a challenge of adapting texts to their students' needs and deciding which instructional methods will maximize students' learning and success (Hendrix, 1999). The expectation of this literature review was to gain an understanding of some common cooperative learning strategies and then determine the effectiveness of these strategies on student achievement in the social studies classroom.

Cooperative learning is a learning environment in which two or more students are working together to complete a common task (Siegel, 2005Cooperative learning research has identified the jigsaw, learning together, student teams-achievement divisions, teams-games-tournaments, academic controversy, as the most commonly utilized cooperative learning strategies.

Jigsaw:

The Jigsaw method was developed by Elliot Aronson is 1978. In the Jigsaw method, students are assigned to multi-member teams to work on academic material that has been divided into sections. Each member of the group is assigned a section of study on which he or she becomes an expert. Experts are then assigned to expert groups in which the members of the group discuss the information and decide on the best way to present the material to members of their home teams. After the students have mastered the material, group members return to their home teams to teach the other members the material.

The research, in regards to the Jigsaw method, is positive. Jigsaw teaching is an appropriate strategy for social studies because there is often not always one answer to a

question (Slavin, 1995). Rhetorical and open-minded questions are confronted more easily when students have exposure to a plethora of perspectives. Concept development is usually one of the main goals in a social studies lesson.

Additional reasons exist for implementing the Jigsaw method in a social studies classroom. The Jigsaw method proves to be useful because of narrative materials, such as a chapter, are often employed and the Jigsaw method had a positive effect on mean scores (Slavin, 1995). The fact that social studies classrooms are reading intensive cannot be ignored. Student mastery of a social studies lesson is significant when planning a lesson. The Jigsaw method was identified by the literature as an ideal cooperative learning method for social studies.

A typical jigsaw activity involves students becoming experts, then teaching their group about what they have learned. For example, in a class using the Jigsaw strategy the teacher has a general topic of what the class is to learn more about in their cooperative learning groups. The topic is divided into separate sections, and each individual is given a different sub-topic to research by using class notes, text books, etc. Each student becomes an "expert" on the subtopic. These experts then get together into groups of students with the same topics, to discuss what they have learned about the subtopic. These meetings serve several useful functions, including: checking their understanding of the material, review, revise, clarify concepts, etc. After this step, the students meet together in their original groups, and each of the individual students, now "experts", are responsible for teaching their teammates about their topic of study. The teacher then provides support by listening to the following discussions, noting difficulties or providing more in-depth knowledge (Koppes, 2002).

Learning together:

Learning together is a cooperative learning strategy created by David W. Johnson and Roger T. Johnson. Learning together was originally designed to help train teachers how to use cooperative learning groups in the classroom at the University of Minnesota in 1966. In the learning together strategy, cooperative effort includes five basic elements: face-to-face interaction, social skills, group processing, positive interdependence, and individual accountability (Johnson & Johnson, 1989). During the learning together process, students complete worksheets in groups of four or five. An emphasis is placed on team building and group self-reflection. Team grades are determined by the teacher. Student growth has appeared in the literature in regards to the social studies classroom because of the emphasis on the student and the interaction between students. The learning together teaching method had a positive effect on mean scores in the social studies classroom (Slavin, 1995).

Student teams-achievement divisions:

Student Teams-Achievement Divisions is a cooperative learning strategy created by Robert Slavin in which groups of four work within their teams to master a lesson presented by the teacher. Students take individualized quizzes, which are compared to past performances, and then team scores are put together based on the extent to which the students in the group meet or surpass past performance (Slavin, 1995). Teams that meet the appropriate criteria may earn some kind of reward from the teacher. Slavin recognized through his research an increase in mean scores through the use of Student Teams-Achievement Divisions.

Teams-games-tournament:

Teams-Games-Tournaments is a cooperative learning strategy developed by David Devries, Keith Edwards, and Robert Slavin. Teams-Games-Tournament is similar to Student Teams-

Achievement Divisions except students do not take individual quizzes. Instead, students participate in academic games with members of other teams and contribute points to their team scores. Slavin determined in his research an increase in mean scores through the use of Teams-Games-Tournaments (Slavin, 1995).

In every aspect of life, effective learning requires teamwork and cooperation to enhance productivity of individuals. Learning institutions also operate the same way (Dallmer, 2007). For example, adopting cooperative learning would enable the students to learn from each other; this enables them to immensely gain interpersonal skills through group participation (Davidson & Major, 2014). Furthermore, cooperative learning enables the students to have broader understanding of the subjects since they are able to collaborate in the learning process. This affirms that students who adopt jigsaw strategy are able to perform better academically compared with their counterparts who are taught through teacher-centred strategy (Robyn, 2014). In cooperative learning, group discussions enhance higher understanding comparatively to traditional or conventional teaching that heavily depends on teachers as resources. Hence cooperative learning could be classified among ways of embracing teamwork in academics. Many college students would be willing to learn, share skills and competencies with their colleagues, and also develop leadership and other important aspects of teamwork (Davidson & Major, 2014).

According to research, students learn better when they are challenged and can be motivated by their classmates. For example, Dallmer (2007) noted that when a student arrived at a clear conclusion to a problem which had caused frustration in the class, his classmates would perceive the solution and the problem as being less difficult, because it was solved by a fellow student (Dallmer, 2007). Students often believe that teachers are experts in the subjects that they teach, so in a traditional, teacher-centred classroom, students may be intimidated by the subject matter, thinking that it is only easy or solvable by the teacher or

another expert. A potential result of this perception is that when students try to work on the material by themselves, they can become very frustrated or lack motivation to complete the task (Chih-Hsiang et al., 2013).

In a cooperative learning environment the students are involved in deriving solutions to the questions through collaboration; whereby the students get to integrate different methods and processes of solving the same "question" especially from their colleagues and teachers. When students solve the same problems especially through group work, there would be differences among the students who work independently when handling assignment problems. The differences in level of understanding among students who learn through jigsaw, and their counterparts who learned via the teacher-centred approach, can be compared when the two teams are evaluated afterwards (Robyn, 2014). Cooperative learning enables the students to identify their areas of specialty, which enables the weak students to know whom to approach when they have misconceptions or difficulties in subject areas. Instructors in Saudi Arabia often do not have time for consultation with students due to tight lesson schedules that have to be attended to on a daily basis (Davidson & Major, 2014). Furthermore, some students do not interact freely with instructors, be it in class or afterwards. Therefore, cooperative learning motivates students' critical thinking and helps them clarify ideas through debate and discussion with their peers.

Traditional Learning (TL) and Cooperative Learning (CL)

The core of cooperative learning is interdependence. Hsiung (2011) conducted a comparison on students' academic performance in both cooperative learning and traditional learning by using Taguchi Quality Indexes. The participants were 42 sophomore mechanical engineering students. The researcher divided the students into two classes, and each class had 21 students.

The first group worked together on solving the tasks assigned to them, whereas the second group worked individually.

After using a T-test, the researcher found that the students who work in cooperative learning groups had higher grades compared to those students who worked alone. In addition, cooperation encourages interaction. Individuals within the team encourage each other and facilitate one another's efforts to learn together and to teach other students who may have difficulty with a subject or topic. On the other hand, traditional centred learning encourages independent learning. Both systems have positive and negative sides. Cooperative learning encourages teamwork, and because it creates an environment in which students not rely entirely on a teacher to give feedback and support, learners are able to identify their own strengths and weaknesses regarding their own learning. Thus, they depend less on teachers. However, the negative side of CL is that it requires more time and the learners' cooperation to succeed. Active learning techniques employ a more hands-on strategy, animation techniques, and jigsaw technique, which make learning more attractive. In addition, techniques such as project-based learning, inquiry-based learning, and problem-based education increase student's acquaintance and conceptual comprehension (Doymus, Karacop, & Simsek, 2010). Lately, between these techniques jigsaw and animation cooperative education have attracted the awareness of school leaders, teachers, and educational researchers (Nan, 2014).

Researchers, such as Brown and Mcllroy (2011) have stated that one of the differences between cooperative learning and more traditional learning approaches is that of the role of competition to motivate students. They stated that setting competitive goals enable students to compete. Therefore, in an effort to outdo their classmates, students are compelled to work harder. On the other hand, there is no competitive instinct in cooperative learning. Another difference between the TL and CL is that whilst the individual learning enables one

to attain personal goals, there is nothing like personal goals in cooperative learning. In cooperative learning, the interdependence is positive; the students help each other to be better in academic performance. The students want to achieve certain academic goals together in cooperative learning.

Additionally, in an extensive analysis of research studies that gave a comparison among the three paradigms of learning, namely, individualistic, competitive, and cooperative learning, Peterson and Miller (2004) examined the quality of college students' experiences during CL. The participants in this study were 113 students in four sections of psychology course. The researchers used questionnaire to collect the data. After two weeks, the students responded. The researchers found that the best paradigm of learning was cooperative learning (CL). The research took place in a college setting whereby the researchers noted the experiences of students learning together and compared it to individualistic and competitive learning. Students who had cooperative learning experiences were more positive towards academic learning than the ones who did not have cooperative learning experiences. Additionally, they were more appreciative of the ideas and opinions of other students than the ones who did not have cooperative learning experiences. Moreover, the students in the cooperative learning group took part in controversial arguments about academic subjects, developed interaction skills, and had more academic expectations than students who learned in individualistic and competitive environments.

A variety of Cooperative learning strategies have been in empirical studies throughout the world, demonstrating a positive effect between cooperative learning and academic performance, as well as attitudes towards learning. As an example, Bahar-ÖzvariŞ, Çetin, Turan and Peters (2006) conducted a study in Turkey in which they examined the difference between cooperative learning strategy which is problem-based learning (PBL) and lecture-based learning. There were 150 students who participated in this study and the experimental

group consisted of 67 students, while control group was 83 students in a mental health course. The students were divided randomly into control group and experimental group. The researchers used pre and post-tests as well as using T- test to measure the differences between the two groups.

Results showed that cooperative learning led to better academic performance (T=0.00) than individualistic learning (T=0, 70). Students functioned well when they cooperated with each other. The researchers observed that cooperation also increased motivation among students towards their learning. The students in the experiment group sought clarification, elaboration and justification from each other. In addition, it enabled the students to share argument roles, procedural knowledge and conceptual work. The research has also suggested that cooperative learning can be effective in passive learning environments. This kind of learning depends on verbal lectures, the student's role is passive no activities during class time.

Nen-Chen, Gladie, and Wu (2005) conducted an empirical study to examine if cooperative learning improves students' outcomes in passive learning environment or not. The sample in this study was 172 students in an intermediate accounting course at Hong Kong University. The students were randomly split into two groups; one group taught by cooperative learning (small group) and the second group taught entirely through lectures. The researcher used ANCOVA to compare the test results for the two groups. The results showed that the p value was 0.01 in favour of the experimental group. In addition, the students who worked as groups outperformed students who were taught by using lecture.

Perkins and Saris (2001) also studied a group of students for four weeks. They studied the effects of the method of jigsaw learning and the traditional type of learning on the performance of students. They found that the students who used the jigsaw learning performed better on the exam given at the end of semester than the ones who used the

conventional method, showing a 5% increase between pre-test and post-test scores, compared to students who had received lecture-style classes alone The reason is that cooperative learning stimulates cognitive activities that promote knowledge retention and achievement (Peterson & Miller, 2004, p. 127). Over 500 research studies are available on the cooperative learning. Researchers such as Manning and Lucking (1991), Huang (2011), Brown and Mcllroy (2011), Peterson and Miller (2004) all prove that cooperative learning is the best mode that teachers should employ in the current educational environment. This recommendation is in line with one of the objectives of the present study based on the premise that improved instructional method of teaching will help students to perform better in Economics.

2.2 The Concept of Inquiry-Based Learning

This is on of the instructional methods being considered in this study. It is one of the traditional practices of teaching based on a 20th century "factory" model that encouraged students to "sit in straight rows, listen to lectures, fill out worksheets, [and] read from texts under the watchful eye of the teacher".Peterson & Hittie, (2003) are of the view that this methodno longer meet the diverse needs of today's students. Some educators like John Dewey contested this model back in the early 1900's. He believed that rote study promoted shallow thinking and a dislike for learning and argued that students were actually learning all the time. Dewey also believed that "learning [was] inherently social" (Powell & Kalina, 2009).

A sample of students West African School Certificate Examination result in biology in the study area 2005-2010 indicate that majority of the students obtain grades within the range of D7 – F9. This result indicates poor achievement in Biology since the least 38 requirement for further studies in the tertiary institutions is C6. The poor student achievement

in Biology is linked to the use of traditional lecture/expository method in the teaching and learning of biology (Nwagbo, 2006 and Isiugo Abanihe et al., 2010). Available studies Ibe and Nwosu (2003); Ibe (2004) and Opara (2011) indicated that inquiry teaching method dimproves students‘ academic achievement as opposed to the traditional teaching methods. Nevertheless, these previous studies did not determine the effects of different types of inquiry on students‘ achievement and interest. The limitations of these previous studies therefore call for the present study which intends to determine the effects of guided and unguided inquiry on students‘ academic achievement and interest. Another important variable in this study is students‘ interest in Biology.

Ralph Tyler also discredited the information-transmission approach in the mid 1900’s. As a result of his rigorous” research “in the areas of cognition, education and literacy [he suggested] the inquiry process [as] a powerful alternative (Wilhelm, 2007). “Everything taught in an inquiry unit, including attitudes, strategies and concepts, is in the service of investigating the question, and understanding and doing things related to the question. This requires students to be active participants in disciplinary conversations” and in their learning (Wilhelm, 2007). Like Dewey he believed that learning was socially constructed. “By viewing learning as an active process, taking students prior knowledge into consideration, building on preconceptions, and eliciting cognitive conflict, teachers can design instruction that goes beyond rote learning to meaningful learning that is more likely to lead to deeper, longer lasting understandings” (Jones & Brader-Araje, 2002). These are the tenets of constructivism.

Lev Vygotsky the “founding father” of social constructivism based his theory on the idea that social interaction was essential to the learning process along with critical thinking. Social interaction or cooperative learning had a big impact on how students internalized what they learned. “Vygotsky stated that language enhances learning and that it precedes

knowledge or thinking. In order to embrace diversity, students must interact socially by using language (Powell & Kalina, 2009).Vygotsky also introduced the concept of a zone of proximal development (ZPD) which he defined as "the intellectual potential of an individual when provided with assistance from a knowledgeable adult or more advanced peer" (Jones & Brader-Araje, 2002). By scaffolding or assisting a student, that student continued to move to the next level of understanding. Learners made sense of new information based on pre-existing understandings. Making sense of this new information was an active process (Jones & Brader-Araje, 2002). According to Vygotsky, the most important active process in a social constructivist classroom was the use of language.He stated that "language enhances learning and that it precedes knowledge or thinking" (Powell& Kalina, 2009, P: 245).

Inquiry-based learning or co-operative learning as Vygotsky called it is an integral part of creating … a social constructivist classroom" (Powell & Kalina, 2009).There is no single definition of inquiry-based learning. However inquiry-based learning can be described as learning that arises through a structured process of inquiry within a supportive environment, designed to promote collaborative and active engagement with problems and issues. Learning becomes more effective when students are actively involved in the learning process (Bonwell &Eison, 1991; Sivan, Wong Leung, Woon & Kember, 2001).

Inquiry-based learning represents a shift away from more passive methods, which involve the transmission of knowledge to students to more facilitative teaching methods. Students are expected to construct their own knowledge and understandings by engaging in supported processes of enquiry (Kahn & O'Rourke, 2005), in which a deep approach is taken to learning. Inquiry-based learning is an approach to teaching and learning that places students' questions, ideas and observations at the centre of the learning experience. Educators play an active role throughout the process by establishing a culture where ideas are respectfully challenged, tested, redefined and viewed as improvable, moving children from a

position of wondering to a position of enacted understanding and further questioning (Scardamalia, 2002). Underlying this approach is the idea that both educators and students share responsibility for learning.

For students, the process often involves open-ended investigations into a question or a problem, requiring them to engage in evidence-based reasoning and creative problem-solving, as well as "problem finding." For educators, the process is about being responsive to the students' learning needs, and most importantly, knowing when and how to introduce students to ideas that will move them forward in their inquiry. Together, educators and students co-author the learning experience, accepting mutual responsibility for planning, assessment for learning and the advancement of individual as well as class-wide understanding of personally meaningful content and ideas (Fielding, 2012).

Although inquiry-based learning is a pedagogical mind-set that can pervade school and classroom life (Natural Curiosity, 2011), and can be seen across a variety of contexts, an inquiry stance does not stand in the way of other forms of effective teaching and learning. Inquiry-based learning concerns itself with the creative approach of combining the best approaches to instruction, including explicit instruction and small-group and guided learning, in an attempt to build on students' interests and ideas, ultimately moving students forward in their paths of intellectual curiosity and understanding.

The inquiry-based teaching approach is supported on knowledge about the learning process that has emerged from research (Bransford, Brown, & Cocking, 2000). In inquiry-based science education, children become engaged in many of the activities and thinking processes that scientists use to produce new knowledge. Science educators encourage teachers to replace traditional teacher-centred instructional practices, such as emphasis on textbooks, lectures, and scientific facts, with inquiry-oriented approaches that (a) engage student interest in science, (b) provide opportunities for students to use appropriate laboratory

techniques to collect evidence, (c) require students to solve problems using logic and evidence, (d) encourage students to conduct further study to develop more elaborate explanations, and (e) emphasize the importance of writing scientific explanations on the basis of evidence (Secker, 2002). Sandoval and Reiser (2004) pointed out in order to build the inquiry-based classroom environment must construct a community of practice like the scientists work. In authentic inquiry-based activities, the students take action as scientists did, experiencing the process of knowing and the justification of knowledge.

In contrast, the traditional classroom often looks like a one-person show with a largely uninvolved learner. Traditional classes are usually dominated by direct and unilateral instruction. Traditional approach followers assume that there is a fixed body of knowledge that the student must come to know. Students are expected to blindly accept the information they are given without questioning the instructor (Stofflett, 1998). The teacher seeks to transfer thoughts and meanings to the passive student leaving little room for student-initiated questions, independent thought or interaction between students (Virginia Association of Science Teachers (VAST), 1998). Even the in activities based subjects, although activities are done in a group but do not encourage discussion or exploration of the concepts involved. This tends to overlook the critical thinking and unifying concepts essential to true science literacy and appreciation (Yore, 2001). This teacher-centred method of teaching also assumes that all students have the same level of background knowledge in the subject matter and are able to absorb the material at the same pace (Lord, 1999).

There are different forms of inquiry learning (Bulbul, 2010). In structured inquiry the teacher provides the input for the student with a problem to investigate along with the procedures and materials. This type of inquiry learning is used to teach a specific concept, fact or skill and leads the way to open inquiry where the student formulates his own problem to investigate. An example of a structured inquiry learning approach is the Learning Inquiry

Cycle Model, based on Piagets theory of cognitive learning (Bevevino, Dengel, & Adams, 1999). The learning cycle model is a teaching procedure consistent with the inquiry nature of science and with the way children naturally learn (Cavallo & Laubach, 2001). Many versions of the learning cycle appear in science curricula with phases ranging in number from 4E to 5E to 7E.

Regardless of the quantity of phases, every learning cycle has at its core the same purpose (Settlage, 2000). In this study, 5E learning cycle instruction model by Bybee et al., (2006) was used. It requires the instruction of five discrete elements:

(a) Engagement:

The teacher or a curriculum task accesses the learners' prior knowledge and helps them become engaged in a new concept through the use of short activities that promote curiosity and elicit prior knowledge.

(b) Exploration:

Exploration experiences provide students with a common base of activities within which current concepts (particularly misconceptions), processes, and skills are identified and conceptual change is facilitated.

(c) Explanation:

The explanation phase focuses students' attention on a particular aspect of their engagement and exploration experiences and provides opportunities to demonstrate their conceptual understanding, process skills, or behaviours. This phase also provides opportunities for teachers to directly introduce a concept, process, or skill.

(d) Elaboration:

After receiving explanations about main ideas and terms for their learning tasks, it is important to involve the students in further experiences that extend, or elaborate, the concepts, processes, or skills. This elaboration phase facilitates the transfer of concepts to

closely related but new situations. In some cases, students may still have misconceptions, or they may only understand a concept in terms of the exploratory experience.

(e) Evaluation:

This is the important opportunity for students to use the skills they have acquired and evaluate their understanding. In addition, the students should receive feedback on the adequacy of their explanations. Informal evaluation can occur at the beginning and throughout the 5E sequence. The teacher can complete a formal evaluation after the elaboration phase. This is the phase in which teachers administer assessments to determine each students level of understanding (Bybee et al., 2006).

Inquiry-based learning falls under the realm of 'inductive' approaches to teaching and learning, an excellent review of which is provided by Prince and Felder (2006). Inductive approaches to teaching and learning begin with a set of observations or data to interpret, or a complex real-world problem, and as the students study the data or problem they generate a need for facts, procedures and guiding principles. Prince and Felder (2006) state that inductive teaching encompasses a range of teaching methods including "inquiry learning" (hereafter referred to as IBL), problem-based learning (PBL), project-based learning, case-based teaching, and discovery learning.

The central goal of IBL is for students to develop valuable research skills and be prepared for life-long learning. Students should achieve learning outcomes that include critical thinking, the ability for independent inquiry, responsibility for own learning and intellectual growth and maturity (Lee, Greene, Odom, Schechter, & Slatta, 2004).

Inquiry-based learning ranges from a rather structured and guided activity, particularly at lower levels (where the teacher may pose the questions and give guidance in how to solve the problem), through to independent research where the students generate the questions and determine how to research them. Furthermore, IBL can occur at a range of scales within the

curriculum from a discrete activity through to the design principle for the whole degree (Spronken-Smith, Angelo, Matthews, O'Steen, & Robertson, 2007).

In the early 1900's John Dewey "argued that education must be experience based, centring on ideals such as open-mindedness and discipline in aim-based activity" (Glassman & Whaley, 2000). He believed these aim-based activities could be done using long-term projects, or project-based learning that grew out of a child's interest. He also saw learning as a continuous fluid process so as one aim was achieved it set the groundwork for the next aim. Dewey, a constructivist, contended "that we must teach children how to engage with the world on a practical level and trust them to construct their own knowledge through (successful) engagement in activities of a lifetime" (Glassman & Whaley, 2000).

In Turkmen's (2009) study entitled an effect of technology based inquiry approach on the learning of 'earth, sun, and moon' subject, he pointed out, that inquiry-based teaching has been closely associated with other teaching methods such as problem-solving, laboratory instruction, project-based learning, cooperative learning and discovery instruction". His definition of inquiry was: "the intentional process of diagnosing problems, critiquing experiments, and distinguishing alternatives, planning investigations, researching conjectures, searching for information, constructing models, debating with peers and forming coherent arguments. Turkmen's definition is similar to Dewey's and Vygotsky's in identifying the importance of social interaction and active engagement on the part of the participants.

Project-based learning (PBL), the term used by Guven and Duman (2007), was the alternative term used most often. Guven & Duman (2007) describe PBL as "a deep investigation of selected topics that are relevant for both learner and teacher. The main aim of a project is to gather knowledge through focusing related questions on a topic". Additionally they stated that PBL is "one of the most effective learning strategies for constructing

knowledge and thinking creatively [and provides] supports and reinforces many of the principles emphasized in brain-based learning".

Other iterations of the term IBL were also found in the literature. For example, authors like Whitney Rapp (2005) linked inquiry-learning directly to Vygotsky's theory of social constructivism and chose to define it using his definition; knowledge is constructed through social interaction. Chu, Tang, Chow, Tse, Loh, Fung and Rex (2007) chose not to define IBL in their work at all. They just made reference to IBL "projects" or an IBL "approach."This interchange of terms and definitions might leave the consumer of related literature confused about the meaning of IBL. This confusion is what led to the initial research question:How do inclusive educators define inquiry-based learning? Do educators in the 21st century have similar or differing definitions of the term inquiry-based learning and how do they compare with those found in current literature?

A review of the literature also revealed confusion about the role of the teacher in an inquiry based classroom. There were references to the teacher as: 1) the guide (Chu, Tang, Chow, & Tse, 2007) the one who sets a "rich environment in which students take on more responsibility in organizing and managing material for their own learning, and to develop a supportive social environment in which students can work collaboratively in small and large groups and learn to respect each other's ideas" (Turkmen, 2009) a facilitator of projects (Guven & Duman, 2007), 4) including "students in educational decision making as partners in the teaching and learning process (McCombs, Daniels, & Perry, 2008), and 5) working together to develop substantive aims in the educative process… as both mentor and cooperative partner and "guide" (Glassman & Whaley, 2000). There did seem to be a consensus that the teacher was no longer the centre of the classroom giving "information about what has to be known and students … [acting as] receivers of information" (Guven & Dunman, 2007).

One gap discovered in the literature was the lack of research about how children with special needs are included in inquiry-based projects and or classrooms. Of the original fifteen articles identified in the literature review matrix only three referred to children with special needs, two were selected for the final review process (Guven & Dunman, 2007).

Guven and Duman (2007) designed a study to determine the effectiveness of a project-based program delivered for students with mild mental disabilities (aged 6 -7 years) over a six day period. The total duration of the project was 2 ½ weeks. This short study had positive results with the data indicating "that project-based learning was effective for children with mild mental disabilities as all stages. However, this was a very small study using seven subjects who attended a special class for students with disabilities, conducted over a short period of time. How transferable this information would be to children in a regular classroom setting with various special needs is unknown.

Rapp (2005) based her research on the experiences of children in a children's museum setting and even though she observed all the children attaining success in that setting she identified "minimal" generalization of what was learned in the classroom. So even though this study was interesting it did not give any indication of how effective a child-centred, social constructivist setting was for all children in a classroom setting.

This gap in the literature led to the second key question, how do inclusive educators practice inquiry-based learning?

Wilhelm (2007) confirmed that the differing definitions of inquiry created confusion for educators. According to him, inquiry carries associations of unwieldy, time-consuming, student-centred projects that collapse despite good intentions. Student centred projects are not inquiry. Nor is inquiry synonymous with a student-generated curriculum, wherein students are completely in the driver's seat. Wilhelm (2007) agreed with Dewey that inquiry required discipline and direction. A second challenge or obstacle identified by Wilhelm (2007) was

creating good guiding questions for inquiry. He said that many questions are directly related to concepts – but if a question overemphasizes information at the expense of conceptual tools, it can keep us from deeper waters of true understanding. An additional challenge or perhaps misunderstanding around inquiry is the misconception that no planning is required in order to implement it. Parker (2007) argued in her book, Planning for Inquiry, It's Not an Oxymoron, that planning is required and necessary for students to be successful at inquiry.

Several of the studies reviewed had very positive results pointing to IBL as a feasible choice for the classroom teacher in the 21st century. Chen, et al (2008) investigated the use of a collaborative teaching model involving classroom teachers, information technology teachers, and librarians during an inquiry project. They were interested in how this approach would impact students reading abilities. Their results were very positive with students reading abilities improving as well as their attitudes towards reading. Their attitudes were more positive and their interest levels in reading increased.

Guven and Duman (2007) investigated the effectiveness of project-based learning for children with mild mental disabilities. They believed that their data indicate that project-based learning was effective for children with mild mental disabilities at all stages. As a real life experience was selected as the topic of study, it shows that children can gain benefits though out their life.Turkman (2009) investigated how a technology based inquiry approach (TBIA) would impact fifth grade students of the earth, sun and moon. His study found that there were statistically significant differences between the two groups ($p<. 0.05$), and that the achievement level of the experimental groups with TBIA was significantly higher that of the control group. He also found that using an inquiry approach had a positive impact on their attitudes towards science.

McCombs, Daniels and Perry (2008) found similar results as far as student's attitudes towards school. They researched the impact of perceptions of teacher practices from both the

teacher and students (K – Grade 3) point of view. They wondered if the amount of student centred practice actually had an impact on students learning or if the perception of a teacher using student centred practices had just as a great an impact. Their results showed that when children's experience with their teacher is more learner centred, they felt more positive about their own abilities - whether it is their general aptitude for schoolwork, reading or math skill, or ability to create artwork. They also discovered that on average, third-grade students perceived the lowest levels of learner centred practices. This had a negative impact on their abilities.

2.3 The Concept of Self-Efficacy

Self-efficacy, also referred as personal efficacy, is the extent or strength of one's belief in one's own ability to complete tasks and reach goals (Ormrod, 2006) Psychologists have studied self-efficacy from several perspectives, noting various paths in the development of self-efficacy; the dynamics of self-efficacy, and lack thereof, in many different settings; interactions between self-efficacy and self-concept; and habits of attribution that contribute to, or detract from, self-efficacy.

Self-efficacy affects every area of human endeavour. By determining the beliefs a person holds regarding his or her power to affect situations, it strongly influences both the power a person actually has to face challenges competently and the choices a person is most likely to make. These effects are particularly apparent, and compelling, with regard to behaviours affecting health (Luszczynska, Scholz, & Schwarzer, 2005).Judge, Erez, Bono, Joyce, and Thoresen (2002) argued the concepts of locus of control, neuroticism, generalized self-efficacy (which differs from Bandura's theory of self-efficacy) and self-esteem measured the same, single factor and demonstrated them to be related concepts.

Derya (2000) stated that Self-Efficacy is the belief or perception of a person that he or she is capable to perform a specific task. It is a dynamic element that influences other concepts such as goals, performance and is influenced by them. SE is an essential element in Social Cognitive Learning Theory. It plays a role of connecting goals, performance, and motivation concepts. It is one of the individual related concepts that function as a mediating mechanism among these concepts. Various research results show that self-efficacy may be a good predictor of performance. Since self-efficacy may be a good predictor of performance, managers may try to assess the self-efficacy of candidates to predict their potential performance, thus regulating their human resources practices such as selection, adjustment, manager development etc., according to that, self-efficacy is a very central persuasive belief about people's capabilities that they can control their own level of functioning and events that affect their lives.

Gradual acquisition of complex cognitive, social, and physical skills by the experience, creates self-efficacy, and people's behaviours are regulated accordingly. Self-efficacy is not concerned with individuals' skills, but with their perceptions of what they can do with their skills. Self-efficacy has three main aspects that should be understood: First, self-efficacy is one's perceived capability to perform a specific task. Second, self-efficacy is a dynamic element because it changes over time. Finally, mobilization of efficacy beliefs affects performance. Thus, people with same skills may show different performance levels. Since it is a task specific concept, it is important to understand and measure self-efficacy for a specific task (Gist & Mitchell, 1992). Three dimensions of self-efficacy which are subject to measurement are (1) magnitude: Perceived attainable task difficulty, (2) strength: Strength or weakness of the conviction of magnitude, and (3) generality: Expectation's possibility of generalization across different situations (Gist, 1987).

It may be beneficial to distinguish the meaning of self-efficacy from other self-concepts. Two related expectancies determine a person's motivation: self-efficacy and outcome expectancy. While self-efficacy is one's perception that he or she can perform in a specific task, outcome expectancy is the anticipation of external results. Self-efficacy has a meaning broader than expectancy. It includes the expectation of the individual about the degree of effort. In addition, it includes the ability, adaptability, creativity and capacity to perform in a given situation. However, Kirsch(1987) argues that outcome expectancies are defined in two different ways. First, outcome expectancies mean perceived environmental contingencies or the belief that one reinforcer affects another one. Second meaning is people's beliefs about the consequences of their own behaviour. In this second meaning, outcome expectancies are same as self-efficacy according to Kirsch (1987). Self-doubt is the opposite of self-efficacy, and is a kind of factor that inhibits self-regulated performance.

Self-esteem is a trait. Self-efficacy is a kind of task-specific self-esteem. Although same people see self-efficacy as a trait, by definition self-efficacy is task specific for and narrower in scope than self-esteem (Gardner & Pierce, 1998).Normally, future actions cannot influence present situation. However, cognitive representation of future events in the present, results in future to influence present. When people value activities, they are interested in activities at which they judge themselves to be self-efficacious and they are satisfied mastering challenges. People's perceptions of their efficacy influence their anticipations and scenarios about the future. People who have high sense of self-efficacy anticipate success and think positively about their future. Those who have low sense of self-efficacy, anticipate failure. People's beliefs in their efficacy influence their choices, their aspirations, mobilization of effort in a given endeavour, resistance to difficulties, amount of stress and vulnerability to depression. A strong sense of self-efficacy diminished negative thoughts and

anxiety arousal. Low efficacious people are victims of stress and depression. After SE is strengthened against threat, it no longer creates stress (Ozer & Bandura, 1990).

People's beliefs in their efficacy influence the perceived causes of success and failure. People with high SE tend to attribute failures to insufficient effort, whereas inefficacious people tend to attribute failures to low ability. People with high SE see difficult jobs as challenges. They have strong commitments and high level goals; they quickly recover their sense of efficacy; make things happen.

People with low self-efficacy see difficult jobs as threats. They stay away from difficult jobs; they have low aspirations, weak commitments to the goals; they are pessimistic; give up quickly in the face of difficulties; they are slow to recover their sense of efficacy; they are victims of stress and depression; they are passive observers (Bandura, 1991).self-efficacy has also effects on thinking processes. Analytic thinking, anticipation, cognitive motivation are affected by SE. People who believe they have strong capabilities of problem solving (high SE in problem solving) are highly efficient in their analytic thinking in complex decision making situations. On the contrary, self-doubts are erratic in their analytic thinking (Bandura, 1989).

According to Gist, Stevensand Bavetta (1991), self-efficacy affects human mind in the following ways

- High self-efficacy creates more developed schemas for integrating performance relevant knowledge.
- By reducing anxiety, self-efficacy may facilitate retrieval process in the memory.
- self-efficacy creates stronger motivation to maintain learned skills

Perceived self-efficacy predicted memory performance when SE was measured in terms of subjects' evaluations of their highest memory capability (Bandura, 1989).

In Rebok and Balcerak's (1989) study, subjects who think their self-efficacy is low, were given a memory task of remembering 12 nouns in their exact order and were asked how many

words they could recall. The results showed that the higher the self-efficacy was, the higher the memory performance was.

A memory task can be considered as a simple task. A limitation of the predictive validity of self-efficacy for performance can occur due to the quality of the task.

Gist (1992) suggests that the predictive validity of self-efficacy for performance on complex tasks may be weaker than for performance on simple tasks. The reason proposed for that is that individuals expect their performance levels at a lower accuracy in complex tasks due to their inability to assess task requirements. Furthermore, insufficient individual or situational resources and/or constraints for these tasks affect individuals' expectations.

2.4 The Concept of Attitude

Many psychologists have given different definitions for attitudes. According to Schneider (1988), attitudes are evaluative reactions to persons, objects, and events. This includes your beliefs and positive and negative feelings about the attitude object. He also added that attitude can guide our experiences and decide the effects of experience on our behaviours.Besides that, Baron and Byrne (1987) also gave a similar definition of attitude as lasting, general evaluations of people (including oneself), objects, or issues. Attitude is lasting because it persists across time. A momentary feeling does not count as an attitude. According to him attitudes are lasting since it remains across time. This is similar to a statement made by Vaughan and Hogg (1995), that attitudes are relatively permanent- persist across times and situations. A momentary feeling in one place is not an attitude. Therefore, if you encountered a brief feeling about something, it does not count as an attitude.

Vaughan and Hogg (1995) defined attitude as a relatively enduring organization of beliefs, feelings and behavioural tendencies towards socially significant objects, groups, events or symbols or a general feeling or evaluation (positive/ negative) about some person,

object or issue.From this definition we could see that, attitudes are only relevant to socially significant objects.An attitude is an evaluation of an attitude object, ranging from extremely negative to extremely positive. Most contemporary perspectives on attitudes also permit that people can also be conflicted or ambivalent toward an object by simultaneously holding both positive and negative attitudes toward the same object. This has led to some discussion of whether individual can hold multiple attitudes toward the same object (Wood, 2000).

An attitude can be as a positive or negative evaluation of people, objects, events, activities, and ideas. It could be concrete, abstract or just about anything in your environment, but there is a debate about precise definitions. Eagly and Chaiken (1998), for example, define an attitude as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour." Though it is sometimes common to define an attitude as affect toward an object, affect (i.e., discrete emotions or overall arousal) is generally understood to be distinct from attitude as a measure of favourability (Ajzen, 2001). Attitude may influence the attention to attitude objects, the use of categories for encoding information and the interpretation, judgement and recall of attitude-relevant information (Vogel, Bohner, & Wanke, 2014). These influences tend to be more powerful for strong attitudes which are easily accessible and based an elaborate knowledge structure (Vogel, Bohner, & Wanke, 2014). Attitudes may guide attention and encoding automatically, even if the individual is pursuing unrelated goals.

Jung (1971) expresses several attitudes within the broad definition readiness of the psyche to act or react in a certain way. He argues that attitudes very often come in pairs, one conscious and the other unconscious. Similarly, Ajzen and Fishbein (1980) states that attitudes are held with respect to some aspect of the individual's world, such as another person, a physical object, a behaviour, or a policy. Therefore, the way a person reacts to his surroundings is called his attitude. Baron and Byrne (1984) define attitudes as relatively

lasting clusters of feelings, beliefs, and behaviour tendencies directed towards specific persons, ideas, objects or groups.

An attitude is not passive, but rather it exerts a dynamic influence on behaviour. Allport (1935) expresses that an attitude is a mental or neural state of readiness, organized through experience, exerting a directive or dynamic influence on the individual's response to all objects and situations to which it is related. It is a tendency to respond to some object or situation. According to Malhotra (2005), an attitude is a summary evaluation of an object or thought. Attitude is the affect for or against a psychological object. The object or phenomenon can be anything a person discriminates or holds in mind and may include people, products, and organizations (Bohner& Wanke 2002).

Fazio and Williams (1986) confer that attitudes are summary judgments of an objector event which aid individuals in structuring their complex social environments. Hence, attitudes cannot be observed directly. These are acquired through learning over the period of time and influenced by individual's personality and group. Bem (1970) suggests that attitudes are likes and dislikes. Furthermore, Walley (2009) submits that attitudes may be positive, negative, or neutral. Attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour (Eagly & Chaiken, 1993). Every individual has some kind of attitude but, being a psychological phenomenon, each attitude is invisible. Therefore, attitudes are subjective and personal attributes and difficult to measure.

Components of Attitude

According to Vishar Jain (2014), it is generally accepted that attitude represents the positive or negative mental and neural readiness towards a person, place, thing or event. It consists of three components:

- Affective Component (Neural) (Feeling/ Emotion)
- Behavioural Component (Readiness) (Response/ Action)

- Cognitive Component (Mental) (Belief/ Evaluation)

Affective Component

The affective component is the emotional response (liking/disliking) towards an attitude object. Most of the research place emphasis on the importance of affective components. An individual's attitude towards an object cannot be determined by simply identifying its beliefs about it because emotion works simultaneously with the cognitive process about an attitude object. Agarwal and Malhotra, (2005) express that the affect (feelings and emotions) and attitude (evaluative judgment based on brand beliefs) streams of research are combined to propose an integrated model of attitude and choice.

Behavioural Component

According to Wicker (1969) the behavioural component is a verbal or overt (nonverbal) behavioural tendency by an individual and it consists of actions or observable responses that are the result of an attitude object. It involves person's response (favourable/unfavourable) to do something regarding attitude object. Attitudinal responses are more or less consistent. That is, a series of responses toward a given attitudinal stimulus is likely to show some degree of organizational structure, or predictability (Defleur & Westie 1963).

Cognitive Component

The cognitive component is an evaluation of the entity that constitutes an individual's opinion (belief/disbelief) about the object. Cognitive refers to the thoughts and beliefs an individual has about an attitude object. Fishbein and Ajzen (1975) express that a belief is information a person has about an object; information that specifically links an object and attribute. The cognitive component is the storage section where an individual organizes the information.

Attitude Models

Many models of attitude have been proposed by the different scholars. Some of the relevant and well-recognized models are presented below.

Expectancy-Value Model

Among the early expectancy-value models, one is offered by Rosenberg (1956) in which he suggests that the 'value importance' and 'perceived instrumentality' are separate and possibly manipulable dimensions of attitude-related cognitive structures. There is a common acceptance that attitude can be understood as comprehensive evaluation of an attitude object. This model consists of two elements, the likelihood 'expectancy' of each belief making up an attitude and the worth 'value or affect' associated with each belief (Calder & Ross 1972). Fishbein and Ajzen (1975) argue that the Expectancy-Value Model of attitude proposes that a person holds many beliefs about an attitude object; an object is seen as having many attributes.

One of the most popular and recognized Expectancy-Value based models of attitude is Multi-attribute Measurement Model.

Multi-attribute Measurement Model

Multi-attribute Measurement Model of attribute is proposed by Fishbein (1963). According to him, attitude is an independent measure of affect for or against the attitude object, which is a function of belief strength and an evaluative aspect associated with each attribute. The elementary model of an attitude can be represented by the following equation:

$$A_0 = \sum_{i=1}^{n} (b_i a_i)$$

Where,

A_0 is the individual's attitude (for or against) toward an object (o);

b_i is the individual's belief (like or dislike) about the object's attribute;

a_i is the individual's evaluation (good or bad) of the attribute; and

n is the number of salient attribute.

Another model, which may be considered as an expectancy-value approach, is offered by Anderson (1971), in which he argues for the extension of his information integration model to attitude change.

Vector Model

Calder and Lutz (1972) represent attitude structure in their approach, as a two-dimensional metric space, recognized as Vector Model. According to them one dimension represents an affective component (liking or favourableness) and the other represents a cognitive component (likely or probable). Any belief an individual possesses about a product is characterized by a value on each of these dimensions as a set of coordinates in the cognitive space.

Tripartite Model

Spooncer (1992) model of attitude better known as Tripartite Model consists of three components of attitude: Feelings, Beliefs and Behaviour. First component includes an individual's emotion which represents verbal statements of feeling, whereas second component includes an individual's cognitive response which represents verbal statements of

belief and finally the third component includes an individual's overt action which represents verbal statements about intended behaviour against environmental stimuli.

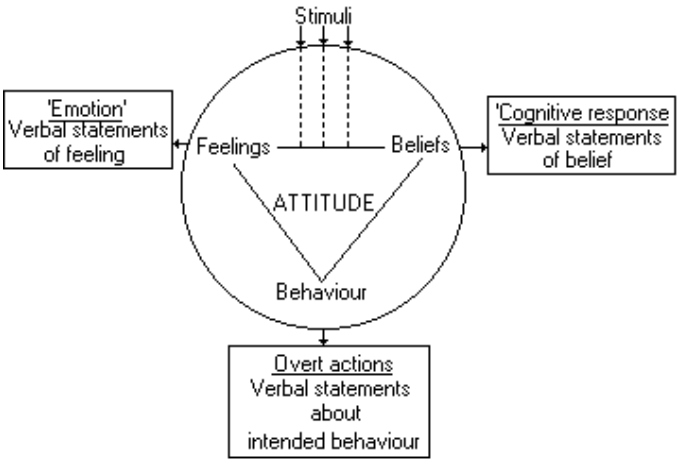


Figure 1: Tripartite Model

Technology Acceptance Model

Suggested by Davis (1993), TAM is an applied model of attitude in which intention to use a technology is influenced by attitude towards that technology and perception of its usefulness. Attitude, in turn, is influenced by a person's beliefs in how useful the technology is and how easy it is to use. In this context, attitude is influenced by both ease of use and usefulness. The perception of ease of use is measured by the degree to which using a technology is free of effort and the perception of usefulness is measured by the degree to which the technology can help to improve task performance (Djamasbi, Fruhling, & Loiacono, 2009).

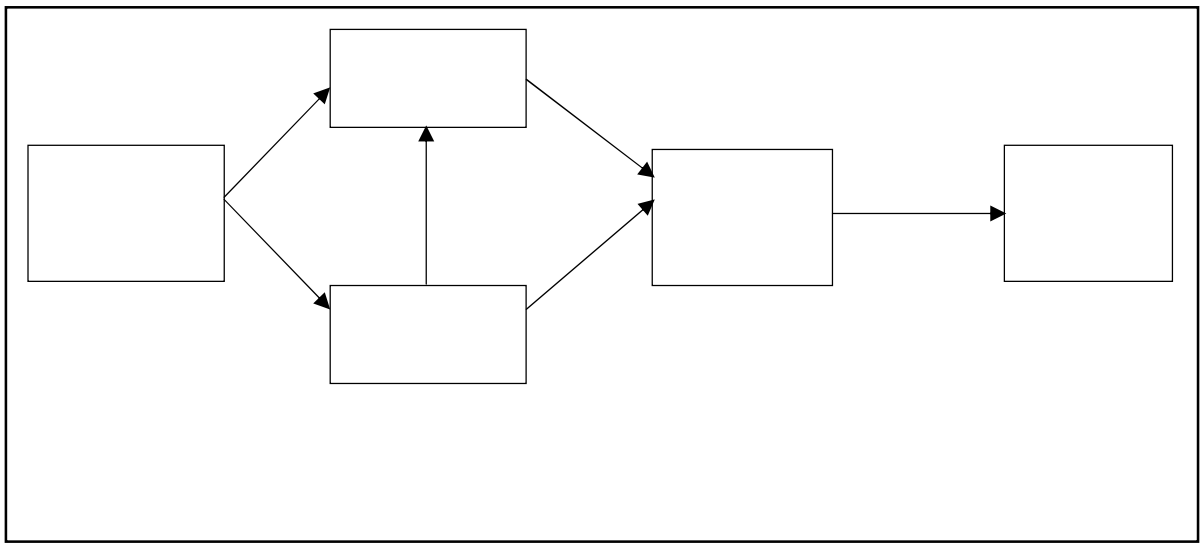


Figure 2: Technology Acceptance Model

ABC Model

ABC model is one of the most cited models of attitude. ABC model suggests that attitude has three elements i.e. Affect, Behaviour and Cognition. Affect denotes the individual's feelings about an attitude object. Behaviour denotes the individual's intention towards anobject. Cognitive denotes the beliefs an individual has about an attitude object (Eagly & Chaiken 1998).

Cognitive-Affective-Conative Model

In CAC Model, Schiffman and Kanuk (2004) suggest that attitudes are constructed around three components:

(1) A cognitive component (beliefs);

(2) An affective component (feelings); and

(3) A conative component (behaviour).

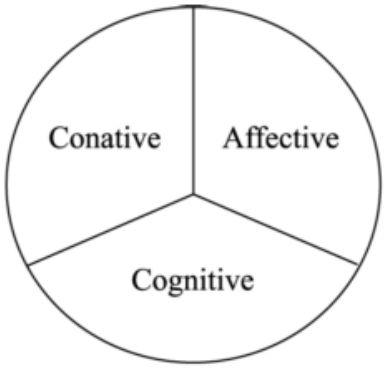


Figure 3: CAC Model

2.5 Cooperative Learning and Academic Achievement

In recent years, studies involving cooperative learning, one kind of student-centred approach have emerged as an internationally important area of social science research among researchers (Slavin, 2011). Many studies have been conducted in different settings of education, using different kinds of cooperative learning techniques. Such techniques are Learning Together (LT), Jigsaw Grouping, Teams-Games-Tournaments (TGT), Group Investigation (GI), Student Teams Achievement Division (STAD), and Team Accelerated Instruction (TAI). A series of research studies has found a appreciate relationship between the higher cognitive and affective outcomes, and cooperative learning approaches (Johnson & Johnson, 2005; Tran & Lewis, 2012).

In the setting of Vietnamese higher education lecture-based teaching, one kind of traditional approach has been still the most prevalent instructional approach (Harman & Nguyen, 2010). In comparison with cooperative learning techniques, lecture-based teaching has been reported to be less effective to the demands of high rates of cognitive and affective outcomes (Slavin, 2011). In order to improve students' cognitive outcomes, an alternative to lecture-based teaching could be cooperative learning (Tran & Lewis, 2012). This approach has been reported to improve students' achievement, and their knowledge retention (Johnson & Johnson, 2009).

Cooperative learning comprises “instructional methods in which teachers organize students into small groups, which then work together to help one another learn academic content” (Slavin, 2011). Cooperative learning consists of five basic elements: positive interdependence, promotive interaction, individual accountability, teaching of interpersonal and social skills, and quality of group processing. Learning situations are not cooperative if students are arranged into groups without positive interdependence (Johnson & Johnson, 2009). Positive interdependence means that in cooperative learning situations, students are required to work together as a cohesive group to achieve shared learning objectives (Yager, 2000). In the process, students must be responsible for their own learning and for the success of other group members’ learning (Slavin, 2011). In other words, students must ensure that other members in their group complete the tasks and achieve the academic outcomes. The lesson will not be cooperative if students do not “swim together” in the group learning activities (Johnson & Johnson, 2008). Hence, positive interdependence needs to be constructed in cooperative learning groups to help students work and learn together. Positive interdependence results in reciprocal interaction among individuals, which promotes each group member’s productivity and achievement. Promotive interaction occurs as individuals encourage and facilitate each other’s efforts to accomplish the group’s goals. In cooperative learning groups, students are required to interact verbally with one another on learning tasks (Johnson & Johnson, 2008).

As part of the cooperative learning condition, students are required to interact verbally with one another on learning tasks (Johnson & Johnson, 2009), exchange opinions, explain things, teach others and present their understanding (Johnson, 2009). Individual responsibility means that students ask for assistance, do their best work, present their ideas, learn as much as possible, take their tasks seriously, help the group operate well, and take care of one another (Johnson, 2009). Positive interdependence is recognized to create “responsibility

forces" that increase the individual accountability of group members for accomplishing shared work and facilitating other group members' work (Johnson & Johnson, 2005). If there is no individual accountability, one or two group members may do all the work while others do nothing. If the achievement of the group depends on the individual learning of each group member, then group members are motivated to ensure that all group members master the material being studied (Slavin, 1996). When group accountability and individual accountability exist in the group, the responsibility forces increase (Johnson & Johnson, 2009).

In reality, students cannot work effectively if socially unskilled students are arranged into one group (Johnson & Johnson, 2006). If basic learning skills on cooperative interaction are not taught, group members cannot work together effectively to finish their tasks. Cooperative learning, compared with individualistic or competitive learning, is more complex because it requires students to engage in learning tasks and work together (Johnson & Johnson, 2005). Therefore, social and interpersonal skills, such as listening attentively, questioning cooperatively and negotiating respectfully need be taught, to help students cooperate effectively in the group. In addition, each group member should know how to manage the group, how to make decisions and how to solve conflicts that arise among group members. If these skills are not taught, cooperative learning activities are rarely successful (Slavin, 1996). To coordinate efforts to achieve mutual goals, participants must: (a) get to know and trust each other; (b) communicate accurately and unambiguously; (c) accept and support each other; and (d) resolve conflicts constructively (Johnson & Johnson, 2009).

Group processing is defined as reflecting on a group session to help students: (1) describe what member actions were helpful and unhelpful; and (2) make decisions about what actions to continue or change (Johnson & Johnson, 1999). Group processing helps improve the effectiveness of the members in contributing to the shared efforts to achieve the

group's goals via reflection on the learning process (Yamarik, 2007). In other words, the purpose of group processing is to clarify and improve the effectiveness of the members in contributing to the joint efforts to achieve the group's goals. In summary, if these basic elements of cooperative learning are included in cooperative learning groups, students achieve better, demonstrate superior learning skills (Johnson & Johnson, 2008), and experience more positive relationships among group members, and between students and the teacher, and more positive self-esteem and attitudes toward the subject area (Slavin, 2011).

In all levels of education students in cooperative situations achieved greater academic, social and psychological benefits (Johnson & Johnson, 2005). Specifically, cooperative learning has been reported to improve students' academic achievement (Zain, Subramaniam, Rashid & Ghani, 2009). For example, one study of the Jigsaw II and GI effect among 98 elementary school students in social studies, lasting 12 weeks in America (Lampe, Rooze, & Tallent-Runnels, 1996), indicated that students in the experimental group had higher academic achievement ($p < .001$) than those in the control group (effect size [ES] = 0.84). Whicker, Nunnery, and Bol (1997) compared the effects of STAD and traditional teaching methods on academic performance of 11^{th} and 12^{th} grade students in a mathematics course in America. The results from the post-tests showed that students in the cooperative learning group achieved significantly ($p < .05$) higher post-test scores than did students in the comparison group (ES = 0.87). Similarly, a two-group experiment reported by Yamarik (2007), investigated the jigsaw effects on the achievement of 116 American tertiary students in a 2-semester period. Results obtained from multivariate regression analysis reveal that the jigsaw group significantly outperformed the comparison group on the post-test scores (ES = 0.01). In a 5-week experimental study on science achievement of 68 eighth-grade Turkish students (Kose, Sahin, Ergun, & Gezer, 2010), the results of t-tests indicated that students in

the treatment group significantly outscored ($p < .05$) students in the control group on the post-achievement test (ES = 1.26).

In addition, the other two experimental studies (Kilic, 2008; Doymus, Karacon, & Simsek, 2010) utilized the pre-test and post-test with control group design to investigate the effects of jigsaw learning on student achievement. The former was conducted with the participation of 80 Turkish tertiary students in a Principles and Methods of Teaching course over a 7-week period.The latter was carried out with 73 Turkish tertiary students in a Chemistry course over a one-year period. At the end of the experiment, the former shows that the jigsaw group had higher post-test achievement scores ($p < .01$) than the control group (ES = 1.13). The latter reports that the jigsaw group significantly outperformed ($p < .001$) the traditional learning group (ES = 2.62).

Similarly, Beck and Chizhik (2008) compared the effects of cooperative learning and other teaching methods on 71 tertiary student performances in a computer science course in America over a period of one year, and found that the cooperative learning group achieved significantly higher ($p < .01$) than the conventional lecture teaching group.

As indicated above, students perform better with cooperative learning than they do with alternative forms of instruction, as reported in the above studies, which further confirms the results of several previous reviews of cooperative learning research (Slavin, 1996; Johnson & Johnson, 1989). These studies were conducted at various levels of education, in different subject areas, and in different countries. For example, in an extensive review of over 375 studies yielding 1,691 findings conducted by Johnson and Johnson (1989), reported that when all of the studies were included in the analysis, the average student cooperating performed at about two-thirds a standard deviation about the average student learning within a competitive (effect size = 0.67) situation or individualistic (effect size = 0.64) situation.

When only high-quality studies were included in the analysis, the effect sizes were 0.88 and 0.61 respectively.

In promoting greater achievement, some additional studies reported that cooperative learning also fosters greater retention of learning, as indicated by students' results on delayed achievement tests (Sousa, 2006). For example, Sousa (2006) reports the average percentage of learning material retention after 24 hours when students were taught by different teaching methods. He indicates that there is retention of 50% of material learned in the discussion group,75% as a result of requests for students to study through practice, and 90% when students teach others. In addition, Moore (2008) reports studies showing that a blend of 'telling' and 'showing' techniques results in greater retention (65%) after three days. It is therefore argued that the best way to learn something effectively is to prepare to teach it. In other words, whoever explains, learns (Sousa, 2006).

Teaching others and elaborating ideas are the main features of cooperative learning (Kagan & Kagan, 2009; Slavin, 2011). The nature of cooperative learning is learning by doing and elaborating (Liang, 2002). In cooperative learning situations, the concepts being taught are often elaborated (O'Donnell, 2000). The consistent elaboration of learning concepts provides students who either receive the explanation or those who give the explanation with a deep understanding and a more complete retention of the concepts being learnt for a longer period of time (Chianson, Kurumeh & Obida, 2010). Consequently, as has been shown in the above review, in cooperative situations, students retain more knowledge when they offer more explanation and elaboration to others (Zakaria, Chin, & Daud, 2010; Webb, 2008; Johnson & Johnson, 1989).

Some studies have reported the effects of different forms of pedagogy on retention of learning. For example, an impressive study lasting 4 weeks was conducted by Tanel and Erol (2008) in which the effectiveness of the jigsaw learning method and conventional teaching

method were compared on achievement and retention in a Physics course in a University in Turkey. An experimental group received the jigsaw technique and a control group received traditional teaching. At the end of the treatment, a post-test was administered, while the delay-test was administered 4 weeks after the treatment. The post-test and delay test mean scores of the jigsaw group were significantly higher ($p<.05$) than those of the control group. Results from the t-tests indicated that there were significant differences ($p<.001$) on the post-test scores (ES = 1.24) and the delayed-test achievement scores (ES = 1.96). The experimental students had greater achievement and long-term achievement than those in the control group. An inspection of post-test scores and delay test scores for each group shows that four weeks after the experiment the students in the experimental group retained nearly 98% of their knowledge on the delay test whereas those in the control group retained nearly 80 percent.

Sahin (2010) also used a pre-test and post-test design to investigate the effects of Jigsaw III on achievement, and retention, of 71 Turkish sixth-grade students in a Turkish course over a 6-week period. Results from the t-tests indicated that students in the jigsaw group outscored on the achievement test ($p <.001$) those in the traditional lecture-based learning group (ES = 0.86).The jigsaw group also had greater long-term achievement on the delay test ($p <.05$) than those in the control group (ES = 0.69). Wyk (2010) examines the effects of GTG on the achievement and knowledge retention of 110 economics education students in South Africa over 12 weeks of instruction. The results show that the post-test and delay test mean scores of students in the GTG were higher than those of students in the conventional teaching group.

The findings of the above studies validate the results of a two-week period conducted by Abu & Flowers (1997) in which the effectiveness of the STAD method and lecture-based teaching method were compared on two dependent variables (achievement, and retention) in

a home economic course in a University in America. A cooperative learning group received the STAD technique and a control group received conventional teaching. At the end of the treatment, a post-test was administered, and a delay test was administered 3 weeks after the treatment. Results show that the students in the STAD group had higher post-test and delay test scores than those in the conventional teaching group. In summary, the review of the above studies, some additional studies on cooperative learning in some Western countries, and some reviews and meta-analytic studies examined above, supports the effectiveness of cooperative learning on students' academic achievement and long-term achievement, as well as knowledge retention.

Although there is research which indicates that students from collectivistic Asian cultures value working in groups, and perform well in groups (Hofstede & Hofstede, 2005), it is necessary to systematically examine the extent to which cooperative learning works and affects students' learning, where Confucianism has a powerful influence on norms, values, and behaviour of learners (Nguyen, Terlouw, Pilot, & Elliott, 2009a&b). In a one-semester study of the effects of STAD and Learning Together on 70 Taiwanese secondary school students' oral communicative competence in English and their attitudes, Liang (2002) reported that students in the experimental group had significantly higher performance scores ($p < .05$) than those in the control group. Hwang, Lui, and Tong's findings (2005) supported this result when they utilized a 2 x 2 between-subjects experimental design to examine cooperative learning effects on the learning outcomes of 172 accounting students in a major Hong Kong university. Results show that the students in the cooperative learning group performed better in answering indirect application-type questions than those in the traditional lecture group. The post-test scores of the cooperative learning group were significantly higher than that of the control group. Similarly, the effects of STAD and traditional lecture teaching on the academic performance of tertiary students in an English course in Taiwan were

compared by Cheng (2006). Results show that students in the cooperative learning group achieved significantly higher ($p < .05$) on post-test scores than students in the traditional lecture teaching group.

In addition, a two-group experimental design, Luu (2010) investigated the Learning Together effects on the reading competence of 77 Vietnamese tertiary students over a 7-week-period.Results show that the small cooperative learning group outperformed ($p < .05$) the comparison group on the post-test scores in reading competence.However, some recent studies in Asian contexts show that cooperative learning is no better than, or worse than lecture in its effects on students' learning. For example, in a two-semester study on linguistic competence achievement and attitudes of 21 secondary school students in Hong Kong, Eva (2003) reported that there were no significant differences ($p > .05$) on linguistics competence between the treatment group and the control group. The other two experimental studies (Chung, 1999; Sachs, Candlin, Rose, & Shum, 2003) also show there were no significant differences ($p > .05$) in achievement between the experimental students and the control students. The former was conducted with the participation of 23 primary school students in a mathematics course in Hong Kong in a one-semester period. Results show that there were no significant differences ($p > .05$) on mathematics achievement between the treatment group, where TAI was employed, and the control group, where whole-class traditional teaching was used. The latter was carried out with 120 primary school students in an English course in a one-year period. The findings reveal no significant differences ($p > .05$) in oral performance scores between students in small cooperative learning groups and in traditional lecture teaching groups.

Similarly, Zain, Subramaniam, Rashid, Shani (2009) investigated the STAD effects on achievement of 61 Malaysian tertiary students in an Economics course of a one-semester duration, and reported that there was no significant difference ($p > .05$) on post-test

achievement scores between the STAD group (n = 31) and the traditional teaching group (n = 30). The review also shows that in two studies, students in the traditional lecture-based groups significantly outperformed ($p < .05$) those in the cooperative learning groups. Specifically, Messier (2003) compared the effects of cooperative learning and the traditional lecture teaching on 95 secondary school student on grammar performances in an English course in China over a period of 4 weeks. There were four experimental groups, and four control groups. Results show that achievement scores in the conventional lecture teaching groups were significantly higher ($p < .05$) than in the small cooperative learning groups.

Another study (Tan, Sharan, & Lee, 2007) lasting six weeks, conducted in Singapore, had similar findings. The study compared the impact of the GI method and a conventional teaching method on secondary school students' achievement in Geography. The study reported that students in two traditional lecture-based teaching groups significantly outperformed those in two treatment groups.

Cooperative Learning deals with students' cooperation and interdependence in accomplishing a task or in achieving a goal. Marburgar (2005) carried out a study on students' performance using Cooperative Learning in California. He examined whether there will be significant difference in micro- economics test using Cooperative Learning and traditional methods. Egthy five students were examined, 54 for Cooperative and 31 for traditional method. The result of the findings showed that those students taught with Cooperative Learning did better in micro- economics test than those taught with Traditional method. In a study in which nutrition was taught to both elementary and secondary students using Cooperative Learning strategy, Wodarski and Adelson (1980) found significant gains between the pre-test and post test scores. Johnson and Johnson, and Holubec (1995) conducted a meta-analysis of 122 studies related to Cooperative Learning and concluded that there was strong evidence for the superiority of Cooperative Learning in promoting

achievement over competitive and individualistic strategies. Okebukola (1986) presented evidence that over time seventh grade science students in Cooperative group demonstrated greater academic achievement as compared to individually competitive groups. At first he did not obtain statistical significance differentiating between his treatment groups but over time he demonstrated significant disparities by the end of his longitudinal study.

2.6 Inquiry Based Learning and Academic Achievement

Due to the student-centred premise behind inquiry-based instruction, Hazari, North, and Moreland (2009) differentiate inquiry-based instruction from teacher-directed instruction by focusing on the unique role of the student "learners construct personal interpretation of knowledge based on their previous experience and application of knowledge in a relevant context. It was stated by Thompson (2006) that constructivist learning, inquiry based activities involve the use of "manipulativeor hands-on materials incorporating inquiry, discovery, and problem-solving approaches applying math and science concepts to real-world context. Moreover, inquiry based methods for learning associates the activities in the classroom to distinct careers and involves the original data analysis. It also inspires both collaboration and communications by the students (Thompson, 2006).

Thompson found support for the idea that there is effectiveness for inquiry based presentations for improving the achievement of the students as well as the satisfaction of the instructors when development occasions that are appropriate are made available. In a wide variety of perspectives and in a broad number of methods in the seventy years since Dewey (Thompson, 2006) hedged education as a progressive movement, there is still a strong predisposition toward using teacher directed methods of instruction. With respect to the instruction of math which was considered previously, although many believe memorization of basic operations and computational facts must be accomplished using teacher directed

methods (Codding et al., 2009), proponents of inquiry based methods suggest that there needs to be some sort of declaration of real world math concepts before any elementary skill sets are committed to memory (Thompson, 2006).

Dewey (Thompson, 2006) gave the following framework which is predicated on the academic basis of inquiry based education with regard to his defined progressive movement of academics: It is a defined rule of the recent institution that the initiation of learning should be created based on experience that students already have learned. This experience combined with the aptitudes already developed during its engagement should provide the initial mark for the learning in the future.

Dewey moved on to state that the presentation of instructors giving students a theoretical set of information comes from an era that predicated the past and future would not be dissimilar.Also, when the movement of progressive education began about 70 years ago, change was thought to be unavoidable. This review covers the suggestions, theories and ideals of both Dewey and Vygotsky (1962) and their writings will be sufficiently examined. These writings are imminently critical to a comprehension of the educational framework called inquiry based education.

There are questions pertaining to inquiry-based instruction that was presented by John Dewey and is of primary concern to proponents of this methodology. It is what does freedom mean and what are the conditions under which it is capable of realization?" There was a pilot analysis created by Papanikolaou and Grigoriadou (2009) of an educational science adept at presenting guidance to learners as they openly select individualized learning routes in the process of creating a unique educational result. They outlined a differentiation between the existing media and this new media that focuses on the design of educational procedures and materials as well as the outcome objects that are targeted, and methods of assessment that

conclude whether or not students have retained the appropriate levels while the constructivist approach centres on in context learning organized about certain assignments.

During the process of this study, the researchers found that non-passive presence which was requested through the use of the inquiry based model for guided questions the learners elected to participate in both an effective and motivated manner. This was concluded using professional examinations of the available educational medium along with student experimentation with a reasonable sample size of 19 students.

In his work, John Dewey predicated an instructor's part in an inquiry based educational environment as an exquisite designer. This person is charged with renewing the associations between the prior experiences of the students with the given subject area and offer new connections to learners who are then able to create more skills, connections, and factual evidence. During the process of comparing teachers in the two educational methods (inquiry based vs. teacher directed) Dewey (1938) acclaimed that there is much more lead time for planning for inquiry based methods because they must assuredly give exposure the continually build on the previous experiences of the students.

Marshall (2010) started with the supporting proposition, our habits of mind, innate curiosity, and ways of thinking and acting are shaped and developed through immersion in experience and repeated practice. Here, the investigators supposed that the method in which students were presented with learning material was equivalently paramount to the absorption of the content that is learned. In turn, more compelling instructors should have a purpose to create unique educational sessions as was suggested by Marshall and attempt to create an environment that is conducive to an ever developing global culture as was defined by Cornish (2004).

Of importance to note, Dewey's intentions on all participations were not to be viewed as a complete presentation of education nor did he view that learning experiences would need

to be equivalent. His views were that an instructor's lead in an inquiry based model of instruction would be that of a guide for learning experiences. Instructors in an inquiry based model should be accountable for aiding learners to avoid experiences that could possibly reduce their abilities to perform in ever changing and increasingly difficult positions while giving direction toward enlightenment of concept development through normal curiosity. Dewey gave ownership to instructors with understanding how to utilize the surroundings, physical and social, that exist so as to extract from them all that they have to contribute to building up experiences that are worthwhile.

Initially, the concepts of instructors as designers and the teachers who bring out and direct curiosity remain to be important parts of education that is inquiry based. It was found by Kazempour (2009) that inquiry based instructor development opportunities would be a significant contributor as a factor during the process of implementing inquiry based education in the classrooms of today. His study looked at the changing of the perceptions of a high school teacher's necessity and abilities toward the implementation of inquiry based education that came from the professional development presented through a series of summer workshops. Along with these development opportunities, the instructor was found to have greater certainty in his capability to design for education that was inquiry based and also direct the students along their learning path.

On the topic of knowledge retention, John Dewey guided that isolated learning of facts within a traditional teacher directed environment while practicing in a poor method can create a situation where learners are not able to perform as well on standardized tests than if the students had received no instruction at all. He found that it is possible to harm learners with isolated learning routines even though children have native capabilities to reason.

Additionally, Dewey asserted that content learned and skills acquired in this manner will not be efficiently conveyed from the practice environment to any other environment.

Coinciding with this type of logic, it would follow that instructors would be surprised by any student's lack of success on the standardized tests that are given. As Oliver-Hoyo (2011) states, what works in one environment at a particular institution or within a specific discipline might not work at another so the need to provide alternative options is of primary importance. This circumstance appears to illustrate yet another level of support for the use of inquiry based teaching to advance scores of student accomplishment for application beside other teaching methods, because the very character of inquiry based teaching and learning is the conduction of experiences along a sequence of learning events.

Dewey (1938) said that if the two principles of continuity and interaction as criteria of the value of experience are so intimately connected that it is not easy to tell just what special educational problem to take up first, it is likely better to comprehend learning and education in a social framework where the two assemblies exist side by side. Dewey associated the establishment which underlies inquiry based learning to a society that is democratic in nature.

Also, he continued on to as if given readers can ponder a preferred desire for democracy (i.e., inquiry based learning and the associated techniques) over a dictatorial method (i.e., teacher directed learning). Dewey did accept that inquiry based learning has a much lower relation to coursework of study and arrangement of learning goals than teacher directed learning. As such, this is a continuing reason for concern for administrators in the educational sector who are aiming to obtain sufficient progress from one year to the next.

Further, as Hattie (2009) demonstrates through extensive meta-analysis of the impact on student achievement brought about by various instructional and environmental factors, a variety of instructional strategies including but not limited to inquiry-based instruction may be necessary to maximize student achievement. Ortlieb and Lu (2011) offer further support for the importance of inquiry-based instruction in their study of pre-service teachers. Teachers who are encouraged to employ the inquiry-based teaching model demonstrate

greater, more sustained commitment to aiding students' development of critical thinking strategies. The implementation of well designed, conceptually based instructional units for inquiry supervised by educators with a strong foundation in multiple instructional delivery models is supported by the literature.

Schiller (2009) underscored the significance of social teamwork to the attainment of success of knowledge retention and learning. His study concluded that learners who were participating in a team-based in an inquiry based learning environment had high inclinations to attend to the given task of knowledge learning and retained information at the applicable stage of comprehension. His study pertained to math at a high level with students from a university environment but the suggestion contained the applicability to a team based and inquiry based environment to K through grade 12 math material.

Vygotsky (1962) proposed that direct teaching of concepts is impossible and would not be fruitful. He said that an instructor who attempts to accomplish this mostly never succeeds at anything but empty terminology with meaningless repeating of terminology by the learner. He compared it to a simulation of a learning environment covering the appropriate abstractions but actually housing a void .

Vygotsky (1962) was in unison with the underlying principles of Piaget and Dewey but he made an important differentiation. He acquiesced that given thought methods of young people came out of their own background experiences and these methods are significantly dissimilar compared with the learning methods of adults. He also stated that young people use both extemporaneous and non-extemporaneous methods and that these methods are mostly co-dependent.

Hernandez-Ramos and De La Paz (2009) compiled an analysis which compared inquiry based instruction with teacher directed instruction in a group of over 700 learners in a given middle school and a similar number of learners in a geographically close middle school

with similar educator credentials and student demographics. During this study, they found support for higher efficacy for learning that was student oriented. They found that learners that had inquiry based material presentation achieved better results as contrasted with students in controlled group in both internal motivation and overall material knowledge. Also, they reported the students had increased critical thinking abilities within the content area.

It may be declared that it is necessary to form the intellection of comprehending and retaining science education to be an exclusive relationship of life experiences along with organized experiences in an educational environment structured to facilitate learners to construct on their learned conceptual comprehensions in significant methods to obtain a complete understanding of given scientific concepts. Along with Vygotsky's (1962) hypothesis which makes use of teacher directed science education is like teaching learners to assume a comprehension of science while never accumulating a comprehension at all. The benefit of inquiry based education gives instructors a vehicle to supply educational activities that are structured to involve learners in genuine learning in both science and mathematics.

Vygotsky (1962) explored three concepts for budding youth intellect. The first concept he discussed was the idea from Piaget that youth have the ability to experience, respond to and comprehend information gained from given activities at an individualistic depth well before rational thinking is possible. This strengthened the notion from Vygotsky that presenting ideas to learners verbally before any inquiry is allowed can be viewed as fruitless. The second concept used by Vygotsky made use of a supposition by Stern that youth have a mysterious exhibition of comprehension processes that seems to lead to a casual experience which may serve as a catalyst for an important inquiry based educational experience. Lastly, Vygotsky expressed both the faults and benefits of ideas from both Stern and Piaget prior to presenting the structured framework for inquiry based education.

Vygotsky further stated, our investigation shows that the development of the psychological foundations for instruction in basic subjects does not precede instruction but unfolds in a continuous interaction with the contributions of instruction.

Inquiry-Based Learning includes students' construction of knowledge and understanding through the teacher‘s encouragement to explore the world, discover knowledge, reflect, and think critically (Santrock, 2001). Ifeanyi-Uche and Ejabukwa (2013) did a study on Inquiry-Based Learning and student academic achievement in Secondary School Home Economics in Orumba, Anambra state. The study examined the possibility of a difference in performance in Home-Economics between students taught using Inquiry-Based Learning strategies and those using lecture methods. They examined 80 students. The experimental groups were taught with Inquiry-Based Learning while the control group was taught using lecture method. A thirty five items Home Economics Achievement test developed by the researcher and validated by researcher's colleagues was used to assess the subject achievement. Data collected were analysed using percentage, mean and t-test statistics. The findings revealed that the experimental group (Inquiry-Base Learning) achieved significantly higher than the control group (lecture method). Based on the findings, it was recommended that inquiry based method should be employed in teaching Home Economics.

2.7 Cooperative learning and attitude to Economics

Cooperative learning is generally defined, as will become clear from the following two definitions, as a continuum of learners working together in a small group, so that everyone can participate in the collective task that has been clearly defined by the teacher. Cooperative learning is not merely another name for group work as it includes more than

learners simply working together in groups. Cooperative learning is a practical teaching strategy to offer learners more active learning experiences, equal access to learning and a more supportive social environment (Johnson et al., 1999). Killen (2007) defines cooperative learning as an instructional design that stimulates peer interaction and learner-to–learner cooperation in the process of fostering successful learning by all. Adams and Hamm (1996) state that cooperative learning as a teaching strategy is a success story in the transformation of education over the past decade. Their research focuses on the application of cooperative learning activities in the classroom where students jointly and creatively identify problems and generate practicable solutions. Sapon-Shevin and Schniedewind (1992) contend that cooperative learning is necessary in any teaching-learning situation, because this particular strategy can foster educational excellence for all children regardless of race, class, or gender, and can provide students and teachers with the experience and expectations of active participation in controlling and changing the spheres of their lives.

Gathering learners together in a group is no guarantee that they will work together. According to van Wyk (2007), cooperative learning involves much more than regular group work: “Cooperation is much more than physically associating with other students, discussing material with them, helping them, or sharing knowledge with them. These elements are all important for cooperative learning, but Johnson et al (1999) identify four basic elements that should be present before cooperative learning groups can truly function cooperatively: Positive inter-dependency, Group interaction, Individual learning performance and Interpersonal and small group skills. There are different forms of cooperative learning techniques such as StudentTeams-Achievement Divisions (STAD), Teams Games-Tournament (TGT), Jigsaw, Cooperative Integrated Reading and Composition (CIRC), Learning Together (LT), Team Assisted Individualisation (TAI), Academic Controversy (AC), Group Investigation (GI), etc. (Kagan 1994). The idea which lies beneath all

cooperative learning methods is that students work together to learn and are responsible for one another's learning as well as their own (Slavin 1994). These two methods can easily be used in economics education classes and they combine cooperative goals and tasks with a high degree of individual accountability (Slavin 1990). These two methods were used because they have simple procedures that are easy to understand, remember and apply.

The cooperative learning technique that has been extensively researched and assessed specifically on academic achievements, attitudes, social interactions and interpersonal relationships is the Student Teams Achievement Divisions (STAD) (Slavin 1983, 1990; Kagan 1994; Johnson & Johnson 1998; Johnson et al. 1999; Balfakih 2003; Bernaus & Gardner 2008; Tarim and Akdeniz 2008). STAD is one of the simplest and most extensively researched forms of all cooperative learning techniques and it could be an effective instrument to begin with for teachers who are new to the cooperative learning technique (Slavin 1990; Becker & Watts 1998).

STAD as a teaching technique was designed and researched by Johns Hopkins University and is known as student team learning (Sharan 1995). Research studies in the use of STAD as a teaching technique has been applied with great success in various research projects (Vaughan 2002; Jacobs et al. 2003; van Wyk 2010). The main purpose of STAD is to drastically improve and accelerate learner performance.The modified STAD consists of: subsection teams; individual improvement scores; class presentations/demonstrations and economic quizzes.

It is important to note that cooperative learning approach is not the same as group work. Studies have suggested that a crucial difference exists between simply placing the students in a group and cooperative learning approach (Johnson & Johnson, 1989). Cooperative learning approach is not merely being physically near to other students at the same table and sharing materials among students. Nor is it limited to assigning a report to a

group of students in which only one student does all the work and the other students place their names on the product (Johnson & Johnson, 1989). It is also not limited to students doing the task on individual basis with instructions that student who finishes first would assist the other students. Cooperative learning approach includes all these elements combined with principles of cooperative learning. Therefore, the use of this approach is shown not only to enhancing students' achievement but also to promoting self-esteem, improving interpersonal relationship and attitude towards school and peers (Johnson & Johnson, 1989; Slavin, 1991).

One issue that could be raised in the usage of this approach in classrooms is whether such approach is effective to all courses in general. This is because courses varies in nature and therefore, may need to use different learning approach or approach in disseminating the knowledge to students. For example; economics subject is considered different from other subjects due to its abstract in nature and extensive theories. Due to the nature of economics subject, one could question whether the benefits of cooperative learning approach could be extended to this subject, particularly when such subject is not a core subject for students in different fields (Zain, Subramaniam, Rashid, & Ghani, 2009).

Studies that have examined the link between cooperative learning approach and students' performance have focused on various fields. The fields include calculus (Whicker et al., 1997), English, mathematics and science (Cheah & Poon, 1999), accounting (Holtfreter and Holfreter, 2000), food and nutrition (Abu & Flowers, 1997) and engineering (Felder et al., 1998; Brawner et al., 2002). Studies that examined the link between cooperative learning approach and students' performance in the field of economics are limited (Yamarick, 2007), compared to other fields (Sax et al., 1999). One attribute to such limitation is that most economics lecturers tend to use predominantly teaching method (Benzing & Christ, 1997). Becker & Watts (2001) found in their survey that students who took economics classes devote only a small amount of time involving discussion.

Within the economics education literature, although limited, there are a number of studies that examined the link between cooperative learning and students' performance (Moore, 1998; Johnson et al., 2000; Jensen & Owen, 2001; Brooks& Khandker, 2002; Yamarick, 2007). The results are mixed. Few studies showed that students using the cooperative learning approach tend to perform better than those students relying on conventional approach (Moore, 1998; Brooks & Khandker, 2002; Yamarick, 2007). Other studies showed no supporting evidence (Johnston et al., 2000). The mixed results could not provide conclusive evidence on the link between cooperative learning approach and students' performance, particularly when teaching economics subject as a non-core subject for a group of students of different field, such as accounting.

Another body of the education literature have examined students' attitude on cooperative learning approach (such as Astin, 1977; Abu & Flowers, 1997; Cheah & Poon, 1999; Holtfreter & Holtfreter, 2000). These studies showed that students tend to favour cooperative learning approach compared to conventional approach (Holtfreter & Holtfreter, 2000). These studies showed that students also tend to become more forward looking to class and actively participate in class discussion. They become more positive towards the subject (Astin, 1977) as well as being able to communicate effectively and improving their social skills (Johnson et al., 1986). However, study on attitude towards cooperative learning in the economics education literature has yet to be extensively examined. Examining this issue in the field of economics context would shed some lights on whether similar results would appear.

Several studies such as Ibanga (2007) in Accounting, Okpala (2007) in Physics, Anuka (2006) in Financial Accounting and Adu et al. (2011) in Economics have tried to identify the causes of poor performance in school subjects and each have come out with its own findings.In spite of all these findings, students' performance has not improved

significantly to justify the efforts of previous research studies. This situation therefore, calls for more research directed at identifying the actual problem associated with students' achievement in Economics.

Economics has been widely accepted as a school subject by many countries to the extent that many students are now writing examination in it at the end of their Senior Secondary School level. Despite the relevance of Economics to everyday life in the area of commerce and industry, the teaching of the subject in Nigeria is characterized by many inadequacies. Nigeria secondary school teachers of Economics have few materials on the teaching of Economics to work with. Similarly, in South Africa the inequalities in school provisions continues to exist which undermines the democratic notion of a unified and equal system of education. Audio-visual aids are either not available in sufficient quality, or what is available is usually inappropriate. These have affected the effectiveness of teachers of Economics (Adu 2012).

Although, there is an increase in the number of students that are offering the subject, achievement in Economics has not been as good as it has been before the introduction of a newEconomics syllabus which incorporated some elements of Mathematics into the subject. The situation has been posing serious problem for the students in the Senior Secondary School classes partly as a result of the carry over effects of the negative attitudes which they have towards economics and ineffectiveness on the part of the teachers. The low levels of student-teacher interaction, students' failure to ask questions and the use of lecture methods were identified as the main cause of poor achievement in Economics (Adu, 2012). They demonstrated that achievement of candidates in Economics is not only poor generally but continues to fall over the years in a study on an "appraisal of trends in achievement of students in Economics at the Senior Secondary Certificate Examination in Oyo State". In sum, this means that students are underperforming due to the inefficiencies of teachers who

may not have adequate subject and content knowledge to present Economics to students in an innovative way (Adu, 2012)

According to Adu and Adeyanju (2013), to achieve success in learning economics, students should be given the opportunity to communicate and reason economically, develop self-confidence to solve economics problems. One of the ways this can be done is through cooperative learning. In cooperative learning, students study in small groups to achieve the same goals using social skills. Many studies show that cooperative learning can improve performance, long-term memory and positive attitudes towards economics, self-concept and social skills.

More opportunities should be given to discussion, problem solving, creating solutions and working with peers. Several educators in the field of economics education conducted studies using cooperative learning and found an increase in students' economics achievement (Adu et al. 2010).Shimazoe and Aldrich (2010) provided several benefits on the use of cooperative learning approach for students. Firstly, cooperative learning promotes deep learning of materials. Secondly, students achieve better grades in cooperative learning compared to competitive or individual learning. Thirdly, students learn social skills and civic values. Fourthly, students learn higher-order, critical thinking skills. Fifthly, cooperative learning promotes personal growth.Finally, students develop positive attitudes toward autonomous learning. In other words, cooperative learning has the potential to engage students actively through cognitive and social encounters that foster collegial and collective thinking whereby generating infused knowledge at a higher level of cognitive thinking and deliberation through attitudinal change and motivational influences within the context of classroom-based teaching and learning.

Adu (2012) defined attitude as internal beliefs that influence personal actions which are learned through one's experience. This has to do with a disposition to act or react in a

particular way as the individual responds to a situation (Amoo & Rahman 2004). Thus, the students' perceptions of the teachers' disposition could influence their attitude and thinking toward Economics or any other school subject. Students more often than not judge their teachers in such areas as the teachers' knowledge of the subject matter, communication ability, the choice of appropriate teaching method and the general classroom management skills. A teacher who is rated high on these indices in the perception of the students is likely to enjoy the confidence, respect and admiration of students.

In the recent years, studies on teaching and learning of economics have gained momentum basically because it is one of the core subjects in the school curriculum. The need to maintain a globally competitive workforce and the trend of interest in economic growth and development has also prompted researchers to place much emphasis on economics because all other social science related subjects are expressed, formulated and communicated through economics. In spite of this, the trend in the performance of students in economics for ten years understudied was not encouraging (Adu, 2012)

The results of van Wyk's (2012) investigation into the impact of cooperative learning on students in economics education provided optimistic support for this instructional technique. Achievement gains were observed in the STAD experimental group when cooperative learning experience was implemented. This is consistent with similar achievement gains previously reported (Stahl & Van Sickle 1992; Nichols & Miller 1994; Slavin 1990; van Wyk 2010). When cooperative learning techniques are used properly, achievement benefits appear to be one of the results that can be anticipated. Van Wyk's (2012) study also offer support for previous findings in that cooperative learning instruction was used to explore student motivation in a variety of ways (Nichols & Miller 1994). Both groups of students in Van Wyk's research who received STAD as a cooperative learning experience, as well as direct instruction increased their intrinsic valuing of the learning task,

self-efficacy, learning goal orientations and their reported use of deep processing strategies for this project.

In previous studies, Bernaus and Gardner (2008) and Van Wyk (2007) observed increases in achievement and motivation gains when cooperative learning replaced the traditional form of instruction.In an earlier study, van Wyk (2010) used STAD in a quasi-experimental design on student performances in economic literacy. The results showed that the experimental group had a 16.13 score; an increase from the pre-test to the post-test compared to the control group. The experimental group which was exposed to STAD had a statistically significant increase in economic literacy levels compared to the control group. By using the STAD experimental group and implementing cooperative learning at two different times of the year, the findings of this project provide additional support for this type of instruction technique. Emanating from this study, it has been suggested that student perceptions of the learning environment remain relatively fixed or stable after the first six weeks of contact; after this time it becomes difficult to change their impressions (Bernaus & Gardner 2008; Nichols & Miller 1994). The findings of Van Wyk's (2012) study suggest that STAD as cooperative learning technique is one avenue that effectively promotes a positive change in student perceptions and motivation.

A second design improvement was the use of Slavin's Student Teams Achievement Divisions

(STAD) design as opposed to Team Assisted Individualisation (TAI) in the earlier studies. The previous findings were contingent with the use of TAI which incorporates individualised instruction. In the earlier study, a retesting component was used when students did not meet predetermined objectives. van Wyk's (2012) offers support for this type of instruction that increases student motivation and achievement and may also be generalised to other cooperative group structures (in this case STAD) that do not include individualised

instruction or a retesting component. Furthermore, several studies report that STAD is the most successful cooperative learning technique for increasing student academic achievement (Mills 2001; Zenginobuz & Meral 2008; van Wyk 2010).

The bulk of research studies on STAD have been conducted at the elementary level and in subject areas other than social studies and economics education. Slavin (1995) reported on 29 studies that examined the effectiveness of STAD. Thus, it can be said that STAD as a teaching technique consistently has positive effects on economic literacy levels of all educational student learning. The findings of the investigation are also in agreement with the efficacy of STAD as a teaching technique for better performances in elementary economics (Vaughan 2002; van Wyk 2007). Additionally, research studies conducted in STAD as a teaching technique were also applied with great success in various research projects (Slavin 1994; Mills 2001).

2.8 Cooperative Learning and Self Efficacy

Both increased self-efficacy beliefs and working together with peers in small collaborative classroom groups can lead to higher academic achievement (Bandura, 1997; Cohen, 1994; Johnson & Johnson, 1989). The phenomena of collaborative learning and self-efficacy have been studied jointly in the past, although the volume of research considering the two together is meagre at best. One line of research in this area has focused on how students' self-efficacy beliefs affect their performance in small group settings (Ruys, Van Keer, & Aelterman, 2010; Sins, van Joolingen, Savelsbergh, & van Hout-Wolters, 2008; Wang & Lin, 2007). In a study conducted by Wang and Lin (2007), college students enrolled in an introductory educational psychology course were separated into three categories based upon self-reported self-efficacy beliefs about the course. The three groups were:

1. Students with high self-efficacy beliefs

2. Students with low self-efficacy beliefs

3. A mixed group including students whose self-efficacy beliefs fell between low and high, as well as randomly selected students from both the low and high groups.

Wang and Lin found that the group comprised of students with high self-efficacy beliefs for this educational psychology course had higher collective efficacy (i.e., individual beliefs about the achievement ability of the group) and employed higher-order thinking more often than did the other two groups. There is little or no research, however, centred around how working in small collaborative groups in the classroom affects student self-efficacy beliefs regarding a specific academic topic. In their concluding remarks, Wang and Lin (2007) suggested that practitioners should place at least one student with high topic specific self-efficacy beliefs within each collaborative learning group. The authors linked this suggestion back to the peer modelling aspect of Bandura's (1986) self-efficacy theory. Bandura suggested that observing similar peer (i.e., a model) who exhibits high academic achievement and strong self-efficacy beliefs can help students with lower self-efficacy beliefs increase their self-efficacy and, in turn, achieve greater academic success. Wang and Lin (2007) echoed Bandura by stating that students with high efficacy beliefs not only have modelling effects on other group members, but are also more likely to transmit their efficacy beliefs through interactions with others.

Albert Bandura (1977) was the first academic scholar to present the idea that positive self-efficacy beliefs can promote favourable outcomes. He began his work with self-efficacy theory in the field of psychology, eventually applying his theory to other domains, including education (Bandura, 1986). Bandura (1995) believed there are four main factors that influence self-efficacy beliefs: mastery experiences, vicarious experiences, social persuasion, and affective states. Mastery experiences are based on students' past experiences with a subject or specific topic or task. If students have had success in the past with a particular task,

they are more likely to have higher self-efficacy beliefs about completing a similar task at present or in the future. On the other hand, if students have experienced failure with a task similar to the one currently presented, they will likely have lower self-efficacy beliefs regarding their ability to successfully complete the task.

Bandura (1995) believed that vicarious experiences can also help increase student self-efficacy beliefs. He stated that, seeing people similar to themselves succeed by perseverant effort raises observers' beliefs that they, too, possess the capabilities to master comparable activities" (Bandura, 1995). While Bandura believed that mastery experience has the most influence on self-efficacy beliefs, the process of observing a model (i.e., a similar peer) work diligently and reach high academic achievement has been shown to be very influential as well (Cohen, 1994a; Johnson & Johnson, 1989; Pajares, 1996). For example, Schunk and Hanson (1985) found that observing high achieving peer models had a statistically significant positive effect on the topic specific self-efficacy beliefs of elementary school children who were learning subtraction skills.

The third factor that Bandura (1995) said can influence self-efficacy beliefs is social persuasion. Using persuasive comments to increase the self-efficacy beliefs of someone who truly does possess academic potential for success, but may not realize it, can be an effective tool. However, false comments stated as a means to increase the self-efficacy beliefs of someone who does not actually have the ability to achieve can have an adverse effect. Bandura believed that people can see through the disingenuous nature of such comments.

Finally, affective states are the fourth factor that can influence self-efficacy beliefs (Bandura, 1995). Affective states include stress, tension, and positive or negative moods and physical states such as fatigue, aches, and pains. Improving the perception of physical and affective states can help increase self-efficacy beliefs. Simply stated, being in a good mood

and physically feeling well will likely produce higher self-efficacy beliefs than feeling depressed or ill (Dierdorff, Surface, & Brown, 2010; Kwan & Bryan, 2010).

Usher and Pajares (2008) conducted a review of the self-efficacy literature, focusing on research studies that investigated one or more of the four sources of self-efficacy beliefs put forth by Albert Bandura (1995). Usher and Pajares (2008) limited their literature search to studies that were conducted in schools. They identified key findings, exposed methodological problems in several of the studies and gaps in the literature, and made suggestions for future research in this area. Through their literature review, Usher and Pajares (2008) found that mastery experience regularly predicted self-efficacy beliefs. This held true across various domains and for all grade levels. The three remaining sources of self-efficacy presented by Bandura (1995) did not always predict self-efficacy beliefs in a consistent manner.

Usher and Pajares (2008) believed this was due to problems with research methodology, the use of measurement instruments that produced unreliable data, and contextual issues they identified in various studies. For example, the review of literature revealed that when researchers summed the values of individual self-efficacy items to create an overall score, the aggregated scores often obfuscated the effects of each individual source of self-efficacy. Usher and Pajares also found that the results of several studies included in their review indicated multi-collinearity between the factors that Bandura (1995) believed influence self-efficacy. Regarding contextual issues, Usher and Pajares (2008) found that, "the predictive value of the sources depend on the domain in which the constructs are assessed, and both their magnitude and their relationship with self-efficacy are influenced by students' group memberships or academic ability indexes" (p. 781). They suggested that further research is necessary regarding vicarious experience, persuasive comments, and affective states, to truly determine if these are means by which self-efficacy beliefs can be positively affected.

Albert Bandura spent his career furthering the understanding of self-efficacy beliefs (Pajares, 1996). His work has provided a foundation upon which contemporary scholars have based their empirical research regarding the phenomenon of student self-efficacy beliefs. While Bandura's (1977) theory of self-efficacy is widely accepted throughout the field, there remains debate over the level of specificity of student self-efficacy beliefs.Some would argue that self-efficacy beliefs are domain specific and possibly even task or topic specific (Finney & Schraw, 2003; Pajares, 1996; Pajares & Miller, 1997).

Others believe that students have a general sense of academic self-efficacy (Chemers et al., 2001). This is a topic that remains a point of controversy among scholars who presently study student self-efficacy beliefs. Based on his empirical research, Bandura (1997) asserted that self-efficacy beliefs are multidimensional, and that these beliefs, should be measured in terms of particularized judgments of capability that may vary across realms of activity, under different levels of task demands, within a given activity domain, and under different situational circumstances. Other self-efficacy scholars agree. It has been found through various research studies that students with high self-efficacy beliefs for one domain of study may not have high self-efficacy beliefs across other academic domains (DiClemente, 1986; Hofstetter, Sallis, & Hovell, 1990; Pajares, 1996; Pajares & Miller, 1997). Usher and Pajares (2008) asserted that it is unreasonable to compare students' domain specific self-efficacy judgments with their overall sense of academic self-efficacy. They noted that students who have high self-efficacy for one academic subject may have low self-efficacy for other subjects. Thus, a student's overall sense of self-efficacy about his or her performance as a student, or academic self-efficacy, may be much lower than his or her self-efficacy for a particular academic subject. Although many scholars study self-efficacy at domain, topic, or task specific levels (e.g., Pajares, 1996; Pajares & Miller, 1997; Pajares & Urdan, 2006), the idea of a general sense of self-efficacy continues to be studied and scales to measure these

general beliefs continue to be created and refined (e.g., Chemers et al., 2001; Chen, Gully, & Eden, 2001).

Chen and colleagues (2001) argued that people have a general sense of self-efficacy that,captures differences among individuals in their tendency to view themselves as capable of meeting task demands in a broad array of contexts. Through empirical research, it has been shown that a general sense of self-efficacy is positively related to other self-evaluation phenomena, including locus of control and self-esteem (Judge, Thoresen, Pucik, & Welbourne, 1999). General self-efficacy is also thought to be positively related to the orientation of learning goals (Chen, Gully, Whiteman, & Kilcullen, 2000).

Chemers et al. (2001) studied the effects of general academic self-efficacy on students' transition from high school to college. They believed that academic self-efficacy would affect both academic achievement and personal transition from the high school to the college environment. Chemers and his colleagues investigated the relationship between overall academic self-efficacy and overall academic achievement and found these constructs to have a positive, statistically significant relationship. This supports the idea that students may hold general academic self-efficacy beliefs about their overall academic success.

Understanding new statistical ideas and topics is a challenge for many students (Garfield, 1995). Even at the undergraduate and graduate college levels, students in introductory courses struggle to comprehend various statistical concepts due to their unfamiliarity and unease with the content. For example, after completing an introductory statistics course, many students do not understand that a larger sample is more likely to produce statistical values that more accurately reflect the population than is a smaller sample (Zieffler et. al., 2008).

There are myriad reasons that students have difficulty fully understanding statistical concepts. Many scholars in the field of statistics education, researchers and practitioners

alike, believe that one key reason students struggle in the statistics classroom is that instructors do not focus on fostering students' statistical literacy and statistical reasoning skills, instead choosing to teach the processes for simply solving problems and producing the correct answer (Ben-Zvi, 2005; Ben-Zvi & Garfield, 2005; delMas, Garfield, Ooms, & Chance, 2007; GAISE College Report, 2005; Garfield, 1995; Garfield, 2005).

The GAISE College Report (2005) stated that, the desired result of all introductory statistics courses is to produce statistically educated students, which means that students should develop statistical literacy and the ability to think statistically. Achieving this knowledge will require learning some statistical techniques, but the specific techniques are not as important as the knowledge that comes from going through the process of learning them.

In a review of contemporary research concerning how students learn statistics, Garfield (1995) found that in statistics classrooms, the use of collaborative learning fostered improved productivity, better attitudes toward learning, and greater academic success. She also found that when small collaborative groups of students were engaged in activities, the students learned to effectively argue their ideas. These small group discussions helped students become more involved in their learning process, which in turn helped to create deeper understanding. Through her research in the field of cognition, Lovett (2001) has come to believe that collaboration among students in the classroom will further student statistical reasoning, literacy, and understanding.

Ben-Zvi and Garfield (2005) found that one of the major benefits of using collaborative group work in the statistics classroom is that students are given the opportunity to communicate using statistical language. Similar to a foreign language class, students practice using new terminology in a way that makes sense to them and their peers. When communicating with their peers in small, collaborative groups, students who struggle with

statistical language may emulate their higher performing peers, which can lead to an increase in their self-efficacy for statistical language, thus helping them to understand and academically achieve (Bandura, 1995; Garfield, 1995).

This collaborative group interaction helps students understand whether or not they are using the vocabulary of statistics accurately. During these collaborative discussions, the instructor can wander among the groups, listening to ensure that students accurately comprehend the material. The ability to understand and correctly use statistical terminology is a key skill necessary for students to become statistically literate (Utts, 2003).

Working together with peers in small groups, discussing topics with peers, hearing various perspectives, and learning from peer models, all of which are aspects of collaborative learning, are ways of promoting academic achievement across various domains, but particularly in statistics (Cohen, 1994b). A collaborative learning environment provides students with space to discuss their ideas in a small, safe setting where they feel comfortable putting forth and negotiating their ideas (Johnson & Johnson, 1989). According to the literature regarding statistics education, while collaborative learning has shown great promise as a method of instruction, it is not widely employed by college statistics instructors (Ben-Zvi & Garfield, 2005; Garfield, 1995, 2005). In response to the recommendation put forth in the GAISE College Report (2005), the researcher hypothesized that collaborative learning can increase the self-efficacy beliefs of statistics students and, thus, can be the process by which students develop statistical literacy and thinking and improve their performance in the statistics classroom.

It is important to examine collaborative learning and students' self-efficacy beliefs within a specific domain. The domain of statistics is uniquely challenging (Ben-Zvi & Garfield, 2005; Garfield, 1995; Garfield & Ahlgren, 1988), yet collaborative learning has been advanced as a way to help students navigate these challenges (Cohen, 1994; Garfield,

1995; Johnson & Johnson, 1989). The often complex and abstract topics associated with statistical sampling can be particularly difficult for introductory statistics students to understand (Fecso et al., 1996; Gelman & Nolan, 2002; Nguyen, 2005; Utts & Heckard, 2006; Yilmaz, 1996).

One way in which undergraduate instructors have offered hands-on, real world statistical sampling activities to their students was by assigning the class one large project (Gelman & Nolan, 2002; Kelly, 2010). At the beginning of the semester or instructional unit on statistical sampling, instructors collaborated with their students to develop a sampling project idea. Once the class and instructor agreed upon an idea, the class was divided into small working groups, each of which was responsible for a portion of the project, including development of the sampling plan, survey design, data collection, data analysis, and final report writing. Some of the small, collaborative group work occurred in class and some outside of class. Although each group focused primarily upon one aspect of the project, all student groups provided regular, in-class status reports for their peers. During these report sessions, students received handouts to help guide the whole class, collaborative discussions and both students and the instructor provided constructive feedback to each of the groups.

Gelman and Nolan (2002) noted that this whole class, collaborative project had several advantages over the typical lecture-based course or instructional unit on statistical sampling. In their courses, students were able to choose to work on an aspect of the project that best aligned with their skills and interests. This helped to keep students interested and motivated while working on the project. Working as a class on one large project created a feeling of collective effort on the part of the students, and thus students were more interested and invested in completing the project. Because the work was distributed, student workload was manageable, allowing the students to focus upon fully understanding the material as opposed to rushing to finish their work. The students were excited about the project and some

even followed up after completion of the course to work with the data in other ways (e.g., honors theses, further research studies, etc.).

Kelly (2010) found that, compared to students who received primarily lecture-based instruction, the students who participated in the whole class collaborative project exhibited higher academic achievement and were more satisfied with their experience in the class. She made reference to the amount of time it took for students to become comfortable with this type of learning environment, stating that, the students, while initially reluctant to speak in class and wanting me to make decisions, gradually, [and] with encouragement, increased in confidence and quite soon took over complete responsibility in running the survey (Kelly, 2010). This increase in student confidence can lead to increased self-efficacy beliefs and, in turn, promote higher academic achievement for students studying statistical sampling (Bandura, 1995). Kelly (2010) also stated that this type of hands-on learning environment was more interesting for both the students and the instructor.

Hodgson and Burke (2000) echoed the sentiments mentioned above regarding the benefits of active, hands-on, real world tasks for students learning statistical sampling. They offered some recommendations to help instructors implement this type of learning environment and gain awareness of their students' levels of knowledge and understanding. The authors suggested that conducting informal, formative assessment is crucial during the active learning tasks. They noted that this type of observation and assessment can help highlight areas where students are confused, and allow instructors to make necessary adjustments to future instruction and activities. Hodgson and Burke also recommended a period of 'debriefing' at the end of each class. They believed that allowing students to share and discuss their final thoughts and questions helped all students gain an accurate, deep understanding of the concepts related to statistical sampling.

Undergraduate students studying statistical sampling for the first time often have difficulty comprehending the rather abstract and complex topics associated with this statistical topic (Fecso et al., 1996; Gelman & Nolan, 2002; Nguyen, 2005; Utts & Heckard, 2006; Yilmaz, 1996). The recommendations from various scholars and instructors to use real world, hands-on activities to teach statistical sampling aligns with the theory and practice of collaborative learning (Johnson & Johnson, 1989). Small, student led collaborative groups working together on real world, hands-on tasks is an instructional method that can help undergraduate statistics students gain a deep understanding of the topics associated with statistical sampling and can help to increase student satisfaction and confidence (Chang et al., 1992; Fecso et al., 1996; Gelman & Nolan, 2002; Hodgson & Burke, 2000; Johnson & Johnson, 1989; Kelly, 2010; Mills, 2002; Richardson, 2003; Warton, 2007; Yilmaz, 1996), leading to increased self-efficacy and, thus, greater academic achievement (Bandura, 1995). However, there is no research that establishes students' self-efficacy beliefs as the mechanism through which collaborative learning affects students' understanding of the concepts associated with statistical sampling. The present study was an attempt to fill this gap in the research literature. In the following section, the researcher present a review of the collaborative learning literature.

2.9 Inquiry Based Learning and Self Efficacy

Inquiry-based instruction may help students understand how to identify problems, autonomously seek answers, and develop and verify solutions. These skills are so-called portable capabilities," a status that underscores their importance. The use of "inquiry" to describe this approach refers to its reliance on an active learning process that allows students to answer research questions via data analysis (Bell, Smetana, & Binns, 2005). Inquiry-based

instruction is student oriented, although instructors may direct students at appropriate times according to the requirements of the situation. Beginners may need more instruction so that they can engage in the process of inquiry more effectively (Zangori, Forbes, & Biggers, 2012).

According to Wheeler and Bell (2012), inquiry involves a different set of five processes related specifically to identifying a problem: collecting data, interpreting data, developing alternative interpretations, presenting results, and verifying results. Additionally, inquiry can be categorized into the following four types: (1) verification inquiry, where a set of questions, approaches, and solutions is provided by instructors; (2) cascades of structure; (3) guided inquiry, where instructors provide questions for further inquiry; and (4) open inquiry. Moreover, Wheeler and Bell (2012) also noted the possible influence of certain myths about inquiry-based instruction. One of these is that although this approach may be helpful for students, it is difficult for instructors to implement. In fact, this method is appropriate for science education at any level and for any grade.

Considerable research has been conducted on inquiry-based instruction. For example, Gormally, Brickman, Hallar, and Armstrong (2011) implemented an inquiry-based curriculum in a college biology laboratory classroom, and Marshall, Lotter, Smart, and Sirbu (2011) performed a comparative analysis of two inquiry-based observational protocols to better understand the quality of teacher-facilitated inquiry-based instruction. Additionally, Marshall and Horton (2011) explored the relationship between inquiry-based instruction and higher-order thinking in students. Moreover, Wang, Wang, Tai, and Chen investigated the effectiveness of inquiry-based instruction among students with different levels of prior knowledge and reading abilities.

Since its inception, the term “inquiry” has been burdened with an identity crisis (Barrow,2006). Originally, the term was used to invoke the idea of teaching science in the

way it is actually practiced by scientists—problem solving through formulating and testing hypothesis(Dewey, 1910; Schwab, 1960). But after decades of policy statements geared toward clarifying the definition of inquiry (National Academy of Sciences - National Research Council Washington DC. Center for Science Mathematics and Engineering Education, 2000), educators continue to debate exactly how to measure it in practice (Abrams, Southerland, & Silva, 2008; Chinn & Malhotra, 2002). Sundberg and Moncada (1994) describe several alternatives to traditional, didactic, "cookbook" type laboratories where students are told what to do and learn. One of these is the "inquiry" lab, which they credit to Uno and Bybee (1994) and define as a laboratory activity in which the instructor leads students to discover a specific concept after being prompted by a basic question or problem.

More recently, Chinn and Malhotra (2002) developed an authentic scientific inquiry scale, which characterizes the degree to which an inquiry lab requires complex reasoning processes as exhibited by practicing scientists. Using this scale to analyse published laboratory manuals, Chinn and Malhotra (2002) discovered that current high school inquiry tasks bore little resemblance to authentic scientific reasoning and were better described as simple inquiry tasks (including simple observations, simple illustrations, or even simple experiments). They argue that simple tasks where students are provided with a research question, protocol, and told what data to collect and how to analyse it vary dramatically from authentic inquiry where students choose the research question, variables, procedures, and must explain their results in light of other studies and theories. Clearly, research attempting to assess the benefit of inquiry instruction must first define exactly where the curriculum falls on this large continuum of inquiry activities in order to assess the impact of instructional practice as well as to compare results between studies.

The labs contain many, but not all, of the attributes of Chinn and Malhotra's authentic inquiry but are best described as "guided inquiry (Malhotra, 2002). In guided inquiry labs, the instructor poses an initial problem such as in the "simple experiment" labs of Chinn and Malhotra but then guides the students in selecting variables, planning procedures, controlling variables, planning measures, and finding flaws through questioning that will help students arrive at a solution (Buck, Bretz, & Towns, 2008; Magnusson, 1999). This method avoids one of the serious problems found with adopting the "simple experiments" categorized by Chinn and Malhotra: laboratory exercises that reinforce the simplistic view that science involves completion of simple tasks to confirm or reject hypotheses rather than reasoning about complex methodological flaws (Chinn & Malhotra, 2002; Germann, 1996). The guided inquiry approach also provides more direction to students who may be poorly prepared to tackle inquiry problems without prompts and instruction because of lack of experience, knowledge, or because they have not reached the level of cognitive development required for abstract thought (Lawson, 1980; Purser & Renner, 1983). The guidance provided by the instructor's questioning should provide that instruction and therefore lower student frustration levels while still maintaining a high level of intellectual challenge (Igelsrud & Leonard, 1988).

In addition to differences in how inquiry-based instruction is implemented, researchers have also differed in how they attempt to measure the effectiveness of this instruction. Decades of research from meta-analyses (almost all from pre-college instruction) suggest that inquiry instruction results in improved student learning (Lott, 1983; Schneider, Krajcik, Marx, & Soloway, 2002; Shymansky, 1990; Von Secker & Lissitz, 1999; Weinstein, 1982; Weinstein & et al., 1982). But, at the college level the data are mixed as to whether increasing inquiry instruction can significantly change student learning or attitude toward science (Berg, Bergendahl, Lundberg, & Tibell, 2003; Hake, 1998; Igelsrud & Leonard,

1988; Lawson & Snitgen, 1982; Leonard, 1989; Luckie, Maleszewski, Loznak, & Krha, 2004; Udovic, Morris, Dickman, Postlethwait, & Wetherwax, 2002).

Most studies on the effectiveness of inquiry investigations have measured student achievement through acquisition of content knowledge, conceptual understanding, and overcoming misconceptions. Using these variables, studies have demonstrated increases in student achievement in inquiry lab classrooms (Basaga, Geban, & Tekkaya, 1994; Hall & McCurdy, 1990; Luckie, et al., 2004; Sundberg & Moncada, 1994). However, other researchers have found either little or no statistically significant differences in student achievement in inquiry labs (Jackman, 1987; Pavelich & Abraham, 1979), or have found increased abilities for reflection and ability to describe concepts, but not in general knowledge or comprehension (Berg, et al., 2003). Comparing these studies is somewhat difficult due to the fact that each differs in the type, scope, degree, and definition of the inquiry activities as well as the student populations and instruments used to assess the learning gains.

The underlying question behind all these studies is whether an inquiry teaching method attains the over-arching goal of science education—preparation of scientifically literate citizens. It has been argued that inquiry-based teaching methods are the best path to achieving scientific literacy because they provide students with the opportunity to discuss and debate scientific ideas (American Association for the Advancement of Science, 1993). Hogan and Maglienti point to this as the primary way practicing scientists evaluate scientific ideas and conclusions (Hogan & Maglienti, 2001). Most studies of the effect of inquiry instruction, however, have focused on measuring only one type of scientific literacy—gains in scientific knowledge. Norris, Phillips, and Corpan (2003) define this type of science literacy as "fundamental," and note that it includes simple recall of scientific principles.

Norris et al. (2003) argue that there is also a second type of science literacy that they refer to as "derived," which includes the ability to transfer conceptual understanding and accurately interpret and evaluate texts dealing with scientific concepts (Norris, Phillips, & Korpan, 2003). This "derived" science literacy is the same set of skills a citizen would need when reading a newspaper article, interpreting published tables and figures, and making personal and societal decisions (Demastes & Wandersee, 1992).

A self-efficacy survey, created and validated by Baldwin et al. (1999), was used to measure how confident non-biology major students were in their ability to understand and do science (Baldwin, Ebert-May, & Burns, 1999). The self-efficacy survey, administered online within the first two weeks and the last two weeks of the semester, was composed of 25 questions (6 demographic + 19 confidence questions) that were scored on a Likert scale (ranging from 2, totally confident, to -2, not at all confident). Baldwin et al. (1999) conducted factor analysis to verify that similar items consistently factor together and to condense the answers into one single value for a particular skill set. The factor pattern was varimax orthogonally rotated, which increases the absolute values of large loadings and decreases the absolute values of small loadings on factors within the columns of the factor matrix, resulting in a greater distinction between significant versus non-significant variables loading on each factor. They found that questions addressed students' confidence in performing three types of skills: (1) confidence in explaining and writing about biological ideas, (2) confidence in writing and critiquing a lab report, and (3) confidence in using a scientific approach to solve problems, including using analytical skills to conduct experiments and general confidence for success in the course.

2.10 Instructional Methods in Education

Teaching is defined as instructing, tutoring or educating. It stands for pedagogy, training and nurturing. As a profession it is taken as a mission to mould the young. Others are prepared to assume certain defined duties and responsibilities. It may be regarded as a teacher's role in educating children. Some refer to it as an occupation for a living. Academic performance is an important result of all college curricular and co-curricular activities (Laguador, 2013f). Teachers have been shown to have an important influence on students' academic performance and they also play a crucial role in educational attainment because the teacher is ultimately responsible for translating policy into actions and principles based on practice during interaction with the students. Both teaching and learning depends on teachers, no wonder an effective teacher has been conceptualized as one who produces desired results in the course of his duty as a teacher (Akiri & Ugborugbo, 2009). In order to realize the instructional goals formulated, a teacher must possess the ability to plan and organize all the needed task to be performed appropriately timed and adequately provided with suitable materials. Only then will actual teaching to be smoothly paved towards the desired ends. To underscore, it is hardly possible to make children learn without a precise method, or else the class activities will end up hit-and-miss or segmented operations.

In teaching, method is a systematic plan to achieve a learning objective. It is a procedure that must followed strictly to attain a goal. It refers to a series of related and progressive acts performed by the teacher and students to achieve the objectives of the lesson. It is well planned procedure that guides the direction in undertaking a learning activity. Educators take method as a pattern or manner of treating people, objects and events that is directed purposely toward the achievement of an instructional goal (Salandanan, 2009). As applied to the classroom teaching, method is a series of related and progressive acts performed by the teacher and the pupils to accomplish the general and specific aims of the lesson. Method has to do with the way a teacher communicates the subject to the student. It

involves regular steps to guide the mental processes of the learner in mastering the subject matter being presented to him. It also implies arrangement (Gregorio & Herman, 2005).

There are four main types of teaching methods which are widely used by the teachers in educating their students. These methods are namely as: teacher/instructor-centred method, learner-centred method, content-focused method and interactive/participative method. (Makokha & Ongwae, 2001) In teacher/instruction centred method, the teacher casts himself/herself in the role of being a master of the subject matter. The teacher is looked upon by the learners as an expert or an authority. Learners on the other hand are presumed to be passive and copious recipients of knowledge from the teacher. Examples of such methods are expository or lecture methods - which require little or no involvement of learners in the teaching process. It is also for this lack of involvement of the learners in what they are taught, that such methods are called "closed-ended" (Makokha & Ongwae, 2001).

The traditional teacher-centred method of instruction also known as direct or explicit instruction consists of seven components. The seven components of direct instruction are: developing of anticipatory activities used to prepare the students to the lesson, identifying an objective, teaching of new material, modelling the objective to be learned questioning the students as a checked for understanding, providing a guided practice and an appropriate feedback to the student, and providing an independent practice of the new material for the student to do outside of the classroom (Pretson, 2007).

Teacher/instructor-centred involves the teachers' action to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation. Likewise, it involves the establishment and maintenance of the classroom environment so that educational goals can be accomplished (Agno, 2009). Teacher-centred instruction includes teaching strategies in which the teacher's role is to present the knowledge

to be learned and to direct, in a rather explicit manner, the learning process of the students. (Backiel, 2009).

In content-focused teaching methods, both the teacher and the learners have to fit into the content that is taught. Generally, this means the information and skills to be taught are regarded as sacrosanct or very important. A lot of emphasis is laid on the clarity and careful analyses of content. Both the teacher and the learners cannot alter or become critical of anything to do with the content. An example of a method which subordinates the interests of the teacher and learners to the content is the programmed learning approach. (Makokha & Ongwae, 2001).

Content-Focused Coaching is a professional development model designed to promote student learning and achievement by having a coach and a teacher work jointly in specific settings, guided by conceptual tools (Staub, 2005). This method of teaching centres on students' learning in the lessons but is also about teachers' learning from the process. In the short term, teachers refine how they teach particular lessons to specific groups of students. In the long term, they develop professional habits of mind and general teaching expertise. Expert teachers know both their subject and the best pedagogical practices by which to bring the subject to their students. (Staub, West & Bickel, 2006) To fulfil the student learning objectives of the course, the class facilitator integrated technology-driven teaching strategies in the learning experience of the students including multimedia presentations, World Wide Web resources, open line of communication thru email, networking sites page, video/photo portfolios, digital cameras and photo editing software (Bay, 2013).

Learner-centred teaching is a teaching which is focused on learning – what the students are doing is the central concern of the teacher. Learning by doing is one of the most important aspects of psychomotor domain (Laguador & Dizon, 2013). Being "focused on learning" is easily understood at a superficial level, but its delineation reveals more details

and intricacies: It is the teaching that engages the students in the hard, messy work of learning. It motivates and empowers students by giving them some control over learning process. It is the teaching that encourages collaboration, acknowledging the classroom (be it virtual or real) as a community where everyone shares the learning agenda. It promotes students' reflection about what they are learning and how they are learning it. It includes explicit learning skills instruction (Weimer, 2013).

Student engagement through learner-centred approaches leads to desirable student outcomes. The benefits of learner-centred education include increased motivation for learning and greater satisfaction with school; these outcomes lead to a greater academic achievement. Students in learner-centred programs differ from students in more instructor-centred programs in some concrete and specific ways (Wiley, 2009). Teachers must provide enough encouragement and motivation to students to strive harder to achieve higher grades in the subjects. They may establish a reward system that will recognize the students with exemplary performance during quizzes or major examinations to increase their motivation to exert more effort in dealing with their studies (Laguador, 2013).

The last type of the teaching method which is the participatory/interactive method is driven by the situational analysis of what is the most appropriate thing for us to learn/do now given the situation of learners and the teacher. They require a participatory understanding of varied domains and factors (Makokha & Ongwae, 2001). This method is also termed as learner-centred method. This means that the activities done with this method focuses on how the students analyse and learn the topic the instructor wants to imply. The use of teaching methods produces a variety of results. It may be strong and effective in one case, may be weak and harmful in another case and may still be in another case. The point is the teacher should develop some definite procedure as he requires more teaching experience through the

years, which could bring better results. Experience shows that this kind of result in possible if the teacher's exigency and convenience. The methods and strategies of teaching are the best means of improving the educational system of the country. By the methods and strategies used by the teachers in the classroom, students teach a lot of it in gain more knowledge and understand mean on the different situations in problems in daily life (Gutierrez, 2010).

2.11 Theories of Instruction

2.11.1 Constructivism

Constructivism is an epistemological view of knowledge acquisition emphasizing knowledge construction rather than knowledge transmission and the recording of information conveyed by others. The role of the learner is conceived as one of building and transforming knowledge. But what does it mean to construct knowledge? Within constructivism there are different notions of the nature of knowledge and the knowledge construction process. Moshman (1982) has identified three types of constructivism: exogenous constructivism, endogenous constructivism and dialectical constructivism.

In exogenous constructivism, as with the philosophy of realism, there is an external reality that is reconstructed as knowledge is formed. Thus one's mental structures develop to reflect the organization of the world. The information processing conceptualizations of cognitive psychology emphasize the representation view of constructivism, calling attention to how we construct and elaborate schemata and networks of information based on the external realities of the environments we experience.

Endogenous constructivism or cognitive constructivism (Cobb, 1994; Moshman, 1982) focuses on internal, individual constructions of knowledge. This perspective, which is derived from Piagetian theory (Piaget 1977, 1970), emphasizes individual knowledge construction stimulated by internal cognitive conflict as learners strive to resolve mental

disequilibrium. Essentially, children as well as older learners must negotiate the meaning of experiences and phenomena that are discrepant from their existing schema. Students may be said to author their own knowledge, advancing their cognitive structures by revising and creating new understandings out of existing ones. This is accomplished through individual or socially mediated discovery-oriented learning activities.

Dialectical constructivism or social constructivism (Brown, Collins, & Duguid, 1989; Rogoff,1990) views the origin of knowledge construction as being the social intersection of people, interactions that involve sharing, comparing and debating among learners and mentors. Through a highly interactive process, the social milieu of learning is accorded centre stage and learners both refine their own meanings and help others find meaning. In this way knowledge is mutually built.This view is a direct reflection of Vygotsky's (1978) sociocultural theory of learning, which accentuates the supportive guidance of mentors as they enable the apprentice learner to achieve successively more complex skill, understanding, and ultimately independent competence.

The fundamental nature of social constructivism is collaborative social interaction in contrast to individual investigation of cognitive constructivism. Through the cognitive give and take of social interactions, one constructs personal knowledge. In addition, the context in which learning occurs is inseparable from emergent thought. This latter view known as contextualism in psychology becomes a central tenet of constructivism when expressed as situated cognition. Social constructivism captures the most general extant perspective on constructivism with its emphasis on the importance of social exchanges for cognitive growth and the impact of culture and historical context on learning.

While there are several interpretations of what [constructivist] theory means, most agree that it involves a dramatic change in the focus of teaching, putting the students' own efforts to understand at the centre of the educational enterprise (Prawat, 1992). Thus despite

the differences sketched above, there is important congruence among most constructivists with regard to four central characteristics believed to influence all learning: 1) learners construct their own learning; 2) the dependence of new learning on students' existing understanding; 3) the critical role of social interaction and; 4) the necessity of authentic learning tasks for meaningful learning (Bruning, Royce, & Dennison, 1995; Pressley, Harris, & Marks, 1992).

For the learner to construct meaning, he must actively strive to make sense of new experiences and in so doing must relate it to what is already known or believed about a topic. Students develop knowledge through an active construction process, not through the passive reception of information (Brophy, 1992). In other words, learners must build their own understanding. How information is presented and how learners are supported in the process of constructing knowledge are of major significance. The pre-existing knowledge that learners bring to each learning task is emphasized too. Students' current understandings provide the immediate context for interpreting any new learning. Regardless of the nature or sophistication of a learner's existing schema, each person's existing knowledge structure will have a powerful influence on what is learned and whether and how conceptual change occurs. Dialogue is the catalyst for knowledge acquisition. Understanding is facilitated by exchanges that occur through social interaction, through questioning and explaining, challenging and offering timely support and feedback. The concept of learning communities has been offered as the ideal learning culture for group instruction (Brown, 1994; Brown and Campione, 1994). These communities focus on helping group members learn, by supporting one another through respectful listening and encouragement. The goal is to engender a spirit and culture of openness, exploration and a shared commitment to learning.

Situated cognition or learning is a concept advocated in social constructivist approaches and is a natural extension of the importance attached to the context, social and

cultural, in which learning is believed to be born. Knowledge is conceived as being embedded in and connected to the situation where the learning occurs. As a consequence, thinking and knowledge that is constructed are inextricably tied to the immediate social and physical context of the learning experience. And what is learned tends to be context-bound or tied to the situation in which it is learned (Lave & Wenger, 1991). Evidence for the situational nature of learning can be seen in numerous cases where students' school learning fails to transfer readily relevant tasks outside of school. Brown, Collins, and Duguid (1989) chronicle how people can acquire rather sophisticated mathematical operations in one setting and yet be quite unable to apply those same operations in another setting.

Just how teachers and peers support and contribute to learning is clarified by the concepts of scaffolding, cognitive apprenticeship, tutoring and cooperative learning and learning communities (Brown, 1994; Rogoff, 1998). Cognition is viewed as a collaborative process and modern constructivist thought provides the theoretical basis for cooperative learning, project or problem based learning and other discovery oriented instructional approaches, all of which appeal to the powerful social nature of learning. As students are exposed to their peers' thinking processes, appropriation of others' ideas and ways of thinking is possible. Therefore, constructivists make extensive use of cooperative learning tasks, as well as peer tutoring, believing that students will learn more readily from having dialog with each other about significant problems.

A second key concept derives from Vygotsky's concept of zone of proximal development (Kozulin, 1986). When children work on tasks that cannot be accomplished alone but can be successfully completed with the assistance of a person competent in the task, they are said to be working within their zone of proximal development. Children working in cooperative groups will generally encounter a peer who possesses a slightly higher cognitive level, one within the child's zone of proximal development.

The concept of cognitive apprenticeship is analogous to that of apprenticeships in many occupations where one learns on the job by closely working with a master. The master models behaviour and gives feedback and gradually allows the novice increasing opportunity to independently exercise the skills of the profession. A substantial aspect of the learning is the socialization into the norms and behaviour of the profession. The experience of teachers and physician interns demonstrates the shadowing and modelling that occurs during this critical period in the development and induction into these professions. More generally, one can say that a cognitive apprenticeship relationship exists between teachers and students to the extent that teachers provide scaffolding or mediate learning for students. At the same time that students are given complex, authentic tasks such as projects, simulations and problems involving community issues, they are also given sufficient assistance to achieve the desired outcomes.

An important aspect of teacher guidance relates to the constructivist notion of generative learning. Since constructivists believe that the learner must transform or appropriate whatever is learned, one can say that all learning is discovered. To appropriate new understandings from one's social environment and to become an efficient maker of meaning requires the adoption of specific intellectual skills, ones that should be modelled from more competent adults and peers. Thus generative learning strategies (learning-to-learn) may be explicitly taught to students or may be discovered by students as they are trying to find strategies for solving problems. For example, students have been guided to generate their own questions and summaries and analogies during reading (King, 1992a; Kourilsky & Wittrock, 1992; Wittrock, 1991), and while listening to lectures (King, 1992b). Reciprocal teaching (Palincsar & Brown, 1984) is a successful method for teaching reading comprehension in which metacognitive skills, including question generation, prediction and summary are taught through teacher modelling, followed by student enactment of the same

metacognitive behaviours. The goal is to encourage self-regulated learning, by helping learners develop effective learning strategies and knowledge of when to use them.

The types of tasks that are selected for students to engage in (complex, problem-based, real-life) reveal the emphasis of constructivists on a top-down view of instruction. Students are intentionally confronted with complex tasks that can only be performed with a teacher's guidance and that create an immediate need to develop relevant skills. When students are faced with the task of writing a letter to the county commissioners, they must begin to develop the necessary grammar, spelling, and punctuation skills. So, students learn what they need to know in order to figure out how to accomplish authentic but, difficult tasks at the upper range of their zone of proximal development.

The more traditional approach to instruction, a bottom-up strategy, involves isolating the basic skills, teaching these separately and building these incrementally before tackling higher order tasks. This is an essentially objectivist and behavioural approach to instruction, although cognitive information processing views often lead to similar instructional practices. Constructivists turn this highly sequential approach on its head. Instead of carefully structuring the elements of topics to be learned, learning proceeds from the natural need to develop understanding and skills required for completion of significant tasks. Learning occurs in a manner analogous to just in time manufacturing, where raw materials are received just prior to their use rather than held in expensive inventories. As Fosnot (1996) puts it, constructivism is fundamentally non-positivist and as such it stands on completely new ground -often in direct opposition to both behaviourism and maturationism. Rather than behaviours or skills as the goal of instruction, concept development and deep understanding are the foci; rather than stages being the result of maturation, they are understood as constructions of active learner reorganization.

Constructivists believe that meaningful learning or "purposeful knowledge" may be promoted by a learning environment that has three main features. First, one should use authentic problems, that is, tasks having the contextual feel of the real world. Secondly, the learning environment should represent the natural complexity of the real world and avoid oversimplification of the task and instruction. And thirdly, a constructivist learning environment should support collaborative knowledge construction through social negotiation (Jonassen, 1991). It is believed that such learning environments invite learners through interaction with others to engage in problem finding, problem solving and inquiry learning. Through the combination of complex, real-world problems and meaningful social interaction among learners and teacher, constructivists assert that learners are encouraged to discover or invent new rules or revise old rules and in the process come to a deeper understanding of underlying concepts and principles. The discovery process embedded in a constructivist learning environment also allows learners to re-evaluate what they know, and to change their understanding based on what they have directly learned from their environment. Constructivists argue that the open-ended, problem-based, inquiry learning characteristics of constructivist learning environments require learners to struggle with the ill-structured, real-world problems in order to solve them.

One of the fundamental underlying principles of constructivism is the concept of "socio-cognitive conflict." This mechanism for learning, derived from the work of Piaget and his disciples, proposes that cognitive conflicts lead to higher levels of reasoning and learning (Webb & Palinscar, 1996). Cognitive conflict arises through the dynamics of social exchange when the learner realizes that there is a contradiction between his/her existing understanding and what he/she is experiencing. Constructivists claim that it is reasonable to believe that the best environment for creating such conflict is an environment in which problems are posed, questions are raised and alternative perspectives are presented. Problem-based environments

also promote peer collaboration and exchange of ideas, which are the major sources of cognitive conflict (Piaget, 1976). Evidence shows that giving up one's current understanding in order to reach a new perspective will be best attained by an exchange of ideas (Damon, 1984; Radziszewska & Rogoff, 1991).

From a motivational perspective, evidence shows that since problem-based, inquiry learning environments simulate real world situations, students' natural curiosity is stimulated and learners find their learning experiences to be more interesting, more engaging and more relevant. Furthermore, problem-based environments make higher cognitive, metacognitive, affective, and resource management demands upon the learner. These high level demands encourage learners to develop expertise in how to learn as well as in learning to construct useful knowledge (Perkins, 1991). A problem-based learning environment is much more likely to engage learners in the learning process through identification, formulation and restructuring of goals; planning; development and execution of plans; self-monitoring; and appropriate use of resource management strategies.

2.11.2 Instructionism

Educational application of objectivism is referred to as instructionism. In contemporary educational contexts, instructionism is the term used to describe teacher-centred, teacher- controlled, outcome-driven, highly structured, and non-interactive instructional practices (DynaGloss, 1998). Instructionism has been referred to as systematic teaching, explicit teaching, direct teaching, and active teaching (Schug, Tarver, & Western, 2001), terms that emphasize teacher, as opposed to student, behavior (Jonassen, 1996). Because the content of instruction and the content of knowledge are assumed to be isomorphic (Driscoll & Rowley, 1997), teachers are conceptualized as transmitters of objective reality; students are viewed as passive receptors of knowledge. Since learning

outcomes are objective and standardized (Kazdin, 2001), instruction is directed toward efficient movement of skills and knowledge from the teacher to the student, often in the form of drill, practice, and rote memorization. Instructionists focus on detailed lesson preparation, on teacher organization and management, and on teacher communication and effectiveness (Adams & Engelmann, 1996; Kameenui & Carnine, 1998).

When children fail to learn in school, instructional characteristics, not student characteristics, are assumed to be the cause (Adams & Engelmann, 1996). Engelmann and Carnine (1991) point out that children are perfectly capable of learning anything that we can teach. We know that the intellectual crippling of children is caused by faulty instruction – not by faulty children. Instructionists claim that they succeed where other educational approaches fail, most notably with students with learning and behavioural challenges (Swanson, 2001). Driscoll and Rowley (1997) summarize instructionism in terms of: 1) identification of student prerequisite or entry-level skills, 2) determination of the most effective methods of knowledge transmission, and 3) formation of evaluative strategies that detect problems of transmission that must be corrected for the instruction to be deemed effective. While there are many classroom applications of instructionism, a particularly notable example is direct instruction.

2.11.3 Direct Instruction

Direct instruction emerged from Siegfried Engelmann's early work on beginning literacy (Bereiter & Engelmann, 1966) and resulted in a programmed instructional package published under the trade name DISTAR (Direct Instruction System for Teaching and Remediation; Engelmann & Carnine, 1991). Over the past decades, the term direct instruction

evolved to include educational practices that generally adhere to Engelmann's initial emphasis on well-developed and carefully planned lessons designed around small learning increments and clearly defined and prescribed teaching tasks (Swanson, 2001). Originally associated with attempts to improve the educational outcomes of disadvantaged learners, during the past 40 years, direct instruction has been applied to teaching elementary through secondary language, reading, mathematics, higher-order thinking and reasoning skills, written composition, science, and social studies (Adams & Engelmann, 1996; Kameenui & Carnine, 1998).

Direct instruction applies a basic set of instructional principles. First, all skills and concepts are broken into sub-skills or small component skills that are taught in isolation (Kameenui & Carnine, 1998). Advocates of direct instruction maintain that specific underlying skills are prerequisite to school learning (Hallahan, Kauffman, & Lloyd, 1999; Stickland, 1998).

The goal of sound instruction is to identify and efficiently teach these prerequisite sub-skills. For example, proponents of direct instruction endorse the teaching of alphabet sounds as an essential prerequisite literacy skill. The aim of direct phonics teaching is to make explicit to students the alphabetic principle. As Byrne (1996) observed, it might be prudent to tell children directly about the alphabetic principle since it appears unwise to rely on their discovery of it themselves.

The apparent relative success of programs that do support the wisdom of direct instruction. Each of these identified prerequisite sub-skills is taught and re-taught until students achieve a high level of mastery (Adams & Engelmann, 1996). The assumption is that mastery of prerequisite skills is necessary to the development of more complex skills and that partial or incomplete learning accumulates over time to result in inadequate patterns of skills and knowledge. Binder (1996) claimed that: Educational programs will be more effective in

the long run if they produce a more focused, but truly mastered, repertoire rather than a broad but fragile repertoire. The latter might be said to characterize the usual educational approach in America, which introduces but never ensures mastery of a broad range of skills and knowledge.

Direct instruction, then, is summarized as a systematic set of procedures for: 1) determining students learning requirements, 2) enhancing the efficacy of the learning environment, and 3) monitoring student curricular progress so that instruction can be improved and corresponding learning outcomes maximized (Schweinhart, & Weikart, 1997). Direct instruction reflects instructionist assumptions - lessons are teacher-controlled, prescriptive, and focused on observable student achievement outcomes. In stark contrast to objectivist assumptions and direct instruction are subjectivist assumptions and constructivist instruction.

2.12 Summary of Reviewed Literature

Relevant literature has been reviewed with focus on the concept of Cooperative Learning, Inquiry-Based Learning, Self- efficacy, Attitude to Economics, and Economics Achievement. Following this literature review, it has been observed that previous researchers have researched on the impact of Cooperative Learning and Inquiry-Based Learning on Academic Achievement in either mathematics or science but very few works on Economics. The dichotomy in achievement by students of Economics has in recent times attracted considerable attention by interested concerned stakeholders because of the poor Economic indicators affecting the less developed nations.

In most secondary schools, the application of knowledge of Economics to solve real life problem is still low maybe because some teachers do not have the required skill to use

Cooperative Learning and Inquiry-Based Learning to solve Economics' questions. Despite the introduction of different approaches adopted to learning and instruction, this dichotomy has been attributed to success and failure rate of students in some schools. Some factors attributed to the above statement include inadequate instructional materials, poor teaching methods, students and teachers attitude toward Economics. Thus, effective instruction should enable students investigate the causes of poor performance and connections between various concepts and topics within Economics. The introduction of Cooperative Learning can provide an avenue for students to learn together and improve on their performance because it involves activities that engage students in exchanging ideas.

In the classroom environment, the use of Inquiry-Based Learning also helps to improve academic achievement in Economics. Effective use of Inquiry-Based Learning would help students formulate questions; investigate to find answer; build new understandings, meanings and knowledge; and communicate what they have learnt to others. In classrooms where teachers emphasize Inquiry-Based Learning, students are actively involved in solving authentic (real-life) problems within the context of the curriculum and/or community. However, insufficient literature on Cooperative Learning and Inquiry-Based Learning on Economics, attitude and self-efficacy has created a wide gap in the instruction to produce better achievement in Economics, hence the need for this study.

CHAPTER THREE

RESEARCH METHODOLOGY

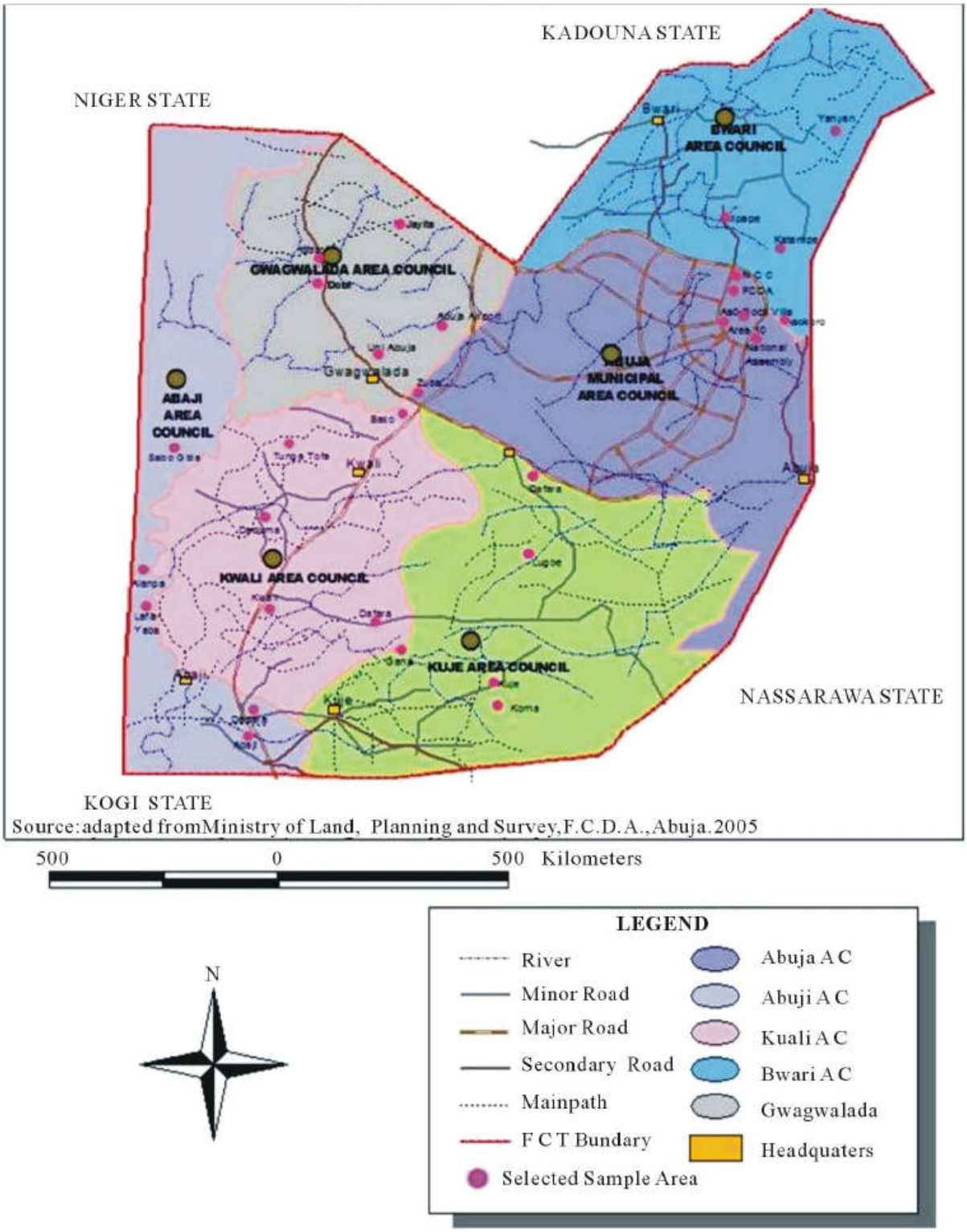
This chapter focused on the research method used in this study. This was examined under the following headings: Research design, study area, the population, the sample and sampling techniques, instrumentation, data collection, treatment procedure as well as the procedure for analysing the stated hypotheses.

3.1 Research Design

The study adopted a quasi-experimental separate sample pre-test/post-test control group design. It consists of three experimental groups, two training groups and one control. The quasi-experimental design was appropriate for this study because it involved human behaviour and did not permit complete randomization of subjects and control of all variables (Nwadinigwe, 2002; Ilogu, 2005).Training was done in intact classes which the researcher equated by matching and randomization of treatment. The control group was placed on a waiting list.

3.2 Study Area and justification for the choice.

The study was carried out in Federal Capital Territory (FCT) Abuja, Nigeria. Abuja was purposefully selected for this study due to its diversity, unique characteristics, multiple opportunities, availability of schools for high and low socio-economic classes and its relative representation of the entire Nigerian population. Abuja is the capital city of Nigeria. It has six Area Councils namely Abaji, Bwari, Gwagwalada, Abuja Municipal Area Council, Kuje and Kwali. The area (Abuja) has 157 Public Secondary Schools and high number of teachers. The area was also considered for this study because of its proximity to the researcher. It is the place where the esearcher resides. The student population in the city is and appear enlightened to participate actively in the study. Therefore, the city was purposefully chosen.



3.3 Population of the Study

The target population for this study comprised the entire senior secondary school students in the Federal Capital Territory (FCT) Abuja. However, the accessible population for this study was 494 senior secondary school two (SS2) students in three schools in Abuja Municipal Area Council of the Federal Capital Territory Abuja because they are the most stable class and they are not distracted by any external examinations at the time of the study.

3.4 Sample and Sampling Techniques

The participants for the study comprised 275 Senior Secondary 11 Students (134 male participants and 141 female participants) who completed the pre-assessment measures. The students were selected from three Senior Secondary Schools namly; i. Model Senior Secondary School, Maitama, ii. Government Secondary School Wuse Zone 3, and iii. Government Secondary School Garki, Area 10.The sample size in each of the schools was 96,91, and 88 totalling 275. The study adopted a multi-stage sampling technique. All the public secondary schoosl in Abuja Municipal Area Council (AMAC) were put into five strata using the Six Districts in the Municipal (Gwarinpa, Maitama, Wuse 11, Wuse one 5 and 6, and Garki). Firstly, three Educational Districts were selected out of the five Districts in AMAC through the hat and draw. Secondly, one co-educational school(Model Senior Secondary School, Maitama, Government Secondary School Wuse Zone 3, and Government Secondary School Garki, Area 10.) was randomly drawn from each of the three Educational Districts. Thirdly, two SS 2 classes were randomly drawn from each of the three secondary schools (co-educational) bringing the total to six classes. The students in the six SS11 classes were administered the Numerical Aptitude Test (NAT) developed by Obe for baseline assessment. Those who scored 40 and above in the NAT were included in the study as participants. Consequently, 275 students who met the baseline assessment criteria served as participants in the study.

Table 2: Distribution of students who participated in the study and types of training received.

Schools	Type of Training	No of Groups	M	F	Total
A	CL	1	55	41	96
B	IBL	1	38	53	91
C	CG	1	41	47	88
Total		3	134	141	275

A = Model Senior Secondary School, Maitama, Abuja

B = Government Secondary School Wuse Zone 3, ABUJA

C = Government Secondary School Garki Area 10, Abuja

CL = Cooperative Learning

IBL = Inquiry-Based Learning

CTG = Control Group

TNP = Total number of Participants

3.4.1 Research Variables

There are two major variables in the study, Dependent Variables and Independent Variables. The Instructional Methods constitute the independent variables while self-efficacy, attitude and performance constitude the dependent variables.

3.5 Instrumentation

The following research instruments were used:

i. Economics Achievement Test (EAT)

ii. Economics Attitude Scale (EAS)

iii. Self-efficacy Questionnaire (SEQ)

iv. Numerical Aptitude Test (NAT)

1. Economics Achievement Test (EAT)

This test was developed and validated by the researcher to measure students' achievement in Economics as a result of the treatment. It comprises of three sections. Section A contains items that seek personal information from the students' such as class, gender, religion and class type. Section B part consists of fifty (50) multiple-choice questions. The test was constructed by the researcher to cover each of the concepts under study. That is ten items each on labour market, element of treatment of utility theory, price determination, market structure and industries in Nigeria. Also, this section consist of one theory question from each of the five topics taught. The test was developed based on the first term's scheme of work in Economics. Table 3.1 provide the Test Blue-print. The questions were adapted from past WAEC question papers by the researcher.

Table 3 : Test Blueprint for Fifty (50) items Multiple Choice Objectives Economics Test

				20%	20%	20%	20%	10%	10%	
		Week	Weight	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation	Total
1	Labour market	2	20	2	2	2	2	1	1	10
2	Utility theory	3	30	3	3	3	3	2	1	15
3	Unemployment	2	20	2	2	2	2	1	1	10
4	Market structure	2	20	2	2	2	2	1	1	10
5	Industries in Nigeria	1	10	1	1	1	1	-	1	5
		10	**100**	**10**	**10**	**10**	**10**	**5**	**5**	**50**

2. Economics Attitude Scale (EAS)

The researcher adopteda four point Likert type questionnaire developed by Adu (2002) and was adapted in this study. The EAS was used to explore participants' attitude to Economics. It is a 20-item scale of attitude to Economics. The response of each item was Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). Scoring of the instruments was assigned 4,3,2,1 for positive items. The points were awarded in the reversed order for the negative items. To ascertain the internal consistency, the Cronbach's alpha was used to obtain a reliability coefficient of0.82.

3. Self-efficacy Questionnaire (SEQ)

The researcher adopted a 25- item scale developed by Schwazer and Jerusalem (1995) to assess self-efficacy based on personality disposition. The scale has internal consistency between alpha 0.75 and 0.90. The scale is measured on a 4 point Likert scaling model with options ranging from 1 for strongly disagree to 4 for strongly agree.

4. Numerical Aptitude Test (NAT)

The researcher adopteda subtest of Scholastic Aptitude Test (SAT) developed by Obe (1982)to assess number series, arithmetic reasoning, coding, spatial reasoning (involving diagrams), and numericalcomputation and word problems. The Level 3 of the numerical aptitude subtest (SAT-3) was chosen for the study. The SAT-3 is suitable for senior secondary level and transition from senior secondary to tertiary level. The test-retest reliability coefficients ranged from 0.79 to 0.86. The numerical aptitude subtest correlated 0.64 and 0.67 respectively with mathematics and Economics achievement tests.

3.6 Validity and Reliability of Instrument

The test was validated by the researcher's supervisors and experts in Economics. Test-retest reliability was used to measure the stability of the instrument. Two forms of the test were constructed (Form A and B). Form A was used for pre-test, while form B was used for the post-test. The two forms correlated 0.76 with each other. Test-retest reliability coefficient of 0.82 and 0.78 respectively was obtained for the two forms of the achievements tests at four weeks interval.

3.7 Appointment and Training of Research Assistants

Three research assistants were appointed to assist in the administration of the research instruments. The research assistants are teachers with a minimum of first degree in education. They were trained on how to administer the instruments.

3.8 Pilot Study

A pilot study was carried out in one of the schools in the Area Council not selected for the main study. The content validity of the Instruments (Economics Achievement Test, Economics Attitude Scale and Numerical Aptitude Test) was established by submitting the instruments to experts in test development, educational psychology, Economics Department, and the researcher's supervisors. The test-retest measure of stability of the instruments was used to establish the reliability co-efficient of the instruments using thirty students (15 boys and 15 girls) within two weeks interval. Pearson Product Moment Correlation was used and r of 0.75 and 0.71 was established respectively between the two-test administered to the students indicating that the test is reliable and adequate for the study.

3.9 Study phases

The study was conducted in three phases over eight weeksduration.

Phase One

This phase lasted for one week. Here the researcher was introduced by the Vice Principal (Academics) to the SS 2 classes chosen for the study as their new Economics Teacher.Thereafter, the students were administered the Economics Achievement Test (Form A), Economics Attitude Scale, Self-efficacy Questionnaire and the Numerical Aptitude Test. All the instruments were used for pre-test assessments except the Numerical Aptitude Test which was used for baseline assessment.

Phase Two

This phase lasted for six weeks. The three co-educational secondary schools earlier selected for the study were randomly assigned to one of the three experimental conditions namely, Inquiry-Based Learning, Cooperative Learning and Control. The two SS 2 classes in each school were taught twelve lessons in Economics for six weeks at one lesson per week. Each lesson lasted for 45 minutes and double lessons 90 minutes. The researcher developed detailed lesson plan for each class session. The topics for the lessons were drawn from the first term scheme of work for SS 2 Economics. The researcher taught the lessons in all the schools based on the instructional method assigned to the school. Below are the descriptions of each instructional method.

Phase Three

One week after exposure to Economics lesson based on the assigned instructional method, the post-test assessment measures were re-administered to the participants. This included the

Economics Achievement Test (Form B), Economics Attitude Scale and Self-efficacy Questionnaire.

1. Cooperative Learning (CL)

Cooperative learning is an instructional method that encourages students to work in small groups, each with students of different levels of ability that use a variety of learning activities to improve their understanding of a subject or topic. Working with students using Cooperative Learning involves serious planning. According to Odili (1990), the class in Cooperative Learning is divided into groups, and each group has specific work to do. Also, group rewards and individual accountability within the group are essential. The group uses a variety of learning activities in cooperative form to improve their understanding of a particular topic or subject. Each member of a team is responsible not only for learning what is taught but also for helping team mates to learn, thus creating an atmosphere of achievement (Ronsini, 2000).

Most classes in schools consist of academically good students and weak students so encouraging students to work in groups or teams could help them complement each other's strength and weakness in Economics. Every student has their different ability in the knowledge of Economics they could bring to the group, also slow learners will benefit from interacting with fast learners and academically sound students will be proud to make an impact by helping classmates have a better understanding of a topic or subject.

Research has shown that the biggest advantage of Cooperative Learning groups is that individuals can learn from each other and develop alternative solutions to problems (Huang, 2000).

Introduction

The researcher interacted with students, introduced herself and asked students to do same. She got all students involved in the exercise, gave room to every student to talk and treated them equally so she could identify active and quite students. She introduced the instructional method to the students after administering the pre-test.

The researcher selected students in hat and draw and randomly assigned them into six groups. Group leaders were appointed on weekly basis to enable every student in the group to have the opportunity to lead. The researcher divides topics into sub-topics and each group was given a sub-topic at the end of every lesson to discuss and prepare for presentation for next lesson. At every lesson, students were made to seat with group members, they were given some minutes to discuss and then each group leader was given five minutes to summarize. Group reward and individual accountability within the groups was taken into consideration and treated very importantly while lessons were going on. Students were advised to meet with their group members to discuss and prepare when they are less busy before the next lesson.

At the end of every period, groups will be assessed by answering these questions:

a. What did each member do that was helpful to the group?
b. What can each member do to make the group work better?
c. Can they apply their knowledge to similar problems or questions?
d. Are they able to extend their reasoning and analysis to new situations or problems?

In conclusion, the researcher gave a brief explanation of the entire topic. She gave room for questions and students were advised and encouraged to apply what they have learnt to real life situations.

The researcher writes down the next topic and sub-topics on the board and gave the various groups their sub-topics. She advised students to prepare on their own and group members were advised to meet and discuss for the next lesson.

At the end of every lesson assignment was given to students. Notes were given out to students to copy.

2. Inquiry-Based Learning (IBL)

IBL is mostly about asking questions. It entails thinking and reasoning things out by students. It is a stimulus for learning, thinking and questioning. It involves serious planning by the researcher. Students questions, ideas and observations are placed at the centre of the learning experience. In a class where IBL is used, the teacher is expected to ask stimulating questions to arouse the curiosity of the students. Questions asked by teachers are expected to help students in exploring ideas that could lead to the formation of questions and creation of plans to investigate such questions. Students were classified as inquirers while the teacher was classified as a facilitators or moderators of learning.

It is also important to note that "students learn from known to unknown concepts". Learning could be more interesting and meaningful to students when they are allowed to ask and investigate questions. According to Lee (2004), Inquiry Learning is an array of classroom practices that promote students learning through guided and increasingly independent investigation of complex questions and problems, often for which there is no single answer.

Introduction

The researcher interacted with students, introduced herself and asked students to do same. She got all students involved in the exercise, gave room to every student to talk and treated

them equally so she could identify introverts and extroverts. She introduced the instructional method to the students after administering the pre-test.

The researcher introduced new rules and regulations that must be adhered to such as;

1. Questions were asked in a way that everyone was involved in thinking about them.
2. Sitting pattern was arranged to encourage participation.
3. Questions, answers and suggestions were treated very importantly.
4. Students were given time to reason and get solution to questions.
5. Students were advised not to raise their hands when questions wereasked so that some students would not stop thinking. Most times when students raise their hands up to answer question, some students would stop thinking because they feel the teacher will not ask them anymore.
6. Students were motivated when they respond to question by affirming, "thank you", "that is really interesting", "what other ideas do you have" etc.
7. The content in the lesson plan was not explained by the researcher; rather students were guided to get the explanations through questions.

The researcher asked students practical questions by asking how they can apply what they have learnt to real life issues or situations.

In conclusion, the researcher gave a brief explanation of the entire topic. She gave room for questions and students were advised and encouraged to apply what they have learnt to real life situations. The researcher writes down the next topic on the board. She advised students to read ahead for the next lesson.At the end of every lesson assignment were given to students. Notes were given out to students to copy.

3. The Control Group

The participants in the control group were taught the same topics with the traditional instructional method. The researcher writes down the next topic on the board. She advised students to read ahead for the next lesson from their textbooks.

At the end of every lesson assignment were given to students. Notes were given out to students to copy.Participants were not involved in Cooperative Learning or Inquiry-Based Learning.

3.10 Method of Data Analysis

Data generated from this study was subjected to both descriptive and inferential statistics. Hypotheses 1, 2, 3 and 5 were tested using Analysis of Covariance.(ANCOVA)

Hypothesis 4 was tested using Multiple Regression. All hypotheses were tested at 0.05 level of significance.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

Data obtained from the field work using the research instruments was presented here.Descriptive and Inferential statistical tools were used where applicable .The five hypotheses formulated to guide the study were tested with Analysis of Covariance (ANCOVA) at 0.05 level of significance. The results are presented in tables, which are grouped under each of the hypotheses according to the different independent measures. The Least Significance Difference (LSD) Post Hoc Multiple Comparison tool was used to determine where the significance of the groups differences lies. The acceptance or rejection of the hypotheses was provided with evidence to support them.

4.1 Hypotheses Testing

Hypothesis One: There is no significant difference in the post-test scores in Economics Achievement Test among participants exposed to the three experimental conditions (Cooperative Learning, Inquiry-Based Learning and Control Group).The hypothesis was tested using Analysis of covariance (ANCOVA). The results of the analysis are presented in Tables 4, 5, and 6.

Table 4: Descriptive data on pre and post-test scores of performance of students in economics in the three experimental groups

Group	N	Pre-test		Post-Test		Mean Differences
		Mean	S.D	Mean	S.D	
Control	88	52.77	8.73	54.44	10.66	1.67
Inquiry-Based Learning	91	50.78	9.71	62.40	7.00	11.62
Cooperative Learning	96	52.77	7.84	68.55	7.31	15.78
Total	275	52.44	8.76	61.98	8.32	9.36

A cursory look at Table 4 shows that the control group had the least mean difference of 1.67 in the post-test score in Economics. On the other hand, students exposed to Cooperative Learning had the highest gain of 15.78 in the post test scores more than students exposed to the Inquiry-Based Learning with mean difference post scores of 11.62. To determine whether significant difference exists in the post-test scores of the students in Economics due to the intervention among the participants, analysis of covariance statistics (ANCOVA) was done. The results are presented in Table 5.

Table 5: Analysis of covariance on the difference in performance of the student in Economics across the three experimental groups

Source	Type III Sum of Squares	Df	Mean Square	Fcal.	Sig.
Corrected Model	10564.90	3	3521.63	53.11	*
Covariates	21703.20	1	21703.20	327.32	*
Pre-test Economics	1404.11	1	14.11	1.18	n.s
Experimental groups	10045.93	2	5022.97	75.75	*
Error	17969.10	271	66.31		
Total	1085634.00	275			
Corrected Total	28534.00	274			

*Significant at 0.05 df = 3. 274 Critical F = 2.61

The data in Table 5 revealed that a calculated F value of 75.754 was obtained which is greater than the F critical of 2.61, $p < 0.05$ given 3 and 274 degree of freedom at 0.005 level of significance. Therefore hypothesis 1 was rejected. This implies that there is a difference between the post-tests in Economics among participants exposed to the three experimental conditions. To determine which pair of the experiment groups recorded significant differences in Economics achievement. A Least Significance Difference (LSD) multiple comparison was employed. The results are presented in Table 6.

Table 6: Multiple comparison on performance in Economics among the three experimental groups

(I) Experimental Conditions	(J) Experimental Conditions	Mean Difference (I-J)
Control	Inquiry-Based	-8.727*
	Cooperative	-17.992*
Inquiry-Based	Cooperative	-9.265*

*. The mean difference is significant at the .05 level

The LSD post hoc test were found between the control group and those exposed to Inquiry-Based Learning with a mean difference of -8.727 ($p<0.05$) and those expose to Cooperative Learning with a mean difference of 17.992 ($p<0.05$). This implies that the Control group had lower post test scores in Economics than students exposed to Inquiry-Based Learning and Cooperative Learning. Similarly, students exposed to cooperative learning have a higher scores in post-test Economics scores more than those exposed to the Inquiry-Based Learning with a mean difference of -9.265 ($p<0.05$).This implies that Cooperative Learningwas better in improving students performance in Economics than Inquiry-Based Learning. However, students who undergo Inquiry-Based Learning are better than those in the Control group.

4.2 Testing Hypothesis Two

Hypothesis Two: There is no significant difference in the post-test scores in self-efficacy among participants exposed to the three experimental groups.The hypothesis was tested using one way analysis of covariance (ANCOVA). The results of the analysis are presented in Tables 7, 8, and 9.

Table 7: Descriptive data on pre and post-test scores in Self-Efficacy in the three experimental groups

Group		Pre-test		Post- Test		Mean
	N	Mean	S.D	Mean	S.D	Differences
Control	88	65.88	10.21	79.03	10.40	13.15
Inquiry-Based Learning	91	64.59	10.84	93.39	8.83	28.88
Cooperative Learning	96	65.62	11.34	86.42	10.30	20.80
Total	275	65.37	10.80	86.36	9.84	18.27

Table 7 revealed that the Control group had the least mean difference of 13.15 in the post test self-efficacy. On the other hand, students exposed to Inquiry-Based Learning had the highest gain of 28.88 in the post test self-efficacy scores more than students exposed to the Cooperative Learning with mean difference post scores of 20.80. To determine whether significant difference exists in the post test self-efficacy scores due to the intervention among the participants, analysis of covariance statistics (ANCOVA) was done. The result is presented in Table 8.

Table 8: Analysis of covariance on the difference in the post-test Self-efficacy across the three experimental groups.

Source	Type III Sum of Squares	Df	Mean Square	Fcal.	Sig.
Corrected Model	19067.85	99	192.61	2.02	.*
Intercept	1365980.52	1	1365980.52	14357.58	*
Experimental Groups	7588.26	2	3794.13	39.88	*
Pre self-efficacy	3086.63	34	90.78	0.954	*
Exp. Groups x Pre self-efficacy	7043.53	63	111.80	1.18	n.s
Error	16649.51	175	95.14		
Total	2086681.00	275			
Corrected Total	35717.36	274			

* Significant at 0.05, df =2. 275 Critical F = 2.61

n.s. = not significant

Evidence from the Table 9 revealed that the calculated F of 39.88 is greater than critical F at a degree of freedom of 2.275. This is significant at 5% ($p<0.05$). This implies that there is a significant difference between post test scores of experimental group on self-efficacy due to intervention strategies. To determine pair-wise differences in the self-efficacy, a Least Significance Difference (LSD) multiple comparison was employed. The results are presented in Table 9.

Table 9: Multiple comparison on Self-Efficacy in Economics among the three experimental groups

(I) group	(J) group	Mean Difference (I-J)
Control	Inquiry-Based	-14.35*-
	Cooperative	-7.38*
Inquiry-Based	Cooperative	6.97*

* Significant at 0.05

The LSD post hoc test were found between the control group and those exposed to Inquiry-Based Learning with a mean difference of -14.35 ($p<0.05$) and those expose to Cooperative Learning with a mean difference of 7.38 ($p<0.05$). This implies that the Control group had lower post test scores in self-efficacy than students exposed to inquiry-Based Learning and Cooperative Learning. Similarly, students exposed to Inquiry-Based Learning have higher scores in post self-efficacy more than those exposed to the Cooperative Learning with a mean difference of 6.97 ($p<0.05$).This implies that Inquiry-Based Learning was better in improving self-efficacy in Economics than Cooperative Learning. On the other hand, Cooperative Learning is better than those exposed to the traditional teaching method.

4.3 Testing Hypothesis Three

Hypothesis Three: There is no significant difference in the post test scores in attitude to Economics among the participants exposed to the three experimental conditions.The hypothesis was tested using one way analysis of covariance (ANCOVA). The results of the analysis are presented in Tables 10, 11, and 12.

Table 10: Descriptive data on pre-and post-test scores in attitude towards Economics in the three experimental groups.

Group		Pre-test		Post- Test		Mean
	N	Mean	S.D	Mean	S.D	Differences
Control	88	40.14	7.08	52.05	7.52	11.91
Inquiry-Based Learning	91	40.92	7.56	54.03	6.41	13.11
Cooperative Learning	96	40.40	7.28	56.90	7.47	16.50
Total	275	40.49	10.80	54.33	7.80	13.84

Table 10 revealed that the Control group had the least mean difference of 11.91 in the post test attitude to Economics. On the other hand, students exposed to Cooperative Leaning had the highest gain of 16.50 in the post test scores in attitude to Economics more than students exposed to the Inquiry-Based Learning with mean difference post scores of 13.11. To determine whether significant difference exists in the post test scores in attitude to learning Economics due to the intervention among the participants, analysis of covariance statistics (ANCOVA) was done. The result is presented in Table 11.

Table 11: Analysis of covariance on the difference in the post-test attitude to learning across the three experimental groups

Source	Type III Sum of Squares	Df	Mean Square	Fcal	Sig.
Corrected Model	6905.27	82	84.21	1.66	*
Intercept	454131.66	1	454131.66	8932.24	*
Experimental	1581.66	2	790.83	15.56	*
Pre Attitude	1344.78	28	48.03	0.95	n.s
Exp. Groups x Pre Attitude	2815.28	52	54.14	1.07	n.s
Error	97761.64	192	50.84		4
Total	726851.00	275			
Corrected Total	16666.91	274			

* Significant at 0.05 df = 3. 274 Critical F = 2.61 n.s = not significant

Table 11 revealed that the calculated F of 15.56 is greater than critical F at a degree of freedom of 2. 275. This is significant at 5% ($p<0.05$). This implies that there is a significant difference between post-test scores of experimental group on attitude to learning Economics due to intervention strategies. However, there is no significant difference in the post scores on attitude to Economics learning as a result of the experimental group and pre attitude. Also, there is no significant difference in pre scores of the attitude to learning Economics. To determine which pair of the experimental conditions evidenced significant in the self-efficacy, a Least Significance Difference (LSD) multiple comparison was employed. The results are presented in Table 12.

Table 12: Multiple comparison on attitude to learning in Economics among the three experimental groups

(I) group	(J) group	Mean Difference (I-J)
	Inquiry-Based	-1.99
Control	Cooperative	-5.40*
Inquiry-Based	Cooperative	7.39*

*. The mean difference is significant at the .0.05 level.

The LSD post hoc test were found between the control group and Cooperative Learning with a mean difference of 5.40($p<0.05$). This implies that the Control group had lower post test scores in attitude to learning Economics than the Cooperative group. Similarly, students exposed to Inquiry-Basedlearning have a higher score in attitude to leaning more than those exposed to Cooperative Learning with a mean difference of 7.39 ($p<0.05$).This implies that Inquiry-Based Learning was better in improving attitude to learning in Economics than Cooperative Learning. On the other hand, those exposed to Cooperative Learning are better than those in the Control.

4.4 Testing Hypothesis Four

Hypothesis Four: There is no significant linear relationship between Economics Achievement post-test scores and set of dependent variables (attitude to Economics, self-efficacy).In testing the hypothesis, linear regression was employed using post-test scores in Economics as a dependent variable, while post-test scores attitude to learning and self-efficacy were taken as independent variables. The results are presented in Tables 13, 14 and 15.

Table 13: Model summary of the regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.67	0.45	0.46	0.97

a. Predictors: (Constant), post-test attitude, post-test efficacy

To determine the degree of association between the dependent variable and independent variables, the R^2 is computed and the result shown that adjusted R^2 ($R^2 = 0.45$). This implies that about 46.1% of the performance in Economics was traceable to self-efficacy and attitude to learning Economics.

Table 14: Difference in the attitude and Self -Efficacy among the subjects

Model		Sum of Squares	df	Mean Square	Fcal.	Sig.
1	Regression	1514.10	2	757.05	7.62	*
	Residual	27019.90	272	99.34		
	Total	28534.00	274			

* Significant, $p<0.05$

In order to determine if a significant relationship exist between the dependent variable and independent variables the F-statistics was computed. The model calculated F=7.62 is greater than critical F of 3.99, thus attitude to learning Economics together with self-efficacy has a significant linear relationship with achievement in Economics.

Table 15: Relative contribution of the Self-Efficacy and Attitude to Learning with performance in Economics

Model		Unstandardized Coefficients		Standardized Coefficients	Tcal	Sig.
		B	Std. Error	Beta		
1	(Constant)	63.92	5.633		11.35	*
	post efficacy	0.13	0.05	0.15	2.48	*
	post attitude	0.26	0.08	0.20	3.36	*

*Significant, $p<0.05$

In order to determine the relative contribution of the independent variables to the dependent variable in the model, the t-statistics was computed. The calculated t for post-test self-efficacy of 2.480 and post-test attitude to learning Economics (3.36) was significant at 5% ($p<0.05$), thus a significant relationship exists between post-test self-efficacy and post-test attitude with performance in Economics. This implies that self-efficacy and attitude accounted for a significant variation in post test scores of the Economics Achievement Test.

4.5 Testing Hypothesis Five

Hypothesis Five: There is no significant difference in the post test scores in Economics Achievement Test among participants in the three experimental groups due to gender.

Table 16: Descriptive data on pre and post-test scores in the performance in Economics-based on gender in the three experimental groups.

Groups			Pre-test Scores		Post-test Scores		Mean difference
	N	**Gender**	**Mean**	**SD**	**Mean**	**SD**	
Control	41	Male	52.94	8.94	52.55	10.21	-0.39
	47	Female	54.22	8.64	55.47	10.84	1.25
Inquiry-based	38	Male	46.95	9.99	63.32	5.59	13.37
learning	53	Female	53.53	8.57	62.45	7.90	8.92
Cooperative	55	Male	42.20	7.72	69.15	9.15	26.95
learning	41	Female	44.17	5.26	67.76	3.60	23.59
Total	**275**						

Table 16 revealed that male students in the control group had the least mean difference of 0.39 in the post-test Economics scores. This was followed by mean difference of female in the control group of 1.25. In the same vein, male students exposed to the Inquiry-Based Learning with a mean difference of 13.37 performed better than the female students who had a mean difference of 8.92. Similarly, male students exposed to Cooperative Learning with a mean difference of 26.95 performed better in the post Economics test than female students with mean scores of 23.59. To determine whether significant difference exists in the post-test

scores in Economics due to participants' gender, analysis of covariance statistics (ANCOVA) was done. The result is presented in Table 17.

Table 17: Analysis of covariance on the difference in the post-test scores in Economics and gender across the three experimental groups

Source	Type III Sum of Squares	Df	Mean Square	Fcal.	Sig.
Corrected Model	9378.37	5	1875.67	26.34	.*
Intercept	993563.82	1	993563.82	13952.49	*
Sex	20.35	1	20.35	0.29	n.s
Experimental Groups	9049.10	2	4524.55	63.54	*
Sex x Exp. Groups	204.67	2	102.33	1.44	n.s
Error	19155.63	269	71.21		
Total	1085634.00	275			
Corrected Total	28534.00	274			

Table 17 revealed that the calculated F of 0.286 is less than the critical F at degree of freedom of 2. 275. This is not significant at 5% ($p>0.05$). This implies that there is no significant difference between post-test scores in Economics due to gender. However, there is no significant difference in the post-test scores in Economics due to the experimental groups ($F=4524.55$, $p<0.05$). Also, there is no significant difference in the post-test scores of students in Economics due to gender and experimental groups ($F=1.437$, $p>0.05$). Thus, the null hypothesis is therefore accepted.

4.6 Summary of Findings

1. There is a significant difference between the post-test in Economics among participants exposed to the three experimental conditions. Cooperative Learning was more effective in students' performance in Economics.
2. There is a significant difference in post-test scores on self-efficacy due to intervention strategies. Participants exposed to Inquiry-Based Learning have higher scores in post self-efficacy more than those exposed to the Cooperative Learning and control.
3. There is a significant difference in the post-test scores on attitude to learning Economics among the experimental groups.Inquiry-Based Learning and cooperative learning successfully improved the participants' attitude to learning Economics than those in the control.
4. There is a significant linear relationship between Economics performance test scores and a set of dependant variables (attitude to Economics and self- efficacy). Both self-efficacy and attitude to learning Economics accounted for a significant variation in students' performance in Economics.
5. There is no significant difference in the post-test scores in Economics among participants in the three experimental groups due to gender.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

This study examined the effect of two instructional methods on self-efficacy, attitude to, and performance in economics among selected secondary school students in Abuja, Nigeria. This chapter discusses the result of the statistical analysis relating to the research questions postulated and the hypotheses tested. The discussion of findings tries to place the findings of the study in perspective vis-à-vis other related findings. It highlights the implications of the findings to Educational Psychologist, Guidance Counsellors, Policy Makers, Researchers and Evaluation Experts in Nigeria. The chapter also provides specific recommendations on the findings.

5.1 Discussion of Findings

Relationship between post-test scores in economics achievement test among participants exposed to the three experimental conditions. The Findings from the study revealed that there is a difference between the post tests in Economics among participants exposed to CooperativeLlearning and Inquiry-Based Learning. This findings was derived from the testing of hypothesis one which stated that there is no significant difference in the post-test scores in economivcs achievement test among participants exposed to the three experimental conditions. From the analysis it was discovererd that Cooperative Learning was better in improving student performance in Economics than Inquiry-Based Learning. However, students who undergo Inquiry-Based Learning are better than those in the Control group. This implies that the Control group had lower post test scores in Economics than students exposed to Inquiry-Based Learning and Cooperative Learning. Similarly, students exposed to cooperative learning have a higher scores in post-test Economics scores more than those

exposed to the Inquiry-Based Learning. This is in consonance with the study of Recesso and Orrill (2008) that teachers in an Inquiry-Based Learning environment help students identify real questions and refine them into learning projects or opportunities. In addition, the finding is in agreement with Recesso and Orrill **(**2008) that by engaging in inquiries, students' increase their understanding of the subject matter, investigate and develop the knowledge and skills needed to answer questions and investigate for greater understanding. In the same vein, the study agreed with Shane and Wojnowski (2005) assertion that students learn best when they construct their own knowledge-based on multiple experiences with a concept or skill. Furthermore, the study is in agreement with Bandura (1994) who opined that Cooperative Learning structures in which students work together and help one another also tend to promote more positive self-evaluations of capability and higher academic attainments than individualistic or competitive ones. Furthermore, it agreed with Ward (2001) that Inquiry Learning helped in building on previous constructed knowledge; students can better grasp the concepts and can move from simply knowing the material to understanding it.

The effects of self-efficacy on post-test scores of thje participants as va result of the instructional strategies adopted. The findings from the study statesthat there is a significant difference in the post-test scores of self-efficacy due to the instructional strategies.This findings was derived from the testing of hypothesis two there is no significant difference in the post-test scores in self-efficacy among participants exposed to the three experimental groups. From the analysis it was discovererd that Inquiry-Based Learning was better in improving the self-efficacy of students in Economics than Cooperative Learning. On the other hand, those taught with Cooperative Learning was better than those exposed to the traditional teaching method. This implies that the Control group had lower post test scores in self-efficacy than students exposed to inquiry-Based Learning and Cooperative Learning.

Similarly, students exposed to Inquiry-Based Learning have higher scores in post self-efficacy more than those exposed to the Cooperative Learning. This is in agreement with Bandura (1997) who opined that if students master a challenging task with limited assistance, their levels of self-efficacy will rise. Also, self-efficacy beliefs affect how people approach new challenges and will contribute to performance since these beliefs influence thought processes, motivation, and behaviour (Bandura, (1997). The findings also agreed with that of Multon, Brown and Lent (1991) who in a meta-analysis of 39 studies from 1977 to 1988 found positive and statistically significant relationships among self-efficacy, academic performance and persistence for a number of disciplines.

Difference in the attitude of students to learning Economics. The findings from this study revealed that there is a significant difference between post-test scores of experimental group on attitude to learning Economics due to intervention strategies.This findings was derived from the testing of hypothesis three which states that there is no significant difference in the post test scores on attitude to learning Economics among the experimental groups. From the analysis it was discovererd that Inquiry-Based Learning was better in improving attitude to learning in Economics than Cooperative Learning. On the other hand, those exposed to Cooperative Learning are better than those in the Control. This implies that the Control group had lower post test scores in attitude to learning Economics than the Cooperative group. Similarly, students exposed to Inquiry-Based learning have a higher score in attitude to leaning more than those exposed to Cooperative Learning. This finding agrees with that of Odufuye (1985) who opined that the attitude of a learner towards Economics will determine the measure of the learner's attractiveness or repulsiveness to Economics. The study also agreed with Olaosebikan (1985) view that attitudes are related to the achievement and enrolment in any subject. In a similar vein, Freeman (1997) found that students' attitude

towards a subject is shown to be directly linked to achievement in the subject area. Dirk (2001) opined that attitude of students to learn, helped them to "be connected" with the learning materials and improved their achievement.

The liner relationship between achievement in economics and a set of dependent variables. The findings from this study revealed that there is a significant linear relationship between Economics Achievement post-test scores and set of dependent variables (attitude to Economics, self-efficacy). This findings was derived from the testing of hypothesis four which states that there is no significant linear relationship between Economics Achievement post-test scores and set of dependent variables (attitude to Economics, self-efficacy). In testing the hypothesis, linear regression was employed using post-test scores in Economics as a dependent variable, while post-test scores of attitude to learning and self-efficacy were taken as independent variables, a significant relationship exists between post-test self-efficacy and post-test attitude with performance in Economics. This implies that self-efficacy and attitude accounted for a significant variation in post test scores of the Economics Achievement Test.

This was rejected is in line with Marburgar (2005) whose findings showed that students exposed to Cooperative Learning did better in micro- economics test than those taught with Traditional method.The findings was derived from hypothesis four which states that there is no significant linear relationship between Economics Achievement post test scores and a set of dependent variables (attitude to Economics, self- efficacy)In a study in which nutrition was taught to both elementary and secondary students using Cooperative Learning strategy, Wodarski and Adelson (1980) found significant gains between the pre-test and post test scores. Johnson and Johnson, and Holubec (1995) conducted a meta-analysis of 122 studies related to Cooperative Learning and concluded that there was strong evidence for

the superiority of Cooperative Learning in promoting achievement over competitive and individualistic strategies. Therefore, significant relationship exists between economics achievement and dependent variables if instructional methods are put in place and well implemented.

Gender differentials in post-test scores in economics among students in the three experimental groups. The findings revealed that there is no significant difference in post-test scores in Economics performance due to gender. This findings was derived from the testing ofhypotheses five which states that there is no significant gender deferential in post-test scores in Economics among participants in the three experimental groups. This implies that there is no significant difference between post-test scores in Economics due to gender. However, there is no significant difference in the post-test scores in Economics due to the experimental groups Also, there is no significant difference in the post-test scores of students in Economics due to gender and experimental groups. Thus, the null hypothesis is therefore accepted.

According to Pintrich, DeGroot, and Tippins (1990), female students have lower self-efficacy in Mathematics and Social Science compared to male students. Similarly, Smist, Archambault and Owen (1997) reported that males display more positive attitudes towards careers in social science than females. This finding agreed with that of Miller, Greene, Montalvo, Ravindran and Nichols (1996) that females had lower perceived ability levels in mathematics and social sciences subject than males.

5.2 Conclusion

In view of the findings of this study, the following conclusions were made.

1. Economics Achievement Test significantly differed among students exposed to the three experimental conditions. The study found out that Cooperative Learning was more effective in students' performance in Economics than Inquiry- based Learning.
2. There was a significant difference in the test scores on students' self-efficacy due to intervention strategies. Participants exposed to Inquiry-Based Learning have higher scores in post self-efficacy more than those exposed to the Cooperative Learning and control.
3. There was a significant difference in the test scores on attitude to learning Economics among the experimental groups. Inquiry-Based Learning and cooperative learning successfully improved the participants' attitude to learning Economics than those in the control.
4. There was a significant linear relationship between Economics performance test scores and a set of dependant variables (attitude to Economics and self- efficacy). Both self-efficacy and attitude to learning Economics accounted for a significant variation in students' performance in Economics.
5. There was no significant difference in the post-test scores in Economics among participants in the three experimental groups due to gender difference.

5.3 Recommendations

Based on the findings of this study, the following recommendations are proffered:

1. There is need to engage students in the teaching and learning process in order to help them increase their understanding of the subject. They should not merely know what the teacher says but should have a better grasp of the concepts. This will have a high impact on students' performance in Economics.

2. The Students should be encouraged to believe that their actions produce the outcomes they desires and to persevere in the face of obstacles or adverse circumstances.
3. There is the need for students to be connected with the learning materials. This will improve performance in Economics.
4. Frequent and regular use of cooperative learning and inquiry-based learning would help students to learn many life skills and share common goals which allow them to learn to trust each other as they achieve more than would be possible on their own.

5.4 Contributions to Knowledge

1. The study demonstrates that cooperative learning is a viable instructional strategy to foster the performance in economics of senior secondary students in Nigeria.
2. This study establishes that students self-efficay about performance in economics can be enhanced though exposure to inquiry-based learning.
3. This study demonstrates the relevance of cooperative learning and inquiry-based learning in changing negative attitude of senior secondary students towards economics.
4. The study establishes that students self-efficacy and attitude to economics accounts for a significant variation in students performance in economics.

5.5 Suggestions for Further Research

The researcher hereby recommed that the following studies can be carried out.

1. This study only focused on the use of two instructional methods on self-efficacy and attitude to in Economics. It will be complementary to explore the impact of two instructional methods on self-efficacy and attitude to in English Language and some other vital school subjects.

2. Effects of self-efficacy on students performance in Geography in Nigeria.

3. Teachers role in improving students attitude in Social Sciences, Sceinces and Business studies etc.

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APPENDIX 1

UNIVERSITY OF LAGOS

SCHOOL OF POST GRADUATE STUDIES

DEPARTMENT OF EDUCATIONAL FOUNDATIONS

(WITH EDUCATIONAL PSYCHOLOGY)

ECONOMICS ACHIEVEMENT TEST (EAT).

SECTION A: RESPONDENT DEMOGRAPHIC DETAILS

Instruction

Please read the questions below and tick (√) only in any of the options provided for each question that represents your best option. Where options are not provided, please fill in your answer(s).

(1) Respondents (Student) Class

SSS I ( ) SSS II ( ) SSS III ( )

(3) Sex of Respondents

(M) Male ( ) (F) Female ( )

(4) Religion

Christian ( ) Muslim ( ) Others ( ) Please Specify.....

(5) Type of Student

Art ( ) Science ( )

SECTION B:

INTRODUCTION

Attempt all questions in this section.

Read carefully before answering the question. Each of the items is followed by options A-D. Circle the correct option.

All question carries equal mark.

1. Economics is a social science which studies human behaviour as a relationship between ends and scarce means which have alternative uses'' Ends in the definitions refers to

   A. Output C. Wants

   B. Choice D. Resources

2. When the price of community 'A' Increases; the demand for commodity 'B' decreases. This means that commodity A and B are

   A. Giffen goods C. Supplementary goods

   B. Complementary goods D. Close substitute

3. The price system refers to the system by which……..

A. Price is determined by the forces of demand and supply

B. Government controls price in the economy

C. The producers fix the price of their products

D. Consumer determines price in the market

4. Which of the following is regarded as money in Economics?

A. Bank deposit C. Cheques

B. Currency notes D. Coins

5. The law of demand states that……

A. As a price increases quantity demanded remains constant

B. Demand increases as price increases

C. As price falls, quantity demanded also falls

D. Quantity demands increases as price falls

6. A rational consumer do all following except……..

A. Buying more of the lower price than at a higher buyer

B. Reacting to changes in price

C. Complying with the law of demand

D. Buying more at a high price than at a low price

7. Which of the following channel through which commodities get to the final consumer?

A. Manufacturer- wholesaler- retailer-consumer

B. Manufacture-retailer-wholesaler-consumer

C. Manufacture-sales representative-wholesaler-consumer

D. Manufacture- wholesaler-agents-consumer

8. Which of the following functions do retailers perform in an economy?

A. Hoarding C. Distribution

B. Exchange D. Production

9. Which of the following is the approximate working age in Nigeria?

A. 1-15 C. 15-65

B. 65 and Above D. 40-65

10. If the number of the labourers is increased from 30 to 32 and production 3000kg to 3300kg of corn, generate the MP.

A. 100kg B.150kg C. 30kg D. 300kg

11. A normal demand curve slopes……

A. Upwards from left to right

B. Downwards from left to right

C. Downwards from right to left

D. Upwards form the origin

12. To ensure high employment rates, developing countries should?

A. Build more universities

B. Protect infant industries

C. Organise trade fairs

D. Prevent rural-urban drift

13. Which of the following correctly illustrate the chain of distribution?

A. Manufacturer-wholesaler-retailer-consumer

B. Consumer-retailer-wholesaler-manufacturer

C. Wholesaler-manufacturer-retailer-consumer

D. Distributor-consumer-wholesaler-manufacturer

14. The efficiency of a country's labour force depends on the following except

A. Improved working condition

B. Frequency strikes and locks-outs

C. Better health care facilities

15. A demand schedule is described as a table containing the

A. Price and quantity of a commodity

B. Relationship between price and quantity demanded of a commodity

C. Relationship between quantity demanded and supplied of a market

D. Quantity of goods the consumer is prepared to buy.

16. Examples of an industry include all except

A. Manufacturing industry

B. Construction industry

C. Transport industry

D. Galloping industry

17. Which of the following should be considered in the plan to locate an industry?

A. Nearness to the market

B . A pool of skilled labour

C. High prices of inputs

D. Nearness of pollution

18. A products has utility if it?

A. Is useful

B. Satisfies consumers wants

C. Takes more resources to produce additional units

D. Violate the law of demand

19. Which of the following is derived demand?

A. Labour B. Butter C.Television D. Bread

20. The willingness of an individual to buy a commodity backed up with price at a given time is

Known as……demand

A. Competitive C. Derived

B. Composite D. Effective

21. Scarcity in economics arises because…….

A. The resources available are adequate

B. Individuals have limited

C. Resources are limited in the supply

D. Human begins have limited wants

22. Which of these does not encourage industrial development?

A. Tax exemption

B. Government direct participation

C. Limitation of market for industrial products

D. Provision of infrastructural facilities

23. An entrepreneur will locate its industry in a place……..

A. Nearest to the home town

B. Where the cost of production will be minimised

C. Nearest to his wife home town

D. Where there is no other industry

24. Money market is made up of institutions which provide

A. Short-term loan B. Long-term loan

C. Capital-term loan D. Money-term loan

25. One of this is an example of capital markets

A. Discount houses B. Finance companies

C. Saving banks D. Central banks

26. If demand is perfectly inelastic, the effective incidence of an indirect tax will be transferred to

A. Employer B. Employee C.Consumer D.Civil servants.

27. The additional satisfaction derived from the consumption of one more unit of a good is referred to as

A. Marginal utility B. Marginal product

C. Marginal revenue D. Marginal cost

28. A thirsty man drank 5 cups pf water, which of the cups gave him the greatest utility?

A The second cup B. The first cup

C The third cup D. The fourth cu

29. Money market is made up of institutions which provide

A. short-term loan B. long-term loan

B. capital-term loan C. money-term loan

30. The factor which determines a change in quantity demanded is

A. the commodity B. the price C. taste D. fashion.

31. Which of the following best describe total product (TP)?

A. TP = MP + AP B. AP + L = TP C. TP = Mp x AP D. TP = AP x L

32. Cost of production is known as?

A. Variable cost divided by the total unit of output

B. Various expenses incurred in the use of the four factors of production

C. Money cost divided by the total unit of output

D. Real cost incurred in the use of production plants unit of output

33. Given that fixed cost is N500.00, variable cost is N1,500 and output is 50 units, find the cost of producing one.

A. N 2.00 B. N60.00 C. N50.00 D. N40.00

34. Calculate for TC

A. N50.00 B. N2000.00 C. N5000.00 D. N40.00

35. Which of the following best describe revenue?

A. Marginal Revenue from a firm's sale of its commodities

B. Income earned from government sale of its commodities

C. average and fixed revenue from firm's sale of its commodities

D. Income earned from a firm's sale of its commodities.

36. Profit can be divided by

A. Subtracting total cost from total revenue

B. Subtracting average revenue from total cost

C. Dividing total revenue by total output

D. Dividing marginal revenue by marginal cost

37. Economics argues that cost must be viewed in terms of

A. money cost B. amount of money spent

C. alternative forgone D. total cost

38. The two schools of thought in the analysis of utility are ____ and ____

39. If the last naira spent on each commodity by a consumer gave him equal satisfaction it me ans the consumer has been able to

A. Cut cost B. Maximize costs

C. Increase profits D. Maximize utility

40. A rational consumer utility maximization can be illustrated thus

$$\text{A. } \frac{MU}{PX} > \frac{MUX}{PY} \qquad \text{B. } \frac{MUX}{PY} = \frac{MUY}{PY}$$

$$\text{C. } \frac{MUX}{PX} = \frac{MUY}{PY} \qquad \text{D. } \frac{MUX}{PX} < \frac{MUY}{PY}$$

Match the following items according to the expression given in A-E

41. Demand curve slopes. (A) Effective demand

42. Supply curve slopes. (B) Demand Schedule

43. The higher the price, the higher the quantity (C) Upwards.

(D) Downwards

44. Demand curve is a diagrammatical representation of (E) Demanded

(F) Supplied

45. A demand schedule is described as a table containing the

A. Price and quantity of a commodity

B. Relationship between price and quantity demanded of a commodity

C. Relationship between quantity demanded and supplied of a market

D. Quantity of goods the consumer is prepared to buy.

46. An effect of unemployment include

A. Population control B. Technological progress

C. Earning capacity D. Escalation of crime.

47. To solve the problem of unemployment, government should do all except

A. Restructure the educational curricula at all levels

B. Encourage education beyond primary and secondary schools

C. Develop the rural areas

D. Use capital intensive method of production

48. If there is 20 million people in the working-class age group and 5 million of them are unemployed, compute the rate of unemployment

A. 25% B. 50% C.20% D. 5%

49. Voluntary unemployment differs from structural unemployment because

A. It is deliberate refusal of labour to work

B. It involves immobility of labour

C. There is increase in dependants

D. People are partially unemployed

50. The concept of unemployment could be used in relation to any of the factors of production which is

A. Idle and not being utilized for production

B. Not fully implemented in work

C. Fully utilized for production

D. Used part time in work.

SECTION C:

INSTRUCTION: Answer three (3) questions from this part.

1. What is Utility?

B. State the three (3) types of Utility and explain one (1)

2. Define demand for labour.

B. State and explain four (4) factors that affects the demand for labour.

3. Define the term market.

b. Explain four (4) characteristics of a perfect market.

4. Explain the term unemployment.

b. State and explain four (4) causes of unemployment.

5. Outline the role of industrialisation in the economic development of Nigeria.

APPENDIX II

UNIVERSITY OF LAGOS

SCHOOL OF POST GRADUATE STUDIES

DEPARTMENT OF EDUCATIONAL FOUNDATIONS

(WITH EDUCATIONAL PSYCHOLOGY)

SELF – EFFICACY QUESTIONNAIRE (SEQ)

Dear Respondent,

I am Doctoral student of the University of Lagos carrying out a research on the "*Effects of Two Instructional Methods on Self-Efficacy, Attitude to and Achievement in Economics among Senior Secondary Two Students in Abuja Municipal Council".*

The research is for academic purposes. Your responses to the questionnaire will be treated with absolute confidentiality, and you are indemnified of any error resulting from the filling of the questionnaire and final report of the research.

I humbly appeal to you to fill the questionnaire attached. Your responses will help in my primary data collection.

Thank you, for your anticipated cooperation.

Yours faithfully,

DIMOGU, TONYE

SECTION A: RESPONDENT DEMOGRAPHIC DETAILS

Instruction

Please read the questions below and tick (√) only in any of the options provided for each question that represents your best option. Where options are not provided, please fill in your answer(s).

(2) Respondents (Student) Class

SSS I ( ) SSS II ( ) SSS III ( )

(3) Sex of Respondents

(M) Male ( ) (F) Female ( )

(4) Religion

Christian ( ) Muslim ( ) Others ( ) Please Specify.....

(5) Type of Student

Art ( ) Science ( )

SECTION B:

Introduction:

You will be completing an honest, personal assessment of current self – efficacy questionnaire. Your first response is your best response. Let your feelings decide the best response for you. Response to each statement and tick (√) your response.

S/N	ITEMS				
		SA	A	D	SD
1.	I can always manage to solve difficult problems if I try hard enough.				
2.	If someone opposes me, I can find the means and ways to get what I want.				
3.	It is easy for me to stick to my aims and accomplish my goals.				
4.	I am confident that I could deal efficiently with unexpected events.				
5.	Thanks to my resourcefulness, I know how to handle unforeseen situations.				
6	I can solve most problems if I invest the necessary effort.				
7	I can remain calm when facing difficulties because I can rely on my coping abilities.				
8.	When I am confronted with a problem, I can usually find several solutions.				
9.	If I am in trouble, I can usually think of a solution.				
10.	I can usually handle whatever comes my way.				

APPENDIX III

UNIVERSITY OF LAGOS

SCHOOL OF POST GRADUATE STUDIES

DEPARTMENT OF EDUCATIONAL FOUNDATIONS

(WITH EDUCATIONAL PSYCHOLOGY)

ECONOMIC S ATTITUDE SCALE (EAS)

SECTION A: RESPONDENT DEMOGRAPHIC DETAILS

Instruction

Please read the questions below and tick (√) only in any of the options provided for each question that represents your best option. Where options are not provided, please fill in your answer(s).

(3) Respondents (Student) Class

SSS I ( ) SSS II ( ) SSS III ( )

(3) Sex of Respondents

(M) Male ( ) (F) Female ( )

(4) Religion

Christian ( ) Muslim ( ) Others ( ) Please Specify.....

(5) Type of Student

Art ( ) Science ( )

SECTION B:

Introduction:

You will be completing an honest, personal assessment of current self – efficacy questionnaire. Your first response is your best response. Let your feelings decide the best response for you. Response to each statement and tick (√) your response.

S/N	ITEMS				
		SA	A	D	SD
1.	Economics is not a very interesting subject.				
2.	Economics is a very worthwhile and necessary subject.				
3.	Economics makes me feel nervous and uncomfortable				
4.	I usually enjoyed Economics in school.				
5.	I don't want to take any more Economics than I absolutely have to.				
6	Other subjects are more important than Economics.				
7	I am very calm and unafraid when studying Economics.				
8.	I have seldom liked studying Economics.				
9.	I am interested in acquiring further Knowledge of Economics.				
10.	Economics helps to develop the mind and teaches a person to think.				
11.	Economics makes me feel uneasy and confused.				
12.	Economics is enjoyable and stimulating to me.				
13.	Economics is not especially important in everyday life.				
14.	Economics is dull and boring.				

15.	I plan to take as much Economics as I possibly can during my education.				
16.	Economics has contributed greatly to the progress off civilization.				
17.	Economics is one of my most dreaded subjects.				
18.	I like trying to solve new problems in Economics.				
19.	I am not motivated to work very hard on Economics problems.				
20.	Trying to understand Economics doesn't make me anxious.				
21.	Economics is not one of the most important subjects for people to study.				
22.	I don't get upset when trying to work Economics problems.				

APPENDIX IV

UNIVERSITY OF LAGOS

SCHOOL OF POST GRADUATE STUDIES

DEPARTMENT OF EDUCATIONAL FOUNDATIONS

(WITH EDUCATIONAL PSYCHOLOGY)

NUMERICAL APTITUDE TEST

Identify the missing number within the series.

1. 3, 11, 19, 27, ?

A	B	C	D	E
436	440	438	452	442

2. 3, 6, 11, 18, ?

A	B	C	D	E
24	25	26	27	28

3. 516, 497, 478, 459, ?

A	B	C	D	E
436	440	438	452	442

4. 316, 323, 332, 343, ?

A	B	C	D	E
356	357	358	351	359

5. 662, 645, 624, 599, ?

A	B	C	D	E
587	566	589	575	570

A	B	C	D	E

6. 33, ?, 19, 12, 5

31	26	29	27	24

7. 11, 19, ?, 41, 55

A	B	C	D	E
31	29	26	39	34

8. 98, 94, ?, 70, 38

A	B	C	D	E
89	85	86	87	88

9. 86, ?, 79, 75, 72, 68

A	B	C	D	E
82	80	85	84	83

10. 20, 30, 25, 35, 40, ?

A	B	C	D	E
45	35	25	30	50

11) Identify the missing number.

7	4
5	6

49	16
25	?

A	B	C	D	E
41	36	35	18	37

12) Identify the missing number.

4	14
35	26

11	31
73	?

A	B	C	D	E
51	56	45	55	52

13. Identify the missing number.

7	8
5	6

20	1
2	?

A	B	C	D	E
3	16	25	48	17

14. Identify the missing number.

41	44
36	66

72	78
62	?

A	B	C	D	E
120	122	130	132	98

15. Identify the missing number.

5	20	100	3	24
20	80	400	12	?

A	B	C	D	E
86	96	16	106	56

16. Identify the missing number.

8	?	6	9	7
5	7	3	6	4

A	B	C	D	E
16	14	11	10	9

17) It costs a manufacturer X dollars per component to make the first 1,000 components. All subsequent components cost X÷3 each. When X = $1.50 How much will it cost to manufacture 4,000 components?

A	B	C	D	E
$3,500	$3,000	$4,000	$3,250	$4,500

18) A train travelling at 60 mph enters a tunnel that is 5 miles long. The train is one mile long. How many minutes does it take for the whole train to pass through the tunnel?

A	B	C	D	E
7	4	10	5	6

19) In the Shelbyville election, the Republican candidate received one and a half times as many votes as the Democrat candidate. The Democrat candidate received one third more votes than the Independent candidate. 900 votes were cast for the Independent candidate. How many votes were cast for the Republican candidate?

A	B	C	D	E
900	1,400	1,600	1,000	1,800

20) Anna and John both drive to their new home 400 miles away. Anna drives the family car at an average speed of 60 mph. John drives the removal truck at an average speed of 50 mph. During the journey, Anna stops for a total of 1 hour and 20 minutes, John stops for half as long. What is the difference in minutes between their arrival times?

A	B	C	D	E
60	55	40	90	80

21) A total of 800 copies of a CD were sold. 60% were sold at 50% discount, 20% were sold at 30% discount and the remainder were sold at the full price of $8.95. What was the approximate total revenue in dollars?

A	B	C	D	E
4,679	4,579	4,779	4,499	4,521

22) In a survey, 3/16 of people said that they preferred to use self-service gas stations. 5/8 said that they preferred not to pump their own gas. The remaining 75 respondents said that they had no clear preference. How many people preferred self-service?

A	B	C	D	E
75	125	100	133	150

APPENDIX V

Department of Educational Foundations,
School of Post Graduate Studies,
University of Lagos,
Akoka, Lagos State.
20th October, 2014

The Administration Officer,
Ministry of Education,
Abuja Municipal Area Council,
Abuja, Nigeria.

Dear Sir/Madam,

PERMISSION TO CONDUCT RESEARCH IN YOUR SCHOOLS.

I humbly seek for your permission to use schools under AMAC Education office to educational research. The research which will involve training session on students test Self Efficacy and attitude would likely help to improve academic performance and instill lifelong learning in the students'.

Please, find attached, a letter of introduction from my University. Thanks in anticipation for granting my request.

Yours Faithfully

Dimogu, Tonye (Mrs).

MODEL SECONDARY SCHOOL

No. 1 Lake Chad Crescent,
Off IBB Way,
Maitama - Abuja.

email: mssm93@yahoo.com
website: www.mssmabuja.org

Tel: 09-2918947

Our Ref: _____
Your Ref: _____

Date: 06/07/17

The H.O.D.
Department of Educational Foundations,
Faculty of Education,
University of Lagos.

LETTER OF ATTESTATION

This is to notify you that:

Name: DIMOGU, TONYE

Matric No: 099034080

Status: Prospective Ph.D student

of the University of Lagos; carried out her Research work on the topics **"Effects of Two Instructional Methods on Self-Efficacy, Attitude to and Achievement in Economics"** among Senior Secondary Two (2) students of this school.

She was with us between the 27th of October and the 17th of December 2014. She also completed the duration slated for the research work in good time. She was well behaved in character and disposition. The school was quite proud of her attitude, diligence and sincerity to work, students and staff of the school.

Please accept my warmest regards.

Mrs Oti, E. Patience
Principal
08035872401

PRINCIPAL
MODEL SEC. SCHOOL
MAITAMA
SIGN _____ DATE 6/7/17

APPENDIX V11

DEPARTMENT OF EDUCATIONAL FOUNDATIONS
(WITH EDUCATION PSYCHOLOGY)
FACULTY OF EDUCATION
University Of Lagos, Nigeria

HEAD OF DEPARTMENT
Prof. G. C. Ilogu
B.sc (UNN), M.A; Ph.D. (SUNYAB, NEWYORK)
Dip; In-Law (Chicago) MNAE

Ext: 1948
Tel: 04932660-1

February 20, 2014

LETTER OF INTRODUCTION

TO WHOM IT MAY CONCERN

This is to confirm that **DIMOGU, TONYE** with matriculation number 099034080 is a Ph.D. student studying Educational Psychology in the Department of Educational Foundations, Faculty of Education, University of Lagos.

She is conducting a Research on the Topic 'Effects of Two Instructional Methods on Self-Efficacy, Attitude To and Achievement in Economics among Senior Secondary Two Students in Abuja Municipal Council'.

Please assist her in any necessary request based on the information given.

Thank you.

Prof. G. C. Ilogu

A
HOD (Arts),
P/s allocate classes
for the Student
Teacher.
VP (Acad)
27/2/14

APPENDIX VIII

KEYS FOR ECONOMICS ACHIEVEMENT TEST(EAT)

1.	B	26.	C
2.	C	27.	A
3.	A	28.	B
4.	C	29.	B
5.	B	30.	C
6.	A	31.	D
7.	A	32.	A
8.	B	33.	C
9.	C	34.	D
10.	B	35.	D
11.	B	36.	D
12.	B	37.	D
13.	A	38.	A
14.	A	39.	A
15.	D	40.	A
16.	D	41.	D
17.	A	42.	A
18	B	43.	B
19.	C	44.	A
20.	B	45.	B
21.	C	46.	D
22.	C	47.	C
23.	B	48.	C
24.	B	49.	A
25.	C	50.	B

APPENDIX IX

KEYS FOR NUMERICAL APTITUDE TEST

1)	B		11)	B		21)	B
2)	D		12)	D		22)	A
3)	B		13)	A			
4)	A		14)	B			
5)	E		15)	B			
6)	B		16)	D			
7)	B		17)	B			
8)	C		18)	E			
9)	A		19)	E			
10)	D		20)	C			