EFFECT OF COOPERATIVE LEARNING STRATEGY ON GEOGRAPHY STUDENTS' ACADEMIC PERFORMANCE IN SENIOR SECONDARY SCHOOLS IN SOKOTO STATE, NIGERIA

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M.ED/EDUC/13197/2010-2011

THESIS SUBMITTED TO SCHOOL OF POSTGRADUATE STUDIES IN PARTIAL FULFILLMENT FOR THE AWARD OF MASTERS DEGREE (M.ED) IN CURRICULUM AND INSTRUCTION OF THE DEPARTMENT OF EDUCATIONAL FOUNDATIONS AND CURRICULUM, FACULTY OF EDUCATION, AHMADU BELLO UNIVERSITY, ZARIA

MAY, 2015

DECLARATION

I hereby declare that the work in this thesis entitled “Effect of Cooperative Learning Strategy on Geography Students’ Academic Performance in Senior Secondary Schools in Sokoto State, Nigeria” was conducted by me under the supervision of Dr. A. Guga and Dr. S.U. El-Yakub. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at any institution.

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CERTIFICATION

This thesis titled "Effect of Cooperative Learning Strategy on Geography Students' Academic Performance in Senior Secondary Schools in Sokoto State, Nigeria", meets the regulations governing the award of Masters Degree in Curriculum and Instruction of Ahmadu Bello University, Zaria, Nigeria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This thesis is dedicated to my father, mother, wife and daughters as well as to my family for their supports.

ACKNOWLEDGMENTS

All praises is to Allah. I would like to express my deep appreciation to the members of supervisory Committee for this work, Dr. A. Guga and Dr. S.U. El-Yakub for their contributions, encouragement and assistance in many different ways. Thank you very much for your constructive feedback, suggestions and inspiration without which, this thesis would not have emerged and been completed. I am extremely grateful for all those who have provided me with their help, encouragement, and assistance in one way or the other in order to complete my thesis. I would like to begin with Prof. A.A. Bagudo and Prof. A.K. Tukur. I gratefully acknowledge their help, encouragement and scholarly guidance.

I am indebted to Dr. A.A. Dada, Dr. B.M. Shallah, Dr. M. Ibrahim and Dr. N. Baba. Thank you all for your material and moral supports as well as constructive feedbacks leading to successful completion of this thesis. May Allah (SWA) reward them abundantly. Also, worthy of acknowledgement are my lecturers: Late Prof. M. Ben Yunusa, (may his gentle soul rest in perfect peace) Dr. (Mrs) H.O. Yusuf, Dr. Abdulfatah, Dr. B. Maina, Dr. M.O. Dare among others. My sincere gratitude also goes to all academic staff of the department of Curriculum Studies and Educational Technology, Usmanu Danfodiyo University, Sokoto for their concern and moral support.

I must also appreciate the supports and friendship of the entire 2010/2011 M.Ed. Curriculum & Instruction students, most especially, Umar Dalhatu, Adamu Nuhu, Bashar Jahun, Abubakar Sado, Abdulrasheed Sarki to mention but a few. I am also particularly grateful to Mal. A.A. Yunusa, Mal. U.M. Zuguru, Mal. A.K. Tsafe, Mal. Abbas Mahmud, Mal. Suleman Lawal, Mal. I,J. Ishaq, Mal. A.U Funtua, Mal. A. Kastayal, Mal. Babangida Sa'idu, Mal. Nura Zubairu for their unquantifiable support and prayers. They are indeed unforgettable for their contributions.

I will remain grateful for the support and cooperation of the principals and students of all the schools involved in this research. I must acknowledge the contribution of Mal. Kabiru and Malama A'isha, who are my research Assistants. Thank you very much. I also appreciate the cooperation of staff of Ministry of Education, Sokoto State for providing me with needed input.

Special thank goes to my father, Alhaji Haliru Gandi, my mother, Late Hauwa'u Muh'd and my wife (Khadijat) and daughters (Salima and Jidda), bothers and sisters as well as entire Yarin Gandi family members for their immeasurable moral and financial support and prayers throughout my educational carrier. May Allah reward them with Aljanna Firdaus. Indeed I owe a great debt of gratitude to my parents.

My thanks also extend to the management of Usmanu Danfodiyo University, Sokoto for granting me the study fellowship to further advance my knowledge and also to those not mentioned above who have, in many unique ways, been of great support and assistance.

ABSTRACT

This study investigated the Effect of Cooperative Learning Strategy (CLS) on Geography Students' Academic Performance in Senior Secondary Schools in Sokoto State, Nigeria. To conduct the study, six objectives were stated and transformed into research questions and hypotheses to be responded to and tested respectively. Quasi experimental design involving experimental/control group, pre-test/post-test was used for the study. The population consists of 25,220 senior secondary geography students out of which 15,870 and 9,350 are males and females respectively. The sample size of the study was made up of 234 SS II geography (155 male and 79 female participants) drawn from four randomly selected intact classes from the four schools. The schools are: urban: Government Day Secondary school, Tudun wada, Sokoto and Government Day Secondary school, Arkilla; rural: Government Secondary School, Dundaye and Government Day Secondary School, Wamakko. GDSS Tudun Wada and GDSS Wamakko were the experimental groups, while GSS Dundaye and GDSS Arkilla were the control groups. The instrument used for data collection was Senior Secondary Geography Academic Performance Test (SSGAPT) with reliability coefficient of 0.78. Mean and standard deviation were used to respond to all the research questions raised and t-test statistics was used to test all the six null hypotheses stated at $p \leq 0.05$ level of significance. Findings from this analysis revealed that: there is significant difference between the academic performance of students taught Geography using Cooperative Learning Strategy and those taught using traditional lecture method in senior secondary schools in sokoto state, meaning that students in the experimental group performed significantly better than their counter part in the control group; there is no significant difference between the academic performances of male and female students taught Geography using Cooperative Learning Strategy in senior secondary schools in sokoto state; there is significant difference in the academic performance of urban and rural students when exposed to Cooperative Learning Strategy in favour of urban students; there is significant difference in students' performance in practical geography after exposure to Cooperative Learning Strategy; there is significant difference in students' academic performance in physical geography after exposure to Cooperative Learning Strategy and there is significant difference in students' academic performance in human geography after exposure to Cooperative Learning Strategy. Based on these findings, it was recommended that CLS should be used as alternative strategy to improve the teaching and learning of senior secondary geography.

ABBREVIATIONS

CAI: Computer Assisted Instruction

CBL: Computer Based Learning

CLS: Cooperative Learning Strategy

EL: E-Learning

FME: Federal Ministry of Education

FRN: Federal Republic of Nigeria

GDSS: Government Day Secondary School

GIS: Geographical Information System

ICT: Information and Communication Technology

NECO: National Examination Council

SS: Senior Secondary

SSCE: Senior Secondary Certificate Examination

SSGAPT: Senior Secondary Geography Academic Performance Test

SSPT: Social Studies Performance Test

TEL: Test of Economic Literacy

WAEC: West African Examination Council

WASSCE: West African Senior School Certificate Examination

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OPERATIONAL DEFINITION OF TERMS

- **Cooperative Learning Strategy:** An instructional strategy in which the students are organised into small groups of not more than five students to work cooperatively in order to accomplish their learning goal under the guidance of teacher.

- **Performance:** This refers to the extent to which an individual is able to respond correctly to a given test or examination.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The Nigerian policy on education has made provisions to make education of the citizenry both functional and relevant with a view to ensuring all round development. Specific provisions have also been made for different levels of education system so as to ensure effective curriculum delivery in schools. For the benefits of all citizens, the country's educational goals shall be clearly set out in terms of their relevance to the needs of the individual and those of the society, in consonance with the realities of the environment and the modern world (Federal Republic of Nigeria, (FRN, 2004). Orji and Uka (2012), argued that in order to actualize this in any society, there is the need of attending to certain unavoidable variables such as teaching materials, methods adopted, curriculum, teacher as well as students' interest. With particular reference to secondary education in Nigeria, various subjects have been included in the curriculum to enable pupils acquire knowledge and skills. Certain subjects are categorized as core while others are either vocational electives or non-vocational electives. Geography is found under both core and non-vocational electives categories. This shows the importance of Geography in achieving the national educational goals whose significance cannot be overemphasized.

However, teaching of Geography as science or social science subject in senior secondary schools is not without some problems. Poor academic performance of students in all science subjects and Geography in particular has been documented by many researchers. This has also been corroborated by high failure in public examinations in the country such as the West African Examination Council (WAEC) and National Examination Council (NECO). Studies have shown decline in students performance in sciences … and this has been attributed to the fact that strategies used in our classrooms are not very effective (Akinniyi,

Olaleye & Adewumi, 2008). Students' academic performance is being used as one of the predictors of overall quality of education system. To this end, Effandi and Iksan (2007), stated that the quality of education that teachers provide to students is dependent upon what the teachers do in the classrooms. Similarly, Awoyemi cited in Linda (2000), attributed the poor performance of students to the low quality of teachers. Alimi and Balogun (2010), showed positive relationship between teachers' attributes and students' academic performance in Geography.

The foregoing underscores the importance of teacher pedagogical effectiveness in achieving quality education and as correlate of students' academic performance. Persistent use of traditional teaching methods such as the lecture in Geography classrooms has been the underlying factor for student's poor performance in the subject. Clar and Wareham (2003), observed that Geography has traditionally used a wide range of teaching methods than many other subjects and the range has tended to expand further over the last few years. As a synthesis of other subjects, Geography has a number of recurring themes which distinguish it from other disciplines and help to unite the human and physical aspects of the subject. The nature of this subject calls for paradigm shift from teacher-centred to learner-centred instructional strategies that permit active involvement of learners in the learning process such that a more meaningful learning can be achieved.

The use of cooperative learning strategy (CLS) as an effective instructional strategy for improving the academic performance of students in a wide range of subject areas has been well-documented by several researchers. Johnson, Johnson and Stanne (2000), opined that:

> Modern cooperative learning a widely used instructional procedure in preschool through graduate school levels, in all subject areas, in all aspects of instruction and learning, in non traditional as well as traditional learning situations, and even in after school and non-school educational programs (p.2)

Cooperative learning has been called one of the biggest educational innovations of our time and represents research-based best practice for instruction (Ellis & Fouts, 1997). In cooperative learning situations there is positive interdependence among students' goal attainment, students perceive that they can reach their learning goals if and only if the other students in the learning group also reach their goals (Deutsch, 1962 in Johnson & Johnson, 1987). Cooperative learning or group learning strategy is an instructional strategy which organizes students into small groups so that they can work together to maximize their own and each other's learning (Teaching Methods, 2003).

Researches conducted so far on effects of CLS on students' learning outcomes have shown significant correlation between CLS and students' academic performance. Researchers such as Rahvard (2010); Slavin (2007) and Johnson and Johnson, (1987) have shown the effectiveness of CLS in promoting students' learning and academic performance, increasing their retention and enhancing their satisfaction with their learning experiences. It is against this background that the researcher intends to determine the effect of CLS on Geography students' academic performance in senior secondary schools in the study area, Sokoto State Nigeria.

1.2 Statement of the Problem

The general public outcry against poor academic performance of Senior Secondary School students in Senior Secondary Certificate Examination (SSCE) conducted by West African Examination Council (WAEC), National Examination Council (NECO) and similar bodies is illustrative of low quality education and associated teachers' ineffectiveness at this level. Secondary school teachers have been held responsible for growing decline in students' academic performance since the quality of education depends on the teachers as reflected in the performance of their duties. The results of learning are always influenced by the nature and quality of the methods and techniques employed for the teaching and learning of a

particular content, subject mater or learning experience (Mangal, 2009). Teachers' ineffectiveness in classroom interaction with students could be responsible for the observed poor performance of students and the widely acclaimed fallen standard of education in Nigeria (Akiri & Ugborugbo, 2009). Eduwen (1993), also discussed problems in teaching of Geography which included shortage of professionally trained teachers and subject wide coverage. Useni, Okolo and Yakubu (2012), attributed the problem of poor performance of secondary school students to the quality of teaching, environment and attitudes of students towards the subject. Students' performance in Geography is generally poor when compared with their performance in other subjects. Teachers' persistent use of ineffective instructional methods such as the lecture method has been responsible for students' poor academic performance in Geography. In this regard, Tshibalo (2003), attributed the poor performance of Geography students to the use of ineffective traditional teaching methods such as the lecture method. There is the need for the teachers to shift from their present traditional, teacher-centred to modern and student-centred strategies that enhance academic performance of students.

The search for more improved and modern method of teaching Geography has become part of the professional concern of Geography teachers if they are to succeed in their duties. There is need for the Geography teachers to try other teaching strategies that are found effective in other subjects. A variety of instructional strategies have been proposed and used in many different subject areas with positive effects on students' academic performance. As one of such strategies, cooperative learning strategy provides many learning opportunities that do not occur in the typical traditional classroom and its potential in science, mathematics and many different areas. For these reasons, geography teachers need to try cooperative learning strategy in their classes in order to improve their instructions and the students' academic performance. In the words of Van Wyk (2011) excellent and effective teaching

demands a host of devices, techniques and strategies not only to achieve cross critical outcomes, but because variety, itself, is a desirable. To enhance senior secondary school students' performance in Geography therefore, pedagogical competence of Geography teachers is highly imperative. In view of the fore going, a more improved and modern strategy of teaching Geography has been proposed for use at upper secondary school level- the cooperative learning strategy. In cooperative learning strategy, the emphasis is on getting students to work together on a given problem in small heterogeneous groups of 2 to 5 students in order to achieve a common goal. A Geography teacher using this strategy to teach an aspect of map reading can make use of limited topographical maps at his disposal to maximize learning among students even in large size class since our secondary schools are characterized by limited resources and large size classes.

Specifically therefore, the researcher seeks to determine the effects of CLS on Geography students' academic performance in senior secondary schools in sokoto state. This is with the view to providing information on the strategy and how Geography teachers can take advantage of it in teaching-learning process.

1.3 Objectives of the study

The main objectives of the study are to:

1. Determine the difference between the academic performances of students taught Geography using Cooperative Learning Strategy and those taught with traditional lecture method in Sokoto State.
2. Examine the extent to which cooperative Learning Strategy affects the academic performance of students in Geography in senior secondary schools in Sokoto state as a result of gender differences in Sokoto state.

3. Find out the difference between the academic performance of urban and rural students taught Geography with Cooperative Learning Strategy in senior secondary schools in Sokoto state.
4. Find out the differences in students' practical geography performance after exposure to Cooperative Learning Strategy in Geography in sokoto state.
5. Investigate the effect of Cooperative Learning Strategy on physical geography performance of students before and after exposure to Cooperative Learning Strategy in Sokoto state.
6. Ascertain the effect of cooperative learning strategy on human geography performance of students before and after exposure to cooperative leaning strategy in Sokoto state.

1.4 Research Questions

The following research questions were formulated to direct this study.

1. What is the difference between the academic performance of students taught Geography using Cooperative Learning Strategy and those taught with traditional lecture method in Sokoto State?
2. To what extent does Cooperative Learning Strategy affect the academic performance of male and female students in Geography in sokoto state?
3. What is the difference between the academic performance of urban and rural students taught Geography with Cooperative Learning Strategy in Sokoto State?
4. What is the difference in students' performance in practical geography before and after exposure to Cooperative Learning Strategy in Geography in sokoto state?
5. To what extent does Cooperative Learning Strategy enhance geography students' performance in physical geography in senior secondary schools in Sokoto state?

6. What is the effect of Cooperative Learning Strategy on the performance of students in human geography before and after exposure to Cooperative Learning Strategy?

1.5 Research Hypotheses

The following null hypotheses were postulated to be tested:

Ho1: There is no significant difference between the academic performance of students taught Geography using Cooperative Learning Strategy and those taught using traditional lecture method in senior secondary schools in sokoto state.

Ho2: There is no significant difference between the academic performances of male and female students taught Geography using Cooperative Learning Strategy in senior secondary schools in sokoto state.

Ho3: There is no significant difference between the academic performance of urban and rural students taught Geography with Cooperative Learning Strategy in senior secondary schools in sokoto state.

Ho4: There is no significant difference in students' performance in practical geography before and after exposure to Cooperative Learning Strategy.

Ho5: There is no significant difference in students' performance in physical geography before and after exposure to Cooperative Learning Strategy in Geography in Sokoto State.

Ho6: There is no significant effect of cooperative learning strategy on geography students' performance in human geography before and after exposure to Cooperative Learning Strategy in Geography in Sokoto State.

1.6 Basic Assumptions

With respect to this study, the following assumptions are made:

1. Students taught geography with cooperative learning strategy are likely to achieve higher than peers taught with traditional teaching methods.

2. Geography teachers at secondary school level can use cooperative learning strategy to develop and promote self confidence of their students who are passive in terms of participation in classroom activities thereby promoting students' learning and academic performance.
3. Cooperative learning strategy should result in positive effects on students' ability to work out tasks on map reading.
4. The effects of cooperative learning strategy on the academic performance of geography students differ from one aspect of geography to another

1.7 Significance of the Study

This study, titled effects of CLS on Geography students' academic performance in senior secondary schools in the sokoto state, will be of enormous benefits to an array of stakeholders in education. It will be helpful to Geography teachers, students, school administrators as well as curriculum developers. Information from this study will help Geography teachers improve their teaching effectiveness through the use of cooperative learning as effective instructional strategy in their field. For the Geography students, the benefits derivable from the study are numerous. It is hoped that the use of cooperative learning strategy for teaching Geography will enhance the academic performance of students, retention of learned materials and encourage positive interaction among them.

For curriculum developers and school administrators, findings from this study will provide them with insights into the effectiveness of CLS in achieving maximum result with limited curriculum instructional materials or resources and therefore consolidate it in their future policy efforts. CLS has a wide range of applicability in different levels and subject areas, the study will expose this fact to educators in different fields of study, academic

training and research activities including workshops and seminars which, in turn, results in improving the teaching-learning process.

1.8 Scope of the Study

There are many teaching and learning methods. Cooperative learning has different dimensions (Learning Together, Group Investigation, Jigsaw, Structured Groups, Unstructured Groups etc.). This study is delimited to the consideration of the effect of cooperative learning strategy on Geography students' performance in secondary schools in sokoto state.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviews the literature on effect of cooperative learning strategy on Geography students' academic performance in senior secondary schools in Sokoto state. The review of related literature was carried out under the following sub-headings:

Conceptual Framework; Concept of Cooperative Learning Strategy; Theoretical framework; Cooperative Learning and Academic Performance; Nature and Relevance of Geography education; Geography Curriculum for Senior Secondary Education in Nigeria; Provision for the Implementation of Geography Education Curriculum in Senior Secondary Schools in Nigeria; Contemporary Trends in the Teaching and Leaning of Geography; Empirical Studies and Summary.

2.2 Conceptual Framework

The conceptual framework for this study is based on cooperative learning strategy and academic performance. Cooperative learning strategy is an instructional strategy where students are grouped into 2-5 members per group for the purpose of learning. The strategy is based on group learning but unlike other forms of group learning, CLS assigns the students to group of two to five members. Hence it is based on small group learning. The term cooperative learning, according to Slavin (1986), refers to a variety of instructional strategies in which teachers encourage students to cooperate in learning. Johnson, Johnson and Smith (2007), defined cooperative learning as students working in groups where they are expected to help each other find answers to their questions rather than seeking answers from the instructor. Cooperative learning strategy can be seen as instructional strategy which

encourages interactive learning in which students, in small group, cooperatively construct new knowledge.

Academic performance on the other hand, denotes the outcome of students' academic activities in form of grades or scores received at the end of specified period of time. Academic performance refers to measure of student's performance from a given learning task. Viewed this way, academic performance can be good or poor. Concern about poor academic performance has risen especially when students' results are released by the various examination bodies such as WAEC and NECO (Ofili, 2012). The extent to which students perform brilliantly in standardized tests and teacher-made test is used as parameter for measuring their level of academic performance and the effectiveness of the system. To this end, Philias and Wanjobi (2011), asserted that the better the performance of the students, the more effective the system is assumed to be.

2.2.1 Concept of Cooperative Learning Strategy (CLS)

Cooperative learning strategy has been described as one of the most remarkable and fertile areas of theory, research and practice in education (Johnson, Johnson & Stanne, 2000). Cooperative learning exist when students work together to accomplish shared goal (Johnson & Johnson, 1987). Cooperative learning is an instructional strategy in which small group of students work together to accomplish shared goal (Johnson, Johnson & Smith, 1998). Students perceive that they can reach their learning goals if and only if the other group members also reach they goal. In cooperative learning strategy the teacher assigns the students to group of two to five members for the purpose of achieving academic and social tasks. Slavin (1989), described cooperative learning as set of alternative to traditional instruction.

As alternative to traditional teaching method, cooperative learning is a successful instructional strategy which encourages the learners in small group, each with students of different levels of ability, to work cooperatively and jointly in non-competitive environment in order to obtain their learning goal. All teaching methods are based on models of teaching. Cooperative learning strategy is rooted in the social family of teaching models which emphasize the central role of students' interaction and active role in enhancing understanding. In this regard, Johnson and Johnson (1987), opined that when students work together and interact with their peers and instructors, they can explain and discuss each other's perspectives—which leads to a greater understanding. Some typical instructional methods from which CLS was derived include among others, role playing and structured inquiry. The CLS is also rooted in constructivism. In constructivism theory, learning is a process through which learners discover concepts, facts, and principles by themselves to achieve successful learning outcomes through active participation in the learning process. Unlike information processing models in which students learn passively through teacher-centred methods, the social family models regard educators as facilitators of learning environment. The CLS is therefore an instructional strategy based on learner-centred models which ensure that all students have an opportunity to contribute to their learning.

According to Seifert (1991), all cooperative learning strategies must have three basic features, namely:

1. They instruct students to work together
2. They assign task that can be completed only by a group
3. They give praise, grades and other rewards partly on the basis of how the group performs as a whole.

However, cooperative learning strategies vary in two ways- in how they organise and assign task and in how they organise and assign reward (Seifert, 1991). Rahvard (2010) stated that previous research has shown that cooperative learning techniques provide the following benefits:

a. Promote students' learning and academic performance

b. Increase students' retention of learnt materials

c. Help students develop skills in oral communication

d. Promote students self-esteem

e. Develop students social skills

f. Help to promote positive race relationship

Cooperative learning strategy is particularly important in the teaching of geography at senior secondary level because it enable the students to work together toward providing solution to any given geographical problem. Considering the wide scope of geography, CLS would help discuss, share and brainstorm ideas on geographic concepts and issues. Expatiating on the potential of CLS, Johnson and Johnson (1987), stated that:

> Whenever problem-solving is desired; whenever divergent thinking or creativity is desired; whenever quality of performance is expected; whenever higher level reasoning strategies are needed; whenever long-term retention is desired; whenever task is complex or conceptual; when the learning goals are highly important; or when the social development of students is on of the major educational goals- cooperative learning should be used (p. 44).

The above underscores the power of CLS over individualistic and competitive instructional strategies in producing better result. To this end, this research will determine the

possible effect of CLS on the academic performance of students in geography in some selected senior secondary schools in sokoto state.

Basic Elements of Cooperative Learning Strategy

These elements distinguish cooperative groups from other forms of learning groups. Johnson and Johnson (1987), strongly argued that these elements must be included in order for a small group learning to be truly cooperative. The basic elements of CLS as identified by researchers such as Johnson and Johnson (1987) and Erinosho (2008) are given below:

1. Positive interdependence
2. Face-to-face interaction
3. Individual accountability
4. Social skills/interpersonal small group skills
5. Group processing

The first element is Positive interdependence. Students must perceive that they "sink or swim together". This might be achieved through mutual goals (goal interdependence); division of labour (task interdependence); dividing materials, resources or information among group members (resource interdependence); assigning students differing roles (role interdependence); and by giving joint rewards (reward interdependence). Students develop the spirit of "we" and enjoy the benefit of sharing information with one another (Erinosho, 2008).

Face-to-face interaction which is the second element of CLS give students opportunity to interact with themselves, share their knowledge as a team and support one another to learn

(Erinosho, 2008). It is the interaction patterns and verbal interchange among students promoted by positive interdependence that affect educational outcomes.

The third basic element of CLS is individual accountability. This means that every group member is responsible for learning the material. Since each individual's work contributes to the group work and is taken account of in the assessment, the success of cooperative leaning strategy depends upon individual and group accountability. As group members know that they are responsible for the work done, they must work together for individual and group success.

Another basic element of CLS is Social skills/interpersonal small group skills. For cooperative learning to be successful students must be taught the social skills needed for collaboration and they must be motivated to use them as disagreement and conflict in any group is inevitable. Social skills of conflict resolution trust building, leadership, respect, peaceful coexistence and friendship are important in helping group to achieve and maintain effective working relationships within the group. The skills have to be taught just as purposely and precisely as academic skills (Smith, Sheppard, Johnson & Johnson, 2005).

The fifth and final element of CLS is group processing. According to Seifert (1991), group processing can be seen as reflecting on a group session to: (a) describe which members 'action were helpful and unhelpful, and (b) make decision about which action to continue or change. He further stated that the purposes of group processing are to clarify and improve the effectiveness of the members in contributing to the collaborative effort to learn. How well the group is functioning and how can the group's effectiveness be improved are question solely pertaining to group processing. This last element provides useful avenue for continuous self assessment and self improvement of group's effectiveness by the members. The basic elements highlighted above provide framework against which teachers should implement CLS

in their classrooms in order to give opportunity to students to participate fully in teaching-learning process.

Models of Cooperative Learning Strategy (CLS)

Teachers implementing CLS in their instructions might use different models to help facilitate group interaction and improve students' academic performance. Johnson, Johnson and Stanne (2000) identified some of models of CLS that have received the most attention, namely:

i. Learning Together model (LT, Johnson & Johnson, 1960)

ii. Teams-Game-Tournament (TGT, Devries & Edwards, 1970)

iii. Group Investigation (GI, Sharan & Sharan, 1970)

iv. Jigsaw model (Aronson, 1970)

v. Student-Team-Performance-Division (STAD, Slavin, 1970)

Learning Together Model (LT)

In this model, students are put into groups of two to five members with each group working on assigned task. Class work was mainly based on the group work. The teacher's main role is to assign the task to groups, praise and encourage the groups. According to this model, for any learning exercise to qualify as cooperative learning, it must incorporate the five basic elements of CLS identified above. According to Johnson and Johnson (1991) cited in Nesrin and Nazli (2004), in Learning Together method, the following options must be given place:

1- Determining of instructional objectives,

2- Deciding the group size,

3- Diving the students into groups,

4- Arranging of the class,

5- Planning of educational materials to provide dependence,

6- Giving the roles to the group members in order to provide dependence,

7- Explaining of the academic work,

8- Creating the positive objective dependence,

9- Individual evaluation,

10- Providing the cooperation among the groups,

11- Being explained the criteria necessary for performance,

12- Determining the required behaviours for success,

13- Guiding the student behaviours,

14- Helping to the group work,

15- Having students come together for being to able to teach cooperation,

16- Finishing the lesson,

17- Evaluation for students learning qualitatively and quantitatively,

18- Evaluating the performance of the group,

19- Forming academic contrasts.

Teams-Game-Tournament (TGT)

In Team-Game-Tournament model instead of taking quizzes, the students play academic games as representative of their team. They compete with students having similar performance level and coach each other prior to the game to ensure all group members are competent in subject matter (Panitz, 2003). Students earn team points based on how well they do at their tournament tables.

Group Investigation Model (GI)

Group investigation has a unique character based on the integration of four basic features of investigation, interaction, interpretation and intrinsic motivation (Sharan & Sharan, 1992). Through cooperation, group members can realise a number of ways to solve problem. The members of class reached agreement on a general topic and individual groups choose subtopics for their own group work. Then choose report (involving display and presentation) format for the entire class.

Jigsaw Model

Jigsaw is cooperative learning structure applicable to team assignment that call for expertise in several distinct areas. Students become "experts" on a concept and are responsible for to the other group members. Groups subdivide a topic and members work together with those from other groups who have the same topic, they then return to their original group and explain their topic.

Student-Team-Performance-Division (STAD)

In STAD the teacher presents a lesson and then the students meet in teams of four or five members to complete a set of worksheet on the lesson. Each student then takes a quiz on

the material and the scores the student contribute to their team are based upon the degree to which they have improved their individual past averages (Panitz, 2013).

The effectiveness of CLS is well-established by research, theory and practice. Cooperative learning created many learning opportunities that do not typically occur in traditional classrooms (Effendi & Iksan, 2007). Many studies on CLS have shown positive effect on students' academic performance in different subject areas for which reason it is considered as preferable and alternative to traditional instructional methods. Studies favouring CLS have been found in such subject as Social studies (Yusuf, 2011); Mathematics (Kwaimo, 1999); and Geography (Tshibalo, 2003).

2.3 Theoretical Framework

Cooperative learning strategy as an instructional strategy has overwhelming theoretical supports which justify its wide prevalence and acceptance in different subject areas. Modern theories of learning emphasize the important role played by the learners in the learning process. One of such theories is **Constructivist Theory** proposed by Bruner (1960). **Constructivism** is a learning theory founded on the idea that students construct knowledge in the process of learning through interaction with the phenomenon, as they develop shared-meaning of the phenomenon within social context (Geer & Rudge, 2013). The underlying premise of constructivist learning theory is that learning is an active process in which learners are active sense-makers who seek to build coherent and organized knowledge (Mayer, 2013). Learning become meaningful only after the new materials are well connected with existing related knowledge or schema. To constructivist, an individual can only learn if his/her conceptual schema provides the framework upon which to fit new knowledge (Erinosho, 2008). Learning conflict occur when there is contradiction between the existing schema and the new ideas, forcing the learner to consider whether to reject the new idea or discard the

old. Mangal (2009) refers to schema as the general cognitive ability of the learner. An individual schema can take new information through either *accommodation* or *assimilation*

Learning thus involves an interaction between students' mental schemas and the experience they have. The experience, according to Driver and Leach (2011), may fit with students' expectation, in which case little change is required in the students' schemas. On the other hand, the experience may be novel and students may change or adapt their knowledge schemas as a result. For learning to take place, learners must be active in the learning process, organizing their own experience. Most constructivists agree learning occurs when individuals assimilate new information into existing mental models of the world, or construct – as a result of discrepant insights – new models that can accommodate both old and new insights gained from experience (Geer & Rudge, 2013).

Savery and Duffy (1995), described effort to relate constructivism as learning theory to the principles of instruction as true and good practice. Constructivist learning theory is characterized by Savery and Duffy (1995) in terms of three primary propositions, namely:

I. **Understanding is in our interactions with the environment.** This is the core concept of constructivism. What we understand is a function of the content, the context, the activity of the learner, and, perhaps most importantly, the goals of the learner.

II. **Cognitive conflict or puzzlement is the stimulus for learning and determines the organization and nature of what is learned.** When we are in a learning environment, there is some stimulus or goal for learning -- the learner has a purpose for being there. That goal is not only the stimulus for learning, but it is a primary factor in determining what the learner attends to, what prior experience

the learner brings to bear in constructing an understanding, and, basically, what understanding is eventually constructed.

III. **Knowledge evolves through social negotiation and through the evaluation of the viability of individual understandings.** The social environment is critical to the development of our individual understanding as well as to the development of the body of propositions we call knowledge. At the individual level, other individuals are a primary mechanism for testing our understanding. Collaborative groups are important because we can test our own understanding and examine the understanding of others as a mechanism for enriching, interweaving, and expanding our understanding of particular issues or phenomena.

The propositions, according to these authors, suggest a set of instructional principles that can guide the practice of teaching and the design of the learning environments. A common interpretation of constructivist view of learning as an active process is that students must be active during learning. This denotes a paradigm shift from the way we used to teach and interact with students to a more improved form of instruction in which learners are given opportunities to actively seek for information, analyse it and construct knowledge by themselves. To constructivist, passive venues involving books, lectures and on-line presentations are classified as non- constructivist teaching whereas active venues such as group discussion, hand-on activities and interactive games are classified as constructivist teaching (Mayer, 2013).

Constructivist learning theory provides ground for organising students' learning around their experience, giving them more sense of participation in the learning process. Aydin (2011), stated that:

> Constructivist learning theory which has an important place in the field of geography education, aims to educate students who play an active role of engaging in research for deep knowledge, and use the information they have

> learnt rather than the students, who play a passive recipient role in information (p. 277).

This core concept of constructivism is in line with basic conception of cooperative learning strategy in which students in cooperative groups must actively work together in order to accomplish their learning goal. Constructivism view learning as socially situated activity and that understanding could only occur through interaction with others. Participating fully in the learning process is prerequisite if deep and real understanding and use of knowledge are aimed at. The success of learning is largely determined by the level of group members' participation in the cooperative learning process. Cooperative learning strategy recognises the importance behind activating a learner's prior knowledge and putting that knowledge to work. Constructivist theory is considered a frame for the study because it best explained the basic tenets of cooperative learning strategy which include learning through interaction among learners and active involvement of students in their learning.

2.4 Cooperative Learning and Academic Performance

It is evident that poor academic performance of secondary school students in Nigeria affects all subject areas, geography inclusive. The major challenge is how to effectively teach the students in order to improve their academic performance. The task of improving the performance of secondary school students presents a complex challenge to teachers who are key players in meeting the diverse learning needs of every student in the classroom. The search for instructional strategies to help teachers meet this challenge has attracted much attention from many researchers in the recent past. Teachers' methodology has been linked to academic performance of students. Various instructional strategies have been recommended for uses which have wider applicability across different subject areas and positive effects on academic performance.

One recommended strategy is Cooperative Learning (Tshibalo, 2003; Yusuf, 2011). Cooperative learning makes use of small, heterogeneous groups of students who work together to achieve common learning goals. According to Kristen and Douglas (2002), cooperative learning has reported positive academic and social outcomes for students in every major subject area, at all grade levels and in many different types of school worldwide. In the view of Yusuf (2011), cooperative learning helps teachers manage large classes of students with diverse needs and improve academic performance and social development. In the last decade, there is vast amount of research done on cooperative learning in science and mathematics indicating positive results on academic performance of students using cooperative learning strategy (Effandi & Iksan, 2007). Teachers are expected to diversify their teaching strategies to create conducive learning environment that promote effective teaching and learning. The benefits the teachers perceived that they derived from using cooperative learning included that it help them to better manage and structure their lessons and make them more challenging (Gillies & Boyle, 2010).

However, implementing cooperative learning strategy to improve the academic performance of students requires careful preparation on the part of the teacher and the students. The teacher needs to ensure that all the key elements of cooperative learning (positive interdependence, Face-to-face interaction, Individual accountability, Social skills/interpersonal small group skills and Group processing) are in place. Corroborating this view, Gillies and Ashman (1996) in Gillies and Boyle (2010), asserted that when groups are structured so that the key elements are in place students are more likely to work cooperatively to help and promote each other's learning. It is therefore the teacher's role to ensure that this important aspect on which the success of cooperative learning strategy rests is not neglected. The students who are to work in groups to accomplish shared goals needed to be prepared for cooperative activities. To this end, Gillies and Ashman (1996) in Gillies and Boyle (2010),

pointed out that when students worked in groups where they were trained to cooperate, the students demonstrated more on-task behaviour, gave more detailed explanation and assistance to each other and obtained higher learning outcomes than their untrained peers. Geography is considered by many students as conceptually difficult subject with an extremely wide scope (Adegoke, 1987 in Amosun, n. d.). In this regard, Amosun (n.d.), observed that, the performance of candidates in the West African Secondary School Certificate Examination (WASSCE) in Nigeria is becoming poorer every year. He further stated that critical observation of students results of geography through a periods of ten years shows that there was no improvement as no year records even up to 40% pass at credit level (i.e. from A1-C6). Similarly, Aydin (2011), attributed the problem of poor teaching and leaning of geography to ineffective teaching techniques employed by the secondary school teachers which make portion of students or all of them passive. He therefore recommended the use of cooperative learning in geography lesson which has an effect on the academic success of the students, as well as it has a positive effect on the attitude towards geography course, motivation, class participation, geographical skills, retention and social skills. From foregoing it is clear that CLS should be adopted as instructional strategy to replace the conventional methods which dominates our secondary school classes.

Cooperative Learning and Male and Female Students' Performance in Geography

Gender has been identified as one of the factors influencing students' performance at secondary school level (Anagbogu, & Ezeliora, 2007; Eze, 2007 cited in Fagbemi, Gambari, Oyedum, & Gbodi, 2011). This is the reason why gender issue has received the attentions of many researchers across disciplines and at different levels of education. Gender disparity in performance on this subject prevails in schools where this subject is offered (WAEC Chief Examiner's Report, 2008, 2009 in Essien, 2012). In Nigeria, some works have been carried

out to study gender difference in performances in some specific fields and that, gender performance in geography has not received much attention in this part of the country that has a long history of poor female performance in formal education generally (Yusuf & Yakub, 2013). A comparative analysis of boys and girls' performances in Geography by Yusuf and Yukub (2013), revealed that females do better than boys in geography. As such therefore gender disparity in performance is an issue of concern in geography.

Cooperative learning has positive influence on students' performance as shown by several studies. Johnson, Johnson and Stanne (2000), reported that numerous studies have suggested that cooperative learning strategy lead to higher academic performance than individual and competitive methods. Tshibalo (2003), found that students who studied map work (practical geography) by means of cooperative learning strategy did significantly better than those who used lecture method. Pandian (2004) cited in Oludipe (2012), investigated the effects of cooperative computer-assisted learning method on male and female students' performance in geography with the result indicating no significant gender-related difference. Nancy (1997), investigated how males and females perform in educational settings and reported "small" difference between males and females performance in geography. Cooperative learning strategy is a gender-friendly because of the results of various studies which indicated no significant effect of gender on students' performance (example, Amosun, n.d.). Recognizing this fact, Essien (2012), stated that Geography teachers should adopt co-operative learning strategy as a way of bridging the gap between the gender differences in performance in map reading and other areas of geography that involve mathematical or quantitative analysis of concept.

Cooperative Learning and Students' Performance in Different Areas of Geography

Geography as described earlier is a multidisciplinary subject with a very wide scope. It is now one of the optional subjects at senior secondary school level. The subject can be viewed as having four major areas/divisions, namely: physical geography, human geography, regional geography and practical geography/map reading. According to Ajibade and Raheem (2010), the first three divisions of geography above could be wrapped up to mean the study of physical and human elements of different regions of the earth while Map work is a means of depicting the relationship between the three areas. Students who offered this subject in senior secondary schools are assessed in all the areas mentioned in order to determine their general performance. A common tool for evaluating the level of understanding of this subject by the students at this level is through conventional class tests or examinations. Amosun (n.d.), observed that the performance of candidates in the West African Secondary School Certificate Examination (WASSCE) in geography in Nigeria is becoming poorer every year and that the problems may not be unconnected with the methodologies employed in Geography (especially in map work) teaching. Of the four major divisions of geography, students find practical and physical geography more difficult especially the map work/practical geography that requires the knowledge of Mathematics.

With particular reference to mapwork, Tshibalo (2003), identified poor teaching as a cause of poor performance and therefore contended that active involvement in map work activities may among other things; improve learners' performance in map work. In this regard, cooperative learning methods can be used. Co-operative learning in mapwork improves learning quality and increases educational standards. This is because low achievers in this study improved their scores significantly when compared to their peers taught by ordinary traditional method (Tshibalo, 2003). Amosun (n.d.), stated that cooperative learning

strategy has been found to be more effective in improving students' performance in mapwork, mapwork skills and attitude to geography. Cooperative group work provides a setting where children can explore relationships with one another and can share issues in a trusting setting. Further more, cooperative learning strategy in practical geography can enhance students' reading and interpretation of topographical maps and increase the accuracy of measurements done by cooperative group.

Review of literature on geography and methodology has revealed that performance of students in this subject is generally poor. A critical observation of students results of geography through a periods of ten years by Amosun (2002) in Amosun (n.d.) shows that there was no improvement as no year records even up to 40% pass at credit level (i.e. from A1-C6). This situation if remained unchanged, may likely affect the future performance of students in the subject and its selection. As Akintade (2011), rightly pointed out, the non-challant attitude of students to school work, students' lack of understanding of the subjects' basic concept and high student-teacher ratio, teachers' competence, past performance of students in the subject at the school certificate examination among others, influenced students' choice and performance. While map reading was considered difficult because it involves some calculation, Physical geography has been considered conceptually difficult because it deals with description of abstraction coupled with wider content. Learning the content of physical geography and geography generally requires critical thinking on the part of the students. In this regard, Elias and Kress (1994) in Ozgen and Ufuk (2009), argued that increased academic performance in geography is a natural outcome of making critical thinking education a part of educational processes. Thus, Ozgen and Ufuk (2009), stated that:

> As a discipline analyzing and synthesizing the information collected in the context of human-natural environment interaction, geography requires students to structure the acquired information by questioning it using these criteria at all stages. Thus, they improve their critical thinking skills through a questioning and synthesizing approach (p.53).

The learners need to be given opportunity to improve their critical thinking and hence their performances through methodology that will really help students develop the right type of skills and actively involve them in the learning process. Results of various studies have revealed positive effects of cooperative learning on performance across different subjects as indicated in literature review.

2.5 Nature and Relevance of Geography Education

Geography, as a school subject is a multidisciplinary subject that cuts across a wide range of subject areas. Basically, the subject entails the study of the natural environment and its relationship with man, hence the nomenclature of physical and human Geography. The term geography has differing definitions each trying to portray the nature of the subject. Kofo (2011), defined geography as a distinct and dynamic science and or social science discipline that deals with the study of man and his physical environment. It is also seen as study of aerial differentiation. Geography is concerned with the study and description of the earth's surface. Geography is offered both at senior secondary level and at university and other higher institutions. The core subjects at senior secondary school level as given by the FRN (2004) are as follows:

1. Mathematics
2. English language
3. One Nigerian language
4. One of physics, chemistry and biology
5. One of literature in English, history and geography
6. Agricultural science

Geography as a school subject is one of the important subjects at senior secondary level. The subject has particularly been enriched by numerous volumes of local studies dealing with what may be described as micro-region in contra-distinction to macro-region of yester years (Ajibade & Raheem, 2010). Geography deals with physical, human and practical aspects of man-environment relationships. All the aspects are studied by the senior secondary students who registered the subject.

Geography education was included in the secondary school system because of the importance of the subject in equipping students with necessary knowledge to help them understand both natural and human phenomena within their immediate environment and beyond. With specific reference to secondary school education, Akintade (2011), summarized the importance of geography as school subject, in his words:

> Geography generally helps children as well as adult to understand the concept of man versus his environment in his struggle to survive and overcome the problems militating against his progress. It also helps people appreciate the value of their natural resources, which when developed with care and diligence often help to improve their standard of living. Geography has a large role in government at local, state and national levels (p. 134).

The aims and objectives of geography education as given by NECO (2012) are to:

1. understand the concept of different characters and the spatial relationship of the features on the earth surface;
2. understand the concept of man-environment relation, that is, to examine and explain the interaction of man with his physical and cultural environment;
3. acquire the basic knowledge of the nature and function of physical and human environments and understanding of their inter-relationships on the resulting issues;

4. organize and formulate principles according to acquired geographical concepts and apply these principles to interpret and analyse spatial problems in the immediate and wider environment; and
5. develop skills and techniques for accurate, orderly and objective geographical investigations to be carried out both in the classrooms and in the environment.

Geography has a wide scope as such therefore its contents are derived from the following areas or aspects of the subject, namely: physical, practical, human, regional geography and geographical information system (GIS) all of which serve as major sources enriching the contents of geography. Geography students writing SSCE are tested in all the areas.

2.5.1 Geography Curriculum for Senior Secondary Education in Nigeria

The term curriculum has been defined as the planned and guided learning experience and intended outcome formulated through systematic reconstruction of knowledge and experience under the auspices of the school for the learners continuous and wilful growth in personal and social competence (Tanner & Tanner, 1975 in Ben-Yunusa, 2008). Geography is a subject taught at senior secondary level with its distinct curriculum purposely designed to achieve the objectives of Geography education programme. According to FRN (2004), senior secondary school shall be comprehensive with a core curriculum designed to broaden pupils' knowledge and out-look. The curriculum has been developed by the federal ministry of education (FME) through the Nigerian Educational Research and Development Council (NERDC) for SS I, SS II & SS III. The Geography curriculum was structured into major themes for each stage as given below:

Senior Secondary School one (SSI)

1. Local Geography
2. The earth and solar system

3. Environment and its resources
4. Regional geography of Nigeria
5. Map reading and interpretation
6. Economic and human geography
7. Introductory geographic information system (GIS)

Senior Secondary School two (SSII)

1. The earth and solar system
2. Environment and its resources
3. Regional geography of Nigeria
4. Map reading and interpretation
5. Economic and human geography
6. Introductory geographic information system (GIS)

Senior Secondary School three (SSIII)

1. The earth and solar system
2. Environment and its resources
3. Regional geography of Nigeria
4. Economic and human geography
5. Introductory geographic information system (GIS)

At each stage, these themes provide the basis upon which topics, contents, method, curriculum materials as well as evaluation guide are selected for effective curriculum implementation by the teachers. Teachers are encouraged to enrich the content with relevant materials and information from their immediate environment, but adapting the curriculum to their needs and aspirations (FME, 2007).

Based on senior secondary geography curriculum, the content of the subject are drawn from the following areas (NECO, 2012):

- Elements of physical geography;
- Elements of practical geography;
- Regional geography;
- Human geography; and
- Geographic information system.

2.5.2 Provision for the Implementation of Geography Education Curriculum in Senior Secondary Schools in Nigeria

The worth of any curriculum can only be realised if it is properly implemented. Curriculum implementation is the process of executing the curriculum plan already developed. The meaningfulness of any curriculum plan depends heavily upon the extent to which it is adequately executed and to availability of necessary resources. To this end, FME (2007) with reference to senior secondary education geography curriculum, stated that since the curriculum represents the total experience to which all learners must be exposed, the contents, performance objectives, activities for both teachers and learners, teaching and learning materials and evaluation guide are provided. This implies that provision of certain inputs into curriculum implantation process is fundamentally important if success is expected in the end. In the Nigerian context, school curriculum is developed at the centre and handed over to schools for implementation by the teachers as implementers. The teachers are therefore, the most important factor in curriculum implementation process and on whose shoulders the success or failure of the entire process depends. Provision for the implementation of geography education curriculum in senior secondary schools in Nigeria can be examined under the following factors:

The Teacher

The importance of classroom teachers in the curriculum implementation process can not be over emphasised. The classroom teacher forms the corner stone in curriculum implementation… and is the main force and the last person that ensures that any curriculum

is implemented according to specification (Ben-Yunusa, 2008). The teacher is actually the interpreter and the guide in the implementation of the curriculum (Olofu, 2003). Geography teachers employed in senior secondary schools in the country are saddled with the responsibility for implementing the geography curriculum. It is the teacher who translates the objectives, concepts and topics in the curriculum into activities that are meaningful to the learner (Oyetunde, 2002). Therefore, teacher's disposition, attitudes, willingness, competencies as well as motivation to implement the curriculum are all central to achieving the desired objectives.

The teacher takes a number of decisions that are crucial to the success of implementation process. He interprets the Geography syllabus, breaks it in to units, prepares scheme of work and lesson plans on daily, weekly or term basis, utilizes relevant and available instructional materials and employ appropriate teaching strategies all of which are geared toward successful implementation of Geography curriculum. Tachers are therefore the implementers of any curriculum material and hence determine to a large extent the success or failure of any teaching and learning process.

Teaching and Learning Materials

The materials refer to here are the bulk of instructional materials, devices, aids or equipment used by the teacher and or the learner to facilitate the teaching and learning of Geography contents. The materials, when adequately provided and properly used, enhance better teaching and learning in our schools. Based on senior secondary Geography education curriculum, specific provision has been made in terms of teaching and learning materials that Geography teachers should use in order to ensure successful implementation of the curriculum. Some of the instructional materials for teaching and learning of senior secondary Geography education as identified by the FME (2007) include the following:

1. Maps (depicting different geographical information at various locations).

2. Atlases of different sizes
3. Aerial photographs
4. Satellite images
5. Topographical maps
6. Flow charts
7. Globes
8. Illustrative diagrams, sketches and models, posters, pictures etc
9. Video clips/tapes/documentary films
10. Rocks samples and their photographs
11. Weather instruments- Rainguage, Wind vane, Barometer, Hygrometer, anemometer, Thermometer etc
12. Measuring instruments- Tape, Ruler, Chain, Compass, Drawing and Tracing paper, Stencil, Thread, Pens, Pencil, Pairs of divider, etc
13. Farm land in the locality, Markets, Banks
14. Computer system installed with GIS software, Printer and Scanner
15. Published materials

These materials should be made available and accessible in all schools for effective implementation of geography curriculum. Where the materials are not available, the teacher can improvise them using materials from the local environment. In this regard, Isha, (2002), stated that teachers need to be resourceful and creative in producing and using the materials. The importance of "Geography room" in the teaching of specific Geography lessons can not be over emphasised. Kofo (2012), described the Geography classroom/laboratory as the most important factor for effective teaching and Learning of Geography which all senior secondary schools must have. The Geography room serves as Geography laboratory and therefore

should be adequately furnished with teaching and learning materials which inter alia include maps, atlas, charts, posters, computer system etc.

2.5.3 Contemporary Trends in the Teaching and Learning of Geography

Like any other school subject, Geography has witnessed changes in a number of ways. Such changes include among others: curriculum reform, introduction of modern and improved methodologies for Geography teaching and application of ICT. Sofowora and Egbbedokun (2010), argued that very significant parts of these changes are the recent restructuring and the development of the Geography curriculum both at the Junior Secondary School and the Senior Secondary levels. With the new curriculum, according these authors, the major emphasis is now on the relevance of Geography to life. The importance of ICTs within educational institutions, particularly in improving teaching and learning process, has been recognised by all stake holders in education. Information and communication technologies, especially network technologies have been found to encourage active learning, support innovative teaching, reduce the isolation of teachers, and encourage teachers and students to become active researchers and learners (Yusuf, 2011). Developments in information technologies have reshaped people's views towards themselves and their environments, as a result of which a parallel change and development at the same pace has become inevitable in the field of Geography education (Ozgen & Ufuk, 2009). Today, Computer Assisted Instruction (CAI) has been found very effective in teaching and learning of Geography.

The new senior secondary Geography curriculum requires the use of ICT for teaching and learning of such aspects of Physical Geography (e.g. environmental resources, weather and climate etc) and Geographic Information System (GIS, e.g. GIS data, GIS Application etc). To this end, Bednarz (2004) cited in Ozgen and Ufuk (2009), stated that:

> Computers and Internet use have come to the foreground in the recent practices in geography education. In particular, geographical information systems (GIS) take the lead in this respect and there have been important attempts to introduce these systems into geography education (p. 51)

In the area of curriculum reforms, recurring geographical themes such as global warming, climate change, population growth, pollution and their attendant effects on man have affected the objectives, content, scope and nature of Geography education. In view of this, Kofo (2011) stated that regardless of benefits and disadvantages, the consequent impact on earth's warmth (global warming and climate change) on the environment and the syllabus of Geography taught require attention for sustainability. According to Sofowora and Egbbedokun (2010), the new objectives that now guide the formulation of Geography curriculum are:

I. teaching of Geography should provide a vehicle for the learner's development, to help him acquire the art of using knowledge or to learn something about his cultural heritage;
II. provide necessary background to citizenship and to intimate the students into a particular mode of thought;
III. offer a unique mean of furthering inquiry and high intellectual growth in students;
IV. to help man to live, place himself in the world and to learn his true position and what his duties are;
V. to equip the students to understand other people and their environment;
VI. develop positive attitudes to race, culture, and to other peoples environments and places.

There is a growing concern about students' poor academic performance in Geography and this has necessitated conscious efforts geared toward improving the teaching and learning of Geography at all levels. The understanding of contemporary Geography science,

application and learning from it is, no doubt, possible only with the teaching of Geography efficiently and accurately (Demirci and Karakuyu, 2002 in Aydin, 2011). This efficient and accurate teaching of Geography depends largely upon the appropriateness of instructional strategies employed by the teachers which, in turn, is determined by teachers' competence. According to Bello (2013), the trend of instructional approach gaining ground is the use of computer instruction approach called by different names such as Computer-Based Learning (CBL); Web-Based Learning (WB) E-Learning (EL) and so on. Ineffective teaching methods have begun to give way for more improved and modern instructional strategy that have effects on academic success of students. One of these developments is the use of cooperative learning strategy in teaching and learning of Geography. Since the success of students highly depends on their being aware of their own learning paths and their being able to direct their learning. Geography teachers must be able to diversify their methodologies to enhance students' academic performance. Corroborating this view, Aydin (2011), contended that the teaching strategies in which students are active and teacher's guidance is passive should be used in teaching Geography, identifying cooperative learning as one of such strategy that emphasise students' activeness in the teaching/learning process. The strategy, according to the author, can establish a relationship between students' knowledge and new information, observe their own learning and internalize the information by using what they learn in new areas.

Methods of Teaching and Learning Geography

Teaching method is described as the means of transmitting subject content to students (Khan & Akbar, 2004 in Kalgo, 2008). Various teaching methods have been developed and are available for use by the teachers of various subjects. It is often said that a good teaching is not always tied to any particular method. This implies that, teachers should vary their teaching methods or techniques for effective teaching and learning. Geography teachers are

therefore at liberty to use whichever method (s) they considered suitable to serve their purpose. The effective teaching of Geography could be measured by examining the methods of teaching applied in school examinations vis-a-vis the performance of students in school examinations (Adeyemi, 1998 in Adeyemi, 2008). As such therefore, the methods employed to teach geography are numerous. The most frequently used teaching methods in geography as identified by Adeyemi (2008) and Clark and Wareham (2003) include the followimg:

1. The lecture method
2. Field work
3. Demonstration method
4. Inquiry method
5. Project method
6. Discussion method

The lecture method is the most widely used method in geography. In this method the teacher presents the lesson to students verbally while the students listen and write down the key point of the lesson, hence it is described as "talk and the listen" approach to teaching. Kalgo (2008), defined the lecture as a method in which the teacher transmits information orally to the learners. As teaching technique, lecture method is teacher-centred because a lot of telling is done by the teacher while the learners act as passive recipients of information. Unlike other teaching strategies, the lecture deprives the learners of opportunity to participate fully in the learning process for which reason the method has been criticized for developing passivity in the classroom.

The use of lecture method as instructional strategy for teaching geography, particularly at secondary school level, has raised a number of questions among researchers and educationists. Tshibalo (2003), investigated the use of lecture method in geography to teach map work (map reading/practical geography) and concluded that the poor academic

performance of students in map work was due to the use of lecture method as instructional strategy. Secondary school teachers are usually cautioned over the use of lecture method at this level not only in Geography but virtually in all the subjects.

In spite of the above, the lecture has its strengths as teaching technique. Mahuta (2009), gave some of these strengths, namely: it helps teachers cover vast area at a limited time as it deals with lengthy explanation; it is cheap and less expensive as it does not demand any significant financial expenditure; it helps the students to cultivate the skills of note-taking and it is good for adult classes and people of higher mental ability. Some of the limitations of lecture method include: it make the learners passive recipients of information/knowledge; it is didactic and teacher-centred; it is boring particularly in large-size classes and where it is lengthy; it does not promote positive student-teacher relationship; and it does not provide more accurate means of checking students' progress.

Demonstration method is another method of teaching geography. The method allows the students to see the teacher actively engaged as a model rather than merely telling the information (Kalgo, 2008). Students learn mental or physical skills by performing those skills under supervision (Schoolargoolge.com, 2003). Demonstration is therefore an instructional strategy in which the teacher does a lot of "showing and doing" activities while the students listen and observe the teacher. After the teacher has finished the performance of a particular activity, the students might be required to perform same activity in order to test their understanding. If the teacher shows a particular process, act of skills or technique with no explanation accompanying it, this is known as "pure demonstration". Demonstration with commentary occurs if demonstration is accompanied with verbal explanation. In participative form of demonstration, students participate in the demonstration given by the teacher.

While the lecture method makes appeal to the sense of hearing, demonstration implies making appeal to the sense of sight and sense of hearing too. In geography classrooms,

geography teachers use demonstration method to teach map reading and interpretation as well as geographic information system (GIS). In each of these areas, the teacher shows and or explains to students a particular process involving the use of some instruments/tools or identification of certain geographical features.

Demonstration arouses students' interest and makes learning more meaningful and memorable to students. Some of the limitations of this method are that it is risky especially where students are required to make use of dangerous equipments or chemicals; it is time-consuming and its success depends upon the availability of instructional materials.

The importance of field work as instructional strategy has been recognised by Geography teachers at all levels. Field work or field trip, as it is also called, is one of the teaching procedures that make instruction real and memorable and Ajibade and Raheem (2010), described it as inalienable and corporate part of teaching and learning of Geography. Field work refers to an organised visit to a place of interest outside the school in order to allow the students to see and do things for themselves. Okunloye (2000) as cited in Yusuf (2006), defined field trip as an excursion taken outside the classroom for the purpose of making relevant observations and also for obtaining some specific information. Geography teachers can organise a trip to such places as dam sites, irrigation sites, mines, oil refineries, erosive sites, mountainous areas etc as part of Geography lesson. The purpose of the trip is to take the students beyond the confined area of the classroom, to give them an opportunity to see and observe for themselves the information explained by the teacher in the classroom. The field outside the classroom serve as the true laboratory for geographical experiments.

This method (field trip) fosters good teacher-students relationship, makes learning more realistic and memorable and allows students to see the ways in which economic, social physical processes are integrated and interact in a particular place. However, field trip is said

to be time-consuming, expensive to organise and during trip it is difficult to maintain good conduct among students.

Project method is used for teaching geography. The method refers to any individual or group activity involving the investigation and solution of problem planned and carried out to a conclusion by student or students under the guidance of the teacher (Kalgo, 2008). The project starts with problem identification and the identified problem must be of interest to student(s). The teachers' role is to guide the students. Where the investigation is being carried out by a group students, there is no guarantee that all the students in the group will participate.

Discussion method is employed in Geography classrooms to present lessons. In discussion method, the teacher divides the class into groups- small group, large group or whole class group for the purpose of teaching and learning. The teacher usually gives the topic (s) of discussion to students in advance so that they can seek for information, organise it and present it during the discussion. The teacher must also ensure that all group members follow the discussion and concludes the findings after all group leaders have finished their presentations. The success of this method depends upon the teachers' ability to select relevant and real problem, guide the group in the course of discussion and treat everyone impartially.

The bulk of advantages of this method are that: it develops communication skills among learners, the students learn to share and respect other people's view points and develops confidence in the students. Some the disadvantages of discussion method are that: brighter students tend to monopolise the discussion at the expense of less bright ones, if not well-organised the discussion might degenerate into trivial issues and above all the method does not allow for wider coverage of syllabus.

Inquiry method, also called problem-solving, involves seeking or asking for information about something. Inquiry-based teaching approach provide useful platform for engaging students in practical, hand-on science investigation that can bring them in interaction with living and non-living aspect of the environment (Huber & Moore, 2011). This method, as argued by the authors, can be a very potent instructional strategy for geography teachers in the teaching of their subject particularly where the real answer to the problem is not known.

Tshibalo (2003) argued in favour of cooperative learning method stating that the method can be used to teach map work in Geography. If principles of cooperative learning are properly used should retain a better knowledge of map work in geography he added. It is based on this assertion that cooperative learning method has been considered in this study as geography teaching method. The method emphasises the use of small group of two to five students who work together cooperatively to accomplish shared goals. In a study conducted by Tshibalo (2003) he found that learners who studied map work by means of cooperative learning did significantly better the lecture group in the map work test.

Other methods of teaching Geography are Question and Answer method, experimentation, laboratory method, Dramatization and expository method (Adeyemi, 2008). It should be noted at this juncture that most of the teaching methods described above, with exception of cooperative learning, have been criticized for being ineffective in geography teaching. There is therefore an urgent need to search for alternative instructional methods that would enhance the teaching and learning of geographical ideas, fact, information and knowledge which in turn improve students' academic performance. In this study, the instructional method proposed for teaching geography in order to improve students performance is the cooperative learning method.

2.6 Empirical Studies

This study is titled “effect of Cooperative learning method (CLS) on the academic performance of students in Geography in senior secondary schools of Sokoto state, Nigeria”. Various empirical studies/researches have been conducted in this country or elsewhere in the world, which are either directly or indirectly related to this study. The researcher is going to look at some of these studies one after the other.

Yusuf (2011), conducted a study on the effect of cooperative instructional strategy on students' performance in Social studies to find out the effectiveness of cooperative instructional strategy on the teaching and learning of social studies. Quasi-experimental and non-equivalent pre-test and post-test control group design was employed in the study. Two schools in Ilorin metropolis (Kwara state, Nigeria) were selected using simple random sampling technique with ninety-three (93) JSS II students as participants of the study. Social Study Performance Test (SSPT) was the main instrument used to illicit information from respondents. The data collected were analyzed using mean gain scores to answer the research question one and the students' scores were analyzed using ANCOVA. Findings of the study revealed that: there was a statistically significant difference in the performance of students taught using cooperative and conventional instructional strategies in social studies; there was no significant difference in the performance of male and female students taught using cooperative instructional strategy in social studies; and the use of cooperative instructional strategy did not produce statistically significant difference in the performance of high, medium and low scoring students, but the medium scorers gained higher than high and low scorers.

The above study is related to the present study in that like former, the present study attempts to find out the effects of cooperative learning strategy on the academic performance

of secondary students. Also, like the above study, the present study employs quasi-experimental pre-test post-test control group design to conduct the study. However, unlike the above study which was carried out in Illorin metropolis, Kwara State, Nigeria, in the present study, the area of focus is Sokoto State, Nigeria. While Yusuf's (2011) study focused on effects of CLS on the students' performance in social studies, the present study is concerned with effects of CLS on the performance of senior secondary students in geography.

Tshibalo (2003), conducted a study in Limpolo Province (South Africa) to examine the possible effect of co-operative learning in map work on grade 11 and 12 learners. The design was experimental consisting mainly of experimental and control groups. Grade 11 and 12 Geography learners of both genders were randomly assigned to control and experimental groups. Thirty (30) and thirty-two (32) in the experimental group were grade 11 and 12 Geography learners respectively. The control group consisted of twenty eight (28) grade 11 and thirty-one (31) grade 12 Geography learners. The experimental group was exposed to CLM while the control group used traditional instructional method of lecture. Results of the study revealed that: Grade 11 learners who studied map work by means of co-operative learning did significantly better than the lecture group in map work test and grade 12 learners who studied map work by means of co-operative learning did significantly better than the lecture group in map work test.

The above study has significant relationship with present study in that, it sought to examine the effects of CLS on students' performance on map work (practical geography). Like the present study, the above study exposed the experimental group to treatment using CLS while the control group was taught using traditional teaching method. In contrast, the above study was carried out in Limpolo province, South Africa, while the present study is located in Sokoto State, Nigeria. While the above study singled out one area of geography i.e. map work for study, the present study covers all the major areas of the subject (see table 3.3in

chapter three). Therefore, the present study is concerned with general academic performance of students in geography as relates to all the major subject areas from which topics for this study are selected

A study was conducted by Nesrin and Nazli (2004) to determine the effect of learning together techniques of cooperative learning method on students' mathematics performance in Balikesir, Turkey. The study was an experimental research in which pre-test post-test design with control group was applied. Seventy (70) pupils of primary school 7th class 40% of which were female were the respondents. Cooperative learning method of learning together was applied to experimental group while traditional teaching method was used for the control group. Both experimental and control groups were randomly assigned. Performance test was the instrument used. Based on the results of the study it was found that:

- Learning together technique of cooperative learning strategy (CLS) was more effective than traditional method in maths teaching of primary 7^{th} class;

- The level "which is concerned with the performance in maths" of the students in the experimental group "in which Learning together technique of cooperative learning method (CLS) is applied" is higher than the level of the students in the control group" in which traditional teaching method is applied".

The study, like the present one, sought to determine the effects of CLS on mathematics performance of students. The study is similar to the present one in that, it made use of experimental and control groups for which cooperative learning strategy and traditional teaching method were applied respectively. However the two studies differ in terms of location and subject area. While the former study was conducted in Balikesir, Turkey with

focus on mathematics, the present study is located in sokoto State, Nigeria with emphasis on geography as a subject in secondary schools.

Sheikhi, Zainalipoor and Jamri (2012), conducted a study to investigate and compare the effect of cooperative learning with an emphasis on Jigsaw technique on the academic performance of 2nd-grade middle school students in district 1 of Bandar Abbas city, (Iran). The design was pre-test post-test semi-experimental with experimental and control groups. The population of the study includes all male and female students studying at the 2nd grade of middle schools located in district 1 of Bandar Abbas city in 2010-2011 academic years, totaling 4126 students, 1961 girls and 2165 boys. Two schools were randomly selected as samples and two 2nd-grade classes were selected in each school, one being the experimental group and one being the control group. The sample size included 153 students, 89 of which were girls and 64 were boys. The Jigsaw model of cooperative leaning method was applied to experimental group and the traditional method of instruction was used for the control group.

The statistical method of analysis of covariance (ANCOVA) was used to test the hypotheses. Result of the study indicated that: Cooperative Learning with an emphasis on Jigsaw II has significantly increased the scores gained by the experimental group as compared with the control group and therefore, the researchers concluded that Jigsaw has been effective in the academic performance of the students.

The above study is similar to present one in that, it sought to determine the effects of CLS on the academic performance of students. The study design employed for the conduct of the above study is also similar to one proposed in the present study i.e. quasi-experimental pre-test post-test control group design. Like what the former researcher did, the present researcher intends to expose the experimental group to treatment using CLS and the control

group will be taught with traditional teaching method. Unlike the present study which is located in Nigeria, the above study was conducted in Iran.

Van Wyk (2011), conducted a study to determine the effects of the cooperative learning technique of Teams-Games-Tournaments (TGT) on the performance, retention, and attitudes toward TGT as a teaching method. A quasi-experimental pre-test post-test control group design was used for the study. The study population comprised of third year Bed student-teachers of Faculty of Education, University of the Free State, Bloemfontein, South Africa where the study was carried out. Assignment of individual student subjects to specific groups was based on the class for which they have registered. The sample was made up of 110 students (98 females and 21 males). The experimental group consisted of 57 students and the control group of 53 students. The experimental group used TGT while the control group was taught using traditional lecture method. The treatment lasted for twelve weeks. Both groups were pretested and post tested using Test of Economic Literacy (TEL), which is a standardized test of economics content, and Attitude and Retention Instruments. Standard Deviation and Analysis of Covariance (ANCOVA) were the statistical tools used to analyse data at descriptive and inferential levels respectively.

Findings from the study revealed that: the cooperative learning method TGT is more effective in terms of academic performance than the traditional lecture method; the retention test score for the TGT group (experimental) compare to the control group were very similar; and that the TGT technique of cooperative learning method is more effective than the lecture method with regard to economics students' attitudes toward the method of instruction as results indicated significantly positive attitude towards TGT as a teaching strategy by experimental group to economics education.

The study is similar to present one in that, it employed quasi-experimental pre-test post-test control group design to determine the effects of CLS of Team-Game-Tournament on

performance, retention and attitudes of students. Similarly, the study is related with the present one in terms of exposure of experimental group to treatment using CLS and control group to traditional lecture method. Unlike the present study which is located in Sokoto state, Nigeria, the former study was conducted in South Africa. In terms of subject areas, the former study focused on Economics Education (University) while the present study is concerned with secondary school geography. As such therefore, the studies are different in terms of levels of education and age of participants.

2.7 Summary

This study focuses on effect of cooperative learning strategy on Geography students' academic performance in Geography in senior secondary schools in sokoto state, Nigeria. In this chapter, literature related to key words in the topic was reviewed. From the literature reviewed so far, cooperative learning method was found to have had strong theoretical support. CLS was embedded in constructivist learning theory which emphasised the active role of learner in the learning process. This active role allows learners to interact with one another and construct their own knowledge. Constructivist learning theory was said to have an important place in Geography (Aydin, 2011). Geography is one of the subjects taught at Nigerian senior secondary schools and the objectives of Geography education at this level were clearly spelt out. The subject has its distinct curriculum (SS 1-3) designed to achieve the objectives.

In order to achieve maximum results, contents, performance objectives, activities for both teachers and learners, teaching and learning materials as well as evaluation guides are all provided in the curriculum. The teacher was found to be a key actor in the implementation of any curriculum and therefore, on whose shoulder the success or otherwise of implementing the Geography curriculum hinges. Provisions have been made of teaching and learning materials necessary for effective teaching and learning of Geography. It was clear from the

literature reviewed that Geography as a school subject has continued to witness changes in the areas of curriculum reforms, instructional methods, development ICT etc.

Geography teaching and learning in secondary schools was characterised by the use of ineffective teaching methods, gender disparities in students' performance and declining academic performance generally. To arrest this problem, the relative effectiveness of CLS has been emphasised by many researchers such as Tshibalo (2003); Aydin (2011); Yusuf (2011) etc. CLS has been described as the most remarkable and fertile area of theory, research and practice in education (Johnson, Johnson & Stanne, 2000). CLS is an instructional method in which small group of students work together to accomplish shared goals. The method has five basic elements which must guide its implementation in the classrooms. These are positive interdependence, face-to-face interaction, individual accountability, social skills and group processing. All the different models of CLS identified in the literature must include these basic elements. Various empirical studies with focus on cooperative learning strategy have been reviewed. In all the studies, CLS was found to have positive effects on student academic performance.

By implication, apart from ineffective methodologies employed by secondary school teachers, gender disparities and poor students' academic performance in Geography are among the major challenges identified in the literature. The need to improve students' academic performance makes it imperative to search for better and more improved methodologies for geography teaching. In this regard, CLS has been found effective in such subject areas as Social Studies, Mathematics Economics among others. It was also discovered that there were fewer similar studies conducted to investigate the effect of CLS on the academic performance of senior secondary students in Geography in this country. Hence, this study is conceived to determine the effect of CLS on the academic performance of students in Geography in selected senior secondary schools in sokoto state, Nigeria. The study will also

examine the extent to which CLS affects the academic performance of students in Geography as a result of gender differences.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter dealt with methods, strategies and procedures employed in the conduct of the research. In this chapter, the research design, population of the study, sample and sampling techniques, instrumentation, validity of the instrument and reliability of the instrument were discussed. Procedures for data collection and methods of data analysis were also explained.

3.2 Research Design

The research design employed for this study was Quasi-experimental design. In quasi-experiments, the investigator uses control and experimental groups but does not randomly assign participants to groups. The design is used where it may not be permissible to randomly assign subjects to groups and the researcher may have no option but to use already existing groups in form of classrooms (Awotunde,& Ugodulunwa, 2004). The design was used to investigate the effect of cooperative learning strategy (CLS) on the academic performance of students in Geography in senior secondary schools in Sokoto state, Nigeria. The design is conceptually represented below:

Group A O1 _____ X_____O2

Group B O1_____O2

Key: O1 represents Pre-test; X represents treatment & O2 represents Post-test.

3.3 Population of the Study

The population for this study consisted of all students of Geography in senior secondary schools in Sokoto State. Data obtained from Sokoto State Ministry of Education (2014) indicated that there were a total of 70 senior secondary schools with a population of 25,220 Geography students. The schools consist of both public and private schools in the state. Of this population, 15,870 are male students and 9,350 are female students. The age of the students ranges from 16-20 years. The population is heterogeneous as it contains students of different socio-economic backgrounds, genders, abilities, cultures, ethnicity and religions.

3.4 Sample and Sampling Techniques

The population of the study was made up of all students of Geography in senior secondary schools in the State. However, SS II Geography students were used for the study. This was because they were found to be most suitable for this study than SS I and SS III. The reason for selecting SS II students is that SS III students were busy with their SSCE and therefore not available for this study while SS I students were newly introduced to the subject. Stratified random sampling technique was used to select the sample for this study. The selection process is thus: the population for the study was divided into two strata based on school location (urban and rural). Two co-educational schools were purposively selected from each stratum. This was done in order to accommodate the gender and school location variables in the study. The urban schools were: Government Day Secondary school, Tudun wada, Sokoto and Government Day Secondary school, Arkilla; rural: Government Secondary School, Dundaye and Government Day Secondary School, Wamakko. A sample of four intact classes of SS II Geography students, each randomly selected from the four schools, were used for the study. One of the two intact classes from urban schools was experimental group and the other was control group, while one of the two intact classes from the rural schools was

tagged experimental group and the other control group. The sample distribution is given in table 3.2 below:

Table 3.1 sample distribution in selected schools

S/N	Sch. Location	Sch. Designation	Grouping	Gender		Group Size
				Male	female	
1.	Urban	B	Control	37	24	61
2.	Rural	A	Experimental	38	17	55
3.	Urban	A	Experimental	53	35	88
4.	Rural	B	Control	27	03	30
			Total	**155**	**79**	**234**

Topics Selected for the Study

For the purpose of designing instrument for this study, a thorough examination of senior secondary geography curriculum (SS1-3), from which the senior secondary II geography syllabus is drawn, was undertaken with a view to selecting topics that emphasize major areas of Senior School Certificate Examination (SSCE). Four topics were selected each from the four major areas of the subject. These are presented in table 3.3 below:

Table 3.2 Topics selected for the study

S/N	Topic	Area
1.	Environmental hazards	Physical Geography
2.	World Population	Human Geography
3.	Transport in Nigeria	Regional Geography of Nigeria
4.	Direction and Bearing	Practical Geography

3.6 Instrumentation

The instrument for this research was Senior Secondary Geography Academic Performance Test (SSGAPT) which consists of twenty (20) items adopted from West African Senior School Certificate Examination (WASSCE) conducted by the West African Examinations Council (WAEC) from 2000 to 2013. All the 20 questions adopted from this instrument, which are objective items in Geography with four options out of which only one is the correct response to the item (s), are based on the topics selected from SS II geography syllabus (see table 3.2 above). The topics selected were: Transport in Nigeria, World Population, Direction and Bearing and Environmental problems. The instrument was made up of two sections; section A & B, section A sought for demographic data of the respondents on gender and school location variables. Section B on the other hand, assessed the academic performance of respondents in geography based on the topics selected.

3.6.1 Validity of the instrument

In order to determine the extent to which the instrument can measure the academic performance of students in Geography, the SSGAPT was scrutinized by the members of supervisory team for this study who are experts in the field of curriculum and instruction at Ahmadu Bello University, Zaria, Nigeria. The same instrument was given to senior lecturers in the Department of Curriculum and Educational Technology and Test and Measurement experts as well as lecturers in the Department of Geography of Usmanu Danfodiyo University, Sokoto, Nigeria, for their observations and recommendations. Therefore the content validity of SSGAPT was established by the above mentioned experts.

3.6.2 Pilot Study

Pilot study of the instrument was conducted at Giginya Memorial Secondary School, sokoto, Nigeria. An intact class of SS II geography students was randomly selected and used for the pilot study. The subjects were tested before and then given the treatment, which was a normal geography lessons on selected topics for this study, which lasted for two weeks. After the treatment, a test was administered to the respondents using SSGAPT and respondents were given 30 minutes to answer all the items.

3.6.3 Reliability of the Instrument

In this study, test retest method of reliability was employed to establish the reliability of SSGAPT. The scores obtained by the subjects from the pilot testing were analysed using Reliability Statistical Package, where the Common inter-item Correlation Coefficient (r) was obtained at 0.78 indicating that the instrument has internal consistency of the items, thus the instrument is said to be reliable and suitable for this particular study.

3.7 Procedure for Data Collection

For the purpose of collecting data for this study, the procedure followed was made up of five stages, namely:

Stage one:

The researcher sought for permission from authorities of the selected schools whose students will be involved in the study. This was to enable the researcher use intact classes for treatment and test administration.

Stage Two:

Since intact classes were used for this study, out of the two urban and two rural schools sampled for this study, two intact classes each from urban and rural schools were used as experimental group. Another two classes each from another urban and rural school served as control group.

The experimental group, which is the group exposed to CLS (treatment) was trained by the researcher on the basic principles of CLS prior to treatment. Students were taught about the existence of group's goal, the need for sharing of opinions and materials, division of labour and group reward. Students in cooperative groups also learnt social skills which they need to facilitate group interactions.

Stage Three:

At this stage, the researcher with the help of research assistants administered the test instrument (SSGAPT) to both experimental and control groups as pre-test. The instrument contains twenty multiple choice items to which subjects were given thirty (30) minute to respond. Verbal explanation was given to respondents on how to answer questions in addition to the written instruction on the question papers distributed to them.

Stage Four:

The experimental group, which is made up of two intact classes each from urban and rural school, was exposed to CLS (treatment). In all, 29 subgroups comprising five members each were formed by the researcher. While forming the groups, consideration was given to heterogeneity of groups in terms of academic ability, gender, socio-economic backgrounds and ethnicity. This was made possible by using pre test results and students' past examination records. The students learnt the assigned tasks within their groups. Before the commencement

of each lesson, each member went to his/her group. Lessons for this treatment were developed around the selected geography topics from SS II syllabus (see appendix B). The topics are Environmental problems, Transportation in Nigeria, world population and Direction and Bearing. Necessary teaching and learning materials including assignment sheets for each group were provided to students prior to commencement of each lesson. The treatment lasted for eight weeks. The control group was concurrently taught geography lessons developed around same selected topics using conventional lecture method.

Stage Five:

At this stage, the researcher with the help of research assistants administered the test instrument (SSGAPT) to both experimental and control groups as post-test. The instrument was same as the one used for pre-test. Verbal explanation was given to respondents on how to answer questions in addition to the written instruction on the question papers distributed to them. This was done after the completion of the treatment.

3.8 Methods of Data Analysis

The data collected were subjected to analysis at two different levels, vis:- Descriptive and Inferential levels. At the descriptive level, the descriptive statistics of mean and standard deviation were used to respond to questions. While at the inferential level the t-test statistics was used to test the research hypotheses. The inferential statistics permit decision making on whether or not to accept the hypotheses after being tested.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents the results and analysis of data collected for the study. Statistical Package for Social Sciences was used to analyze the data at two different levels, viz: descriptive and inferential levels. Mean and standard deviation were used for descriptive analysis and t-test for inferential analysis. The chapter presents respondents' characteristics, descriptive and inferential analysis, research findings and discussion.

4.2 Respondents' characteristics

Table 4.1: Respondents' characteristics based on gender

Gender	***Experimental group***	***Control group***	***Total***
Male	91	64	155
Female	52	27	79
Total	**143**	**91**	**234**

Table 4.1 above shows a total of 234 respondents who participated in the study. The respondents were divided into experimental and control group with 143 and 91 respondents respectively. The experimental group consisted of 91 males 52 females, while control group has 64 males and 27 females. This indicated a total of 155 male and 79 female respondents for this study.

Table 4.2: Respondents' characteristics based on school location

Gender	***Experimental group***	***Control group***	***Total***
Urban	88	61	149
Rural	55	30	85
Total	**143**	**91**	**234**

Table 4.2 above shows respondent's characteristics based on school location. As seen from this table, out of the total 234 respondents for this study, 149 were from urban while 85 were from rural schools. The experimental group consisted of 88 respondents from urban location and 55 from rural. The control group has 61 and 30 respondents from urban and rural locations respectively.

4.3 Descriptive Analysis

The descriptive analysis was done by way of answering research questions as follows:

Research question one: What is the difference between the academic performance of students taught Geography using Cooperative Learning Strategy and those taught with traditional lecture method in Sokoto State?

The question was responded to using students mean performance after exposure to cooperative learning strategy and lecture method as follows

Table 4.3: Experimental and Control group mean performance

Variable	***N***	***Mean***	***Std. Deviation***
Experimental	143	11.74	4.37
Control	91	7.78	3.04

Table 4.3 showed the computation of experimental and control group mean performance after exposure to cooperative learning strategy and lecture method. The table showed that the experimental group had a mean performance of 11.74, while the control group had 7.78. With a mean difference of 3.96, this shows that the experimental group had some level of improvement as a result of exposure to cooperative learning strategy. The standard deviation is indicative of wide variability between the scores of the groups.

Research question two: To what extent does Cooperative Learning Strategy affect the academic performance of male and female students in Geography?

To respond to this question, experimental group mean performance after exposure to cooperative learning strategy was used based on gender as follows:

Table 4.4: Mean performance of male and female students in the experimental group.

Variable	*N*	*Mean*	*Std. Deviation*
Male	91	11.79	4.36
Female	52	11.65	4.44

Table 4.4 highlights the computation of experimental group means performance after exposure to CLS based on gender difference. The mean performance of male was 11.79, while female had 11.65. This showed an insignificant mean difference of 0.14, implying that there is no gain attributable to gender difference. The standard deviation is indicative of wide variability between the scores of the group.

Research question three: What is the difference between the academic performance of urban and rural students taught Geography with Cooperative Learning Strategy in senior secondary schools in Sokoto State?

This question was answered using experimental group mean performance after exposure to cooperative learning strategy based on school location difference as follows:

Table 4.5: Mean performance of urban and rural students taught geography using cooperative learning strategy.

Variable	*N*	*Mean*	*Std. Deviation*
Urban	149	10.64	4.42
Rural	85	9.42	4.14

In table 4.5, the computation of the experimental group mean performance after exposure to cooperative learning strategy based on school location difference shows that the urban

students had a mean of 10.65 and the rural students had 9.42. With a gain of 1.22 by the urban students, this implies very mild difference after exposure to cooperative learning strategy. The standard deviation of 4.42 for urban and 4.14 for rural respondents is indicative of wide variability between the scores of the group.

Research question four: What is the difference in students' performance in practical geography before and after exposure to Cooperative Learning Strategy in Geography?

This question was answered using experimental group mean performance in practical geography before and after exposure to cooperative learning strategy as follows:

Table 4.6: Experimental group's mean performance in practical geography before and after exposure to cooperative learning strategy.

Variable	*N*	*Mean*	*Std. Deviation*
Before	143	0.93	0.76
After	143	1.74	0.46

Table 4.6 shows the computation of students' mean performance in practical geography before and after exposure to cooperative learning strategy. The table depicts that students had a mean performance in practical geography of 0.93 and 1.74 before and after exposure to CLS respectively. This shows mean performance of 0.98 which implies that after exposure to CLS in practical geography students academic performance mildly improved.

Research question five: To what extent does Cooperative Learning Strategy enhance students' performance in physical geography?

To respond to this question, experimental group's performance in physical geography before and after exposure to CLS was used as follows:

Table 4.7: Experimental group's mean performance in physical geography before and after exposure to cooperative learning strategy.

Variable	*N*	*Mean*	*Std. Deviation*
Before	143	1.62	1.01
After	143	3.79	1.61

Table 4.7 shows the computation of the experimental group's performance before and after exposure to CLS in physical geography. It shows that the mean performance before exposure was 1.62 with standard deviation of 1.01 and after exposure to CLS, the mean performance was 3.79 and standard deviation was 1.61. with a mean gain of 2.17, it implies that after exposure to CLS in physical geography students' academic performance improved.

Research question six: **What is the effect of Cooperative Learning Strategy on the performance of students in human geography before and after exposure to Cooperative Learning Strategy?**

This question was answered using experimental group mean performance in human geography before and after exposure to cooperative learning strategy as follows:

Table 4.8: Experimental group's mean performance in human geography before and after exposure to cooperative learning strategy.

Variable	*N*	*Mean*	*Std. Deviation*
Before	143	1.39	1.07
After	143	3.27	1.41

The computation of the experimental group mean performance in table 4.8 showed the mean performance before and after exposure to CLS in human geography. The mean performance before exposure is 1.39 with standard deviation of 1.07, and after exposure to CLS, the mean performance is 3.27 and standard deviation is 1.41. This shows mean performance difference of 1.88. This implies that after exposure to CLS in human geography students' academic performance improved.

4.4 Inferential Analysis

For the inferential analysis which enables test of the research hypotheses, the t-test statistics was used.

Ho_1: There is no significant difference between the academic performance of students taught Geography using Cooperative Learning Strategy and those taught using traditional lecture method in senior secondary schools in sokoto state.

To test hypothesis one, the experimental and control groups' performance scores in post-test were analysed using t-test statistics to find out if any significant difference exists between the groups. The result of the analysis is as follows:

Table 4.9: t-test analysis of significant difference between the post-test performances of experimental and control group

Variable	*N*	*t-cal*	*df*	*α*	*t-crit*	*Decision*
Experimental Control	143 91	8.16	232	.05	1.65	Significant

Table 4.9 showed the calculated t-test as 8.16 at **α**= 0.05 with df= 232 and t-critical= 1.65. This shows the t-calculated (8.16) is greater than the t-critical (1.65). This indicates that there was significant difference between the academic performance of students taught Geography using Cooperative Learning Strategy and those taught using traditional lecture method in senior secondary schools in sokoto state. Hence, hypothesis one which stated that 'there is no significant difference between the academic performance of students taught Geography using Cooperative Learning Strategy and those taught using traditional lecture method in senior secondary schools in sokoto state' , is rejected.

Ho2: There is no significant difference between the academic performances of male and female students taught Geography using Cooperative Learning Strategy in senior secondary schools in sokoto state.

To test the second hypothesis, the post-test performance scores of students exposed to CLS were analyzed using t-test statistical technique to find out if there was significant difference in the performance of male and female students. The result of the analysis is as follows:

Table 4.10: t-test analysis of significant difference between the performances of male and female students exposed to cooperative learning strategy

Variable	***N***	***t-cal***	***df***	***α***	***t-crit***	***Decision***
Male	91	0.18	141	0.05	1.65	Not significant
Female	52					

Table 4.10 showed the calculated t-test as 0.18 at **α=** 0.05 with df= 141 and t-critical= 1.65. This shows the t-calculated (0.18) was less than the t-critical (1.98). This indicates that there was no significant difference between the academic performances of male and female students taught Geography using Cooperative Learning Strategy in senior secondary schools in Sokoto state. Hence, the second null hypothesis which stated that 'there is no significant difference between the academic performances of male and female students taught Geography using Cooperative Learning Strategy in senior secondary schools in Sokoto state' , is retained.

Ho3: There is no significant difference between the academic performance of urban and rural students taught Geography with Cooperative Learning Strategy in senior secondary schools in sokoto state.

To test this hypothesis, the experimental group performance scores from the post-test were analysed using t-test statistics to find out whether significant difference existed between the performances of urban and rural students as shown below:

Table 4.11: t-test analysis of significant difference between the performances of urban and rural students exposed to cooperative learning strategy

Variable	*N*	*t-cal*	*df*	*α*	*t-crit*	*Decision*
Urban	149	2.11	232	0.05	1.65	Significant
Rural	85					

Table 4.11 showed the calculated t-test as 2.11 at **α=** 0.05 with df= 232 and t-critical= 1.65. This shows the t-calculated (2.11) was greater than the t-critical (1.65). This indicates that there was significant difference between the academic performance of urban and rural students taught Geography with Cooperative Learning Strategy in senior secondary schools in Sokoto state. Hence, hypothesis three which stated that 'there is no significant difference between the academic performance of urban and rural students taught Geography with Cooperative Learning Strategy in senior secondary schools in Sokoto state', is not accepted.

Ho4: There is no significant difference in geography students' performance in practical geography before and after exposure to Cooperative Learning Strategy.

To test hypothesis four, the experimental group pre-test and post-test performance in practical geography was analysed using t-test statistical technique as follows:

Table 4.12: t-test analysis of significant difference in experimental group performance in practical geography before and after exposure to Cooperative Learning Strategy

Variable	*N*	*t-cal*	*df*	*α*	*t-crit*	*Decision*
Before	143	10.99	284	0.05	1.65	Significant
After	143					

Table 4.12 showed the calculated t-test as 10.99 at **α=** 0.05 with df= 284 and t-critical= 1.65. This shows the t-calculated (10.99) was greater than the t-critical (1.65). This indicates that there was significant difference in geography students' performance in practical geography before and after exposure to Cooperative Learning Strategy. Thus, the null hypothesis which stated that 'there is no significant difference in geography students' performance in practical geography before and after exposure to Cooperative Learning Strategy', is rejected.

Ho5: There is no significant difference in geography students' performance in physical geography before and after exposure to Cooperative Learning Strategy in Geography in Sokoto State.

To test hypothesis five, the experimental group pre-test and post-test performance in physical geography was analysed using t-test statistical technique as follows:

Table 4.13: t-test analysis of significant difference in experimental group performance in physical geography before and after exposure to Cooperative Learning Strategy

Variable	*N*	*t-cal*	*df*	*α*	*t-crit*	*Decision*
Before	143	12.77	284	0.05	1.65	Significant
After	143					

Table 4.13 showed the calculated t-test as 12.77 at **α=** 0.05 with df= 284 and t-critical= 1.65. This shows the t-calculated (12.77) was greater than the t-critical (1.65). This indicates that there was significant difference in geography students' performance in physical geography before and after exposure to Cooperative Learning Strategy. Thus, the null hypothesis which stated that 'there is no significant difference in geography students' performance in physical geography before and after exposure to Cooperative Learning Strategy', is rejected.

Ho6: There is no significant effect of cooperative learning strategy on geography students' performance in human geography before and after exposure to Cooperative Learning Strategy in Geography in Sokoto State.

To test hypothesis six, the experimental group pre-test and post-test performance in human geography was analysed using t-test statistical technique as follows:

Table 4.14: t-test analysis of significant effect of CLS on students' performance in human geography before and after exposure to Cooperative Learning Strategy

Variable	*N*	*t-cal*	*df*	*α*	*t-crit*	*Decision*
Before	143	13.72	284	0.05	1.65	Significant
After	143					

Table 4.14 showed the calculated t-test as 13.72 at **α=** 0.05 with df= 284 and t-critical= 1.65. This shows the t-calculated (13.72) was greater than the t-critical (1.65). This indicates that there was significant effect of CLS on geography students' performance in human geography after exposure to Cooperative Learning Strategy. Thus, the null hypothesis which stated that 'there is no significant effect of CLS on geography students' performance in human geography before and after exposure to Cooperative Learning Strategy', is rejected.

4.5 Summary of Major Findings

The following major findings were made from this study:

1. Those taught Geography using Cooperative Learning Strategy performed significantly better than those taught using traditional lecture method (t-cal = 8.16, t-crit = 1.65).
2. There was no significant difference between the academic performance of male and female students taught Geography using Cooperative Learning Strategy in senior secondary schools in sokoto state (t-cal =0.18, t-crit = 1.65).
3. The study showed that there is significant difference in the academic performance of urban and rural students when exposed to Cooperative Learning Strategy (t-cal =2.11, t-crit = 1.65).

4. There was significant difference in students' performance in practical geography after exposure to Cooperative Learning Strategy (t-cal = 10.99, t-crit =1.65).
5. There was significant difference in students' academic performance in physical geography after exposure to Cooperative Learning Strategy (t-cal =12.77 t-crit= 1.65).
6. There is significant effect of CLS on the students' academic performance in human geography after exposure to Cooperative Learning Strategy (t-cal = 13.72, t-crit = 1.65).

4.6 Discussion of Findings

This study examined the effect of CLS on Geography students' academic performance in senior secondary schools in Sokoto state, Nigeria.

The first finding revealed that there was significant difference between the academic performance of students taught Geography using Cooperative Learning Strategy and those taught using traditional lecture method. This implies that subjects in the experimental group who were exposed to cooperative learning strategy performed better than the subjects in the control group who were exposed to traditional lecture method. This indicated that cooperative learning strategy was a more effective instructional strategy than lecture method and can be used to improve the academic performance of students in geography. This finding agrees with several other studies, such as that of Tshibalo (2003) and Yusuf (2011), who concluded that there was a statistically significant difference in the performance of students taught using cooperative learning strategy and those taught using conventional instructional strategies. The finding also supports Johnson and Johnson, (1987); Slavin (2007) and Rahvard (2010) who have shown the effectiveness of cooperative learning in promoting students' learning and academic performance.

The effectiveness of cooperative learning strategy in improving students' academic performance might have resulted from active participation of students in their learning. Students work out a given task in small groups of not more than five members per group and this makes it possible to share ideas and improve each others learning. In cooperative group, students perceive that they can reach their learning goals if and only if the other group members also reach they goal. Unlike in other group learning where the brighter students take advantage of large-size group and benefit more than the less brighter ones, cooperative learning assigns responsibility to each member in a group such that every group member is responsible for learning the material and the brighter students share their knowledge with the other members in the group. The CLS removes the barriers associated with teacher-centred instructional methods and offers a very unique learning situation in which learners are given opportunities to actively seek for information, analyse it and construct knowledge by themselves. This provides for deep and real understanding and use of knowledge by the learner.

The second finding indicated that there was no significant difference between the performance of male and female respondents after exposure to CLS. This means that CLS is gender-friendly. Irrespective of gender, both male and female students equally benefited from the use of this strategy. This finding is in conformity with many findings reported by such researchers as Amason (n.d.); Yusuf (2011) and Essien (2012). Yusuf (2011), investigated the effect of cooperative instructional strategy on students' performance in Social studies to find out among other things whether or not the use of CLS has any significant gender effect on academic performance. He found that there was no significant difference in the performance of male and female students taught using cooperative instructional strategy. In yet another study, Pandian (2004) cited in Oludipe (2012), investigated the effects of cooperative computer-assisted learning on male and female students' performance in geography with the

result indicating no significant gender-related difference. The CLS is therefore gender-friendly instructional strategy that can be used to minimize gender disparity in the performance of students in this subject.

The third finding showed that there was significant difference in the academic performance of urban and rural students when exposed to Cooperative Learning Strategy in favour of urban students. The reasons for this may be the different level of development and improvement that characterized rural and urban schools. Urban schools are more equipped with basic school facilities that facilitate learning than rural schools (Ajayi, 2006). This finding corroborates Akinfolarin as cited in Alimi, Ehinola, and Alabi (2012) who identified facilities as a major factor contributing to academic performance in the schools system. Students exposed to CLS in urban school performed better than rural students exposed to CLS because of the advantage of availability of and improved facilities such as classrooms, furniture, laboratories, audio-visual aids, and electricity among others which is common in schools located in urban areas. There are strong evidences showing that a positive relationship exists between availability of facilities such as classrooms, staffrooms, laboratories, workshops, libraries, laboratory equipment, consumables, audio-visual aids, electricity, water, chairs, tables, stationeries, playground etc and students' academic performances. These facilities should be evenly distributed to schools irrespective of location to aid teaching and learning of all subjects.

The fourth finding indicated that there was statistically significant difference in students' performance in practical geography after exposure to Cooperative Learning Strategy. This means that subjects in the experimental group improved their practical geography performance when exposed to CLS. The finding corroborates findings from other similar studies. Tshibalo (2003), concluded that learners who studied mapwork by means of co-operative learning did significantly better than the lecture group in mapwork test. Amosun

(n.d.) supported the outcome of this study as findings from his study revealed that there was a significant main effect of CLS on performance in mapwork. Practical geography or map reading, as it is also called, is said to be the most difficult aspect of geography to students. Many students at secondary school level can neither read nor interpret simple language of map. This may not be unconnected to the fact that this aspect of the subject involves the use of mathematical knowledge, calculation and other skills. Skills required in mapwork include observation, selection, location and recording skills, mathematical, manipulative and interpretation skills (Amosun, n.d.). Cooperative learning is found to be more effective in helping students to learn practical geography in that it provides many opportunities which do not occur in a typical traditional classroom. These include opportunity to learn from each other, sharing of ideas, face-to-face interaction and more importantly it develops the spirit of "we" among students and promotes critical thinking which maximizes their learning.the CLS can be utilized by the teachers to effectively teach map work/practical geography, an aspect of geography that students found most difficult.

The outcome from the test of hypothesis five implies that there was significant difference in students' academic performance in physical geography after exposure to Cooperative Learning Strategy thereby rejecting the hypothesis. This means that the use of cooperative learning strategy has improved students' performance in physical geography. This finding agrees with Amosun (n.d.) who reported that cooperative learning strategy has been found to be more effective in improving students' performance in mapwork, mapwork skills and attitude to geography. The finding is also in agreement with those of Tshibalo (2003) that the average quality of the work produced by co-operative learning effort is usually higher than the average work of individuals. The higher performance recorded by experimental group in post-test would not be unconnected to the effectiveness of cooperative learning strategy in promoting students' self-esteem, developing their social skills and helping them to promote

positive race relationship which goes along way in promoting learning and academic performance.

The sixth finding revealed that there was significant difference in the students' academic performance in human geography after exposure to Cooperative Learning Strategy. This implies that after exposure to Cooperative Learning Strategy, subjects in the experimental group did better in post-test than in pre-test. This means that cooperative learning strategy improved students' academic performance in human geography. The finding agrees with those reported by Johnson, Johnson and Stanne, (2000); Van Wyk (2011) and Sheikhi, Zainalipoor and Jamri (2012). They all reported that CLS is more effective in terms of performance and attitude toward the subject. This was supported by the significant difference in the performance scores between the pre-test and post-test of students who participated in the experimental group. Students were able to improve their human geography performance because of the opportunity for critical thinking and social interaction which cooperative strategy promotes. In cooperative groups students are more likely to work cooperatively to help and promote each other's learning. Through positive interdependence, learners enjoy the benefit of goal, role, task and resource interdependences which help in leaving no member out in the learning process. Another factor which helped students in the experimental group to raise their performances in practical, physical and human geography was the training they received from the researcher prior to exposure to CLS. As rightly pointed out by Gillies and Ashman (1996) in Gillies and Boyle (2010) that when students worked in groups where they were trained to cooperate, the students demonstrated more on-task behaviour, gave more detailed explanation and assistance to each other and obtained higher learning outcomes than their untrained peers.

The findings of this study supports many of the proven benefits of the cooperative learning strategy, and suggests that the cooperative learning strategy has had a positive effect on

students' learning in geography in senior secondary schools. It is clear that the effectiveness of CLS increased student's performance as indicated by a statistically significant difference between post test performance of experimental and control groups.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the study

This study examined the effects of Cooperative Learning Strategy on Geography students' academic performance in senior secondary schools in Sokoto state. The study was prompted by the prevalence of poor academic performance of Senior Secondary School students in Senior Secondary Certificate Examination (SSCE) and observed poor quality of teaching at this level particularly as it affects the teaching and learning of senior secondary geography.

Six research objectives were stated which gave direction to the study. The objectives were to: determine the difference between the academic performances of students taught Geography using Cooperative Learning Strategy and those taught with traditional lecture methods in Sokoto State; examine the extent to which cooperative Learning Strategy affects the academic performance of students in Geography in senior secondary schools in Sokoto state as a result of gender differences; find out the difference between the academic performance of urban and rural students taught Geography with Cooperative Learning Strategy in senior secondary schools in Sokoto state; find out the differences in students' practical geography performance after exposure to Cooperative Learning Strategy in Geography; investigate the effect of Cooperative Learning Strategy on physical geography performance of students before and after exposure to Cooperative Learning Strategy; and ascertain the effect of cooperative learning strategy on human geography performance of students before and after exposure to cooperative leaning strategy. Six research questions and hypotheses were formulated in line with the objectives. The study used quasi-experimental design involving pre-test and post-test. The research instrument was Senior Secondary Geography Academic Performance Test (SSGAPT) which consisted of twenty (20) multiple-choice items adopted from West African Senior School Certificate Examination (WASSCE) from 2000 to 2013.

Both experimental and control groups were pre-tested and post-tested after the experimental group received the treatment which lasted for eight weeks. Descriptive statistics of mean and standard deviation were used to respond to research questions, whereas t-test was used to test all the null hypotheses at $P \leq 0.05$ significance level.

The study revealed that there was significant difference between the academic performance of students taught Geography using Cooperative Learning Strategy and those taught using traditional lecture method in senior secondary schools in sokoto state, meaning that students in the experimental group performed significantly better than their counter parts in the control group; there was no significant difference between the academic performances of male and female students taught Geography using Cooperative Learning Strategy in senior secondary schools in sokoto state; there was significant difference in the academic performance of urban and rural students when exposed to Cooperative Learning Strategy; there was significant difference in students' performance in practical geography after exposure to Cooperative Learning Strategy; there was significant difference in students' academic performance in physical geography after exposure to Cooperative Learning Strategy and there was statistically significant difference in the students' academic performance in human geography after exposure to Cooperative Learning Strategy. The findings in the present study proved many other findings from several similar studies indicating positive effects of CLS on academic performance of students.

5.2 Conclusion

Based on the discussion and findings of this study the following conclusion is drawn: The CLS appears to have a strong record of successes in increasing student's motivation to learn and enhancing higher academic performance. Students exposed to CLS in the present study performed significantly better than those taught geography by means of traditional lecture method. The strategy was found to be gender-friendly as the result from the test of second

hypothesis indicated that differences do not exist between the performance of male and female students who learnt geography by means of CLS. This strategy can be used to address the present trend of poor academic performance of senior secondary school students in geography. Geography teachers at senior secondary level can explore the potential of CLS in order to improve the teaching and learning of geography irrespective of major area of the subject.

5.3 Recommendations

The following recommendations are made.

1. The use of cooperative learning strategy improved the academic performance of students in the present study. As such therefore, geography teachers should be encouraged to use CLS as alternative strategy that they can fall back on in order to improve the teaching and learning of senior secondary geography.
2. Cooperative learning strategy is an effective and gender-friendly instructional strategy that should be used to maximize learning among students irrespective of their gender.
3. Senior secondary schools in the rural areas should be equipped with basic school facilities that facilitate learning of geography by the government to enable the students benefit from the use of CLS at this level.
4. In view of the apparent failure of students particularly in the area of practical, CLS should be used to address the unique trend of poor academic performance of students in practical geography/map reading.
5. Considering the fact that physical geography has been considered by many students as conceptually difficult area, geography teachers should emphasize the use of CLS to teach aspects of physical geography so as to improve the performance of their students.

6. Since geography students' performance is assessed from all the major areas of the subject including human geography, the use of CLS appeared to have improved the academic performance of students in human geography. Hence, teachers should create cooperative environment in the classroom while teaching this aspect of the subject.

5.4 Contribution to Knowledge

1. The idea of CLS is a new phenomenon in current educational trend. This strategy is new and unknown in the locality of this study. This is attested to by geography teachers in Sokoto state (in schools where this study was conducted). This study appeared to have uniquely provided opportunity for geography teachers to be aware of and utilize this idea for effective teaching and learning of geography.
2. Effective use of cooperative learning strategy requires the use of modern gadgets and facilities such as computers and electricity among others. Hence, the study exposes this fact to stakeholders for necessary action.
3. Cooperative learning strategy appeared to have wider applicability and has attracted researchers across many different subject areas. However, researcher's investigation revealed that not much has been done to ascertain the effects of CLS on the performance of senior secondary geography students in the study area. Hence, the desire to embark on this study is a welcome development and meaningful contribution to knowledge.

5.5 Suggestions for further studies

1. The outcomes of this study provide some insights on the effects of the teaching method on students' performance. Additional research is needed to determine the effects of cooperative learning strategy on the learning of difficulty concepts in geography at secondary school level and beyond.

2. Since this study is limited to the consideration of the effect of CLS on Geography students' academic performance in senior secondary schools, similar study may be needed at tertiary level.
3. There is the need to conduct research on the effects of CLS on other variables such as students' attitudes to geography and their retention of learnt materials.
4. Similar study may also be conducted on the attitude of teachers toward utilization of CLS as alternative to conventional instructional methods.

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Appendix A

SENIOR SECONDARY GEOGRAPHY ACADEMIC PERFORMANCE TEST (SSGAPT)

Dear Respondent/Student,

The purpose of this test is to collect data for research and therefore not intended to test either your performance or that of your school. You are kindly requested to answer the questions as honestly as possible by selecting one out of the four options (A, B, C and D) and this should be ticked ( ).

SECTION A: **Demographic Data**

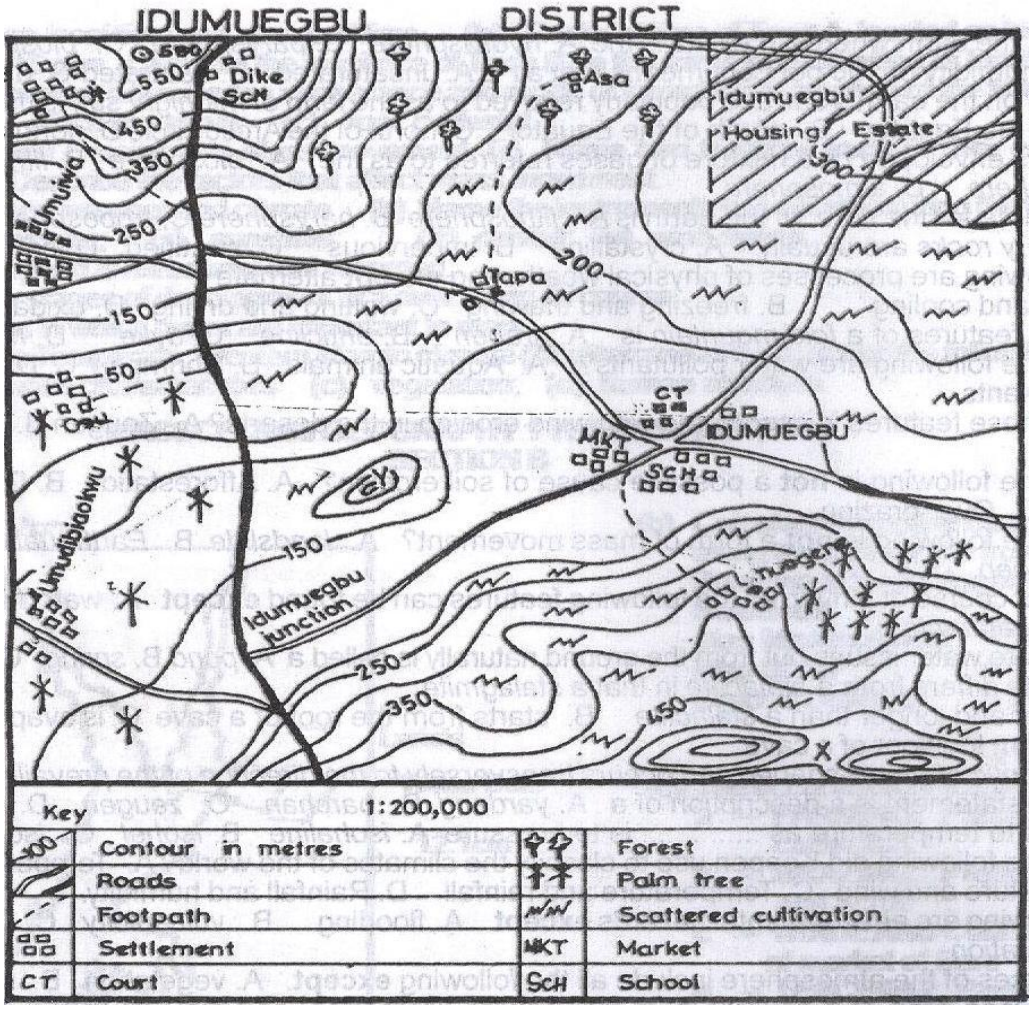
1. Gender : Male { } Female { }
2. Name of Student:-…… 3. Sch. Location: Urban{ } Rural { }

SECTION B:

This section is made up of four parts (***part 1,2,3& 4***), answer all the questions from all parts by ticking one out of the four options (A, B, C, and D) provided against each question.

PART 1: PRACTICAL GEOGRAPHY

Study the Map of IDUMUEGBA DISTRICT below and use it to answer questions **1** and **2**



1. The direction of Umudibiokwu from Tapa is

A. south-east

B. South- West

C. Northwards

D. Eastwards.

2. The bearing of Osu from Umuogene is

A. 288^{O}

B. 280^{0}

C. 260^{O}

D. 252^{O}

PART 2: PHYSICAL GEOGRAPHY

3. All the following constitute environmental hazards **except**

A. urbanization

B. mass wasting

C. Earthquake

D. drought

4. Which of the following is **not** a cause of desertification in West Africa?

A. constant high temperature

B. Deforestation

C. over cultivation

D. overgrazing

5. Deforestation can be caused by

A. an increase in population

B. re-afforestion

C. the establishment of forest res9erves

D. a decrease in the use of fuel wood

6. The most common environmental problems in Niger Delta is

A. Deforestation

B. Aridity

C. Costal flooding

D. Volcanicity

7. Flooding can be prevented by

A. building houses and embarked roads in flood plains to prevent overflow of river water

B. dumping of refuse in drainage channels for awards transportation to ocean deeps

C. building strong fence round residential houses, office blocks and school compounds

D. planning town and cities especially in humid regions

PART 3: HUMAN GEOGRAPHY

8. The number of persons per square kilometer of land is called

A. Total population

B. high population

C. Population density

D. Optimum population.

9. The low population density in the middle belt of West Africa resulted from all the following **except**

A. unfavorable climate

B. The absence of heavy industries in the area

C. inadequate infrastructure

D. inadequacy of food in the area

10. Which of the following is a disadvantage of high population density?

A. unemployment

B. low crime

C.1ow pressure on social amenities

D. Regular flow of traffic

11. The largest concentration of human population is in

A. North America

B. Western Europe

C. West Africa

D. South- East Asia

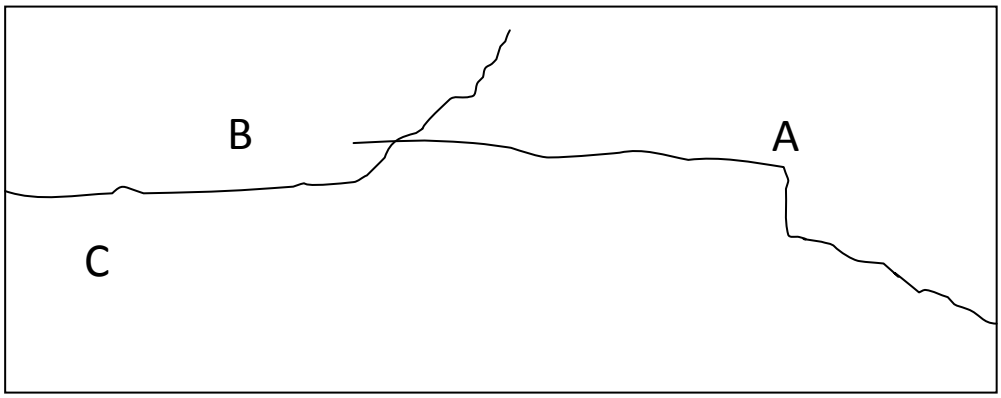
12. If the land area of a place is 900, 000 square kilometers and its total population is 120,000,000, what is the population density of the area?

A. 144 persons per square km

B. 133 persons per square km

C. 122 persons per square km

D. 111 persons per square km



Scale: *I dot represents 10,000 people*

The Map above shows the population of regions A, B and C, use the Map to answer questions **13** to **14**.

13. The total population of inhabitants of region B above is

A. 300, 000

B. 290, 000

C. 280, 000

D.270, 000

14. The difference between the population of region A and region C is

A. 15, 000

B. 20, 000

C. 25, 000

D. 30, 000

PART 4: REGIONAL GEOGRAPHY OF NIGERIA

15. Which mode of transport can easily be affected by weather conditions?

A. Road

B. Rail

C. Water

D. Air

16. Which of the following is **not** a contribution of land transport to the economic development of any country?

A. Generation of income

B. employment opportunities

C. Depopulation of Urban centres

D. Diffusion of ideas and innovation

17. The most common mode of transportation in Nigeria is

A. Air

B. soil

C. ocean

D. Road

18. Which of the following modes of transportation provides door-to-door services?

A. Road transport

B. Rail transport

C. Ocean navigation

D. Air transport

19. The relative advantage of road transportation over other modes of transportation is it's

A. flexibility

B. Fastness

C. safety

D. comfortability

20. Good transportation network promotes all the following **except**

A. national disintegration

B. international trade

C. Movement of people and goods

D. spread of ideas and technology.

Appendix B

Lesson plans for Experimental Group

Lesson plan one

Subject: **Geography**

Topic: **Transportation in Nigeria**

Sub-topic: **Modes of Transportation**

Group: **Experimental**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Strategy: **Cooperative Learning Strategy**

Instructional Materials: Charts, Map and Pictures

Objectives: By the end of the lesson the students should be able to:

1. Explain what transportation is
2. Mention the different modes of transport
3. Give advantages and disadvantages of road transport

Previous knowledge: Students have learnt what transportation is and means of transport in their localities such as Car, Lorry, and Train.

Presentation:

- The subjects will be assigned into small heterogeneous groups of 5 subjects (boys and girls) to allow for better interaction between the students within the group. In order to ensure heterogeneity in each sub group, each sub group will be made up of average, above average and below average students. Each sub group will be assigned a leader among its members.

- Before the commencement of any activity, group leaders are to ensure that their members are appropriately in the groups and each sub group obtain the necessary materials.
- Each subgroup will be provided with answer sheet properly labelled to indicate the subgroup. This will be collected later from the leaders of different subgroups.
- The researcher will introduce the activities covered by the lesson and reminds the subjects of the need for cooperative work in their respective sub groups.
- To ensure role interdependence and individual accountability, each member in the group will be assigned a role. These include group leader, gate keeper, questioner, and group listener. It is the role of group leaders to read out the activities to their groups.

ACTIVITY 1: UNDERSTANDING MODES OF TRANSPORT

Carefully examine the sketch map of Nigeria provided,

- Identify the four modes of transportation as indicated on the map

  1. _____
  2. _____
  3. _____
  4._____

- Explain what road transport is

  _____
  _____
  _____

ACTIVITY 2: ADVANTAGES AND DISADVANTAGES OF ROAD TRANSPORT

- Some of the advantages of road transport include:
  1._____
  2. _____
  3._____
  4._____
- State the disadvantages of roads transportation
  1. _____

2. _____
3._____
4. _____

ACTIVITY 3: IMPORTANCE OF ROADS TO ECONOMIC LIFE OF NIGERIA

- Why do you think roads are important to the economic life of Nigeria?
  1. _____
  2. _____
  3. _____
  4._____
  5. _____

- Through positive interdependence which allow for sharing of information and resources among members and face-to-face interaction which gives subjects opportunity to interact with themselves, share their knowledge as a team and support one another to learn, answers to the above activities will be arrived at.
- Researcher will go round to ensure that every group member contributes to his/ her group learning and completed activities by each subgroup on the answer sheets provided will be collected from different group leaders.
- Research assistant will mark all the completed activities by different sub groups.

Evaluation: The teacher asks the following questions

1. What is transportation?
2. State the different modes of transportation
3. Give any three advantages and disadvantages of road transport

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson.

Assignment: student will be asked to read more about water and rail transports before the next lesson.

Lesson plan Two

Subject: **Geography**

Topic: **Transportation in Nigeria**

Sub-topic: **Water and Rail Transport**

Group: **Experimental**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Strategy: **Cooperative Learning Strategy**

Instructional Materials: Charts, Sketches, Map and Pictures

Objectives: By the end of the lesson the students should be able to:

1. Explain what water transport is
2. State the types of water transport
3. Give advantages and disadvantages of water transport
4. Give advantages and disadvantages of rail transport

Previous knowledge: Students have learnt what transportation is and different modes of transport in their previous lesson.

Presentation:

- The subjects will be assigned into small heterogeneous groups of 5 subjects (boys and girls) to allow for better interaction between the students within the group. In order to ensure heterogeneity in each sub group, each sub group will be made up of average, above average and below average students. Each sub group will be assigned a leader among its members.

- Before the commencement of any activity, group leaders are to ensure that their members are appropriately in the groups and each sub group obtain the necessary materials.
- Each subgroup will be provided with answer sheet properly labelled to indicate the subgroup. This will be collected later from the leaders of different subgroups.
- The researcher will introduce the activities covered by the lesson and reminds the subjects of the need for cooperative work in their respective sub groups.
- To ensure role interdependence and individual accountability, each member in the group will be assigned a role. These include group leader, gate keeper, questioner, and group listener. It is the role of group leaders to read out the activities to their groups.

ACTIVITY 4: WATER TRANSPORT AND ITS TYPES

Carefully study the sketch map of Nigeria and a diagram provided to you,

- Explain what water transport is

  _____

  _____
- Water transport can be classified in to:
  1. _____
  2. _____

ACTIVITY 5: ADVANTAGES AND DISADVANTAGES OF WATER TRANSPORT

Water transport is one of the modes of transportation in Nigeria. It has both advantages and disadvantages.

- Mention the advantages of water transport
  1. _____
  2. _____
  3. _____
  4. _____
  5. _____
- Mention some disadvantages of water transport
  1. _____
  2. _____
  3. _____
  4. _____
  5. _____

ACTIVITY 6: RAIL TRANSPORT: ADVANTAGES AND DISADVANTAGES

- Explain what rail transport is

  _____

  _____

- Mention the advantages of rail transport

  1. _____
  2. _____
  3. _____
  4. _____
  5. _____

- Mention some disadvantages of water transport

  1. _____
  2. _____
  3. _____
  4. _____
  5. _____

Evaluation: The teacher asks the following questions

1. Differentiate between water and rail transport
2. State two advantages and disadvantages of rail transport
3. Give any two advantages and disadvantages of water transport

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson.

Lesson plan Three

Subject: **Geography**

Topic: **Transportation in Nigeria**

Sub-topic: **Air Transports in Nigeria**

Group: **Experimental**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Strategy: **Cooperative Learning Strategy**

Instructional Materials: Charts, Sketches, Map and Pictures

Objectives: By the end of the lesson the students should be able to:

1. Explain what air transport is
2. State the types of services provided by air transport
3. Give three problems of air transport and their solutions

Previous knowledge: Students are familiar with different modes of transport.

Presentation:

- The subjects will be assigned into small heterogeneous groups of 5 subjects (boys and girls) to allow for better interaction between the students within the group. In order to ensure heterogeneity in each sub group, each sub group will be made up of average, above average and below average students. Each sub group will be assigned a leader among its members.
- Before the commencement of any activity, group leaders are to ensure that their members are appropriately in the groups and each sub group obtain the necessary materials.

- Each subgroup will be provided with answer sheet properly labelled to indicate the subgroup. This will be collected later from the leaders of different subgroups.
- The researcher will introduce the activities covered by the lesson and reminds the subjects of the need for cooperative work in their respective sub groups.
- To ensure role interdependence and individual accountability, each member in the group will be assigned a role. These include group leader, gate keeper, questioner, and group listener. It is the role of group leaders to read out the activities to their groups.

ACTIVITY 7: AIR TRANSPORT: TYPES OF SERVICES

Study the sketch map and a diagram provided to you and carefully answer the questions below:

- From the sketch map, identify two types of services provided by air transport in Nigeria
  1. _____
  2. _____
- Explain each of the services identified above
  1._____
  _____ _____
  2._____
  _____

ACTIVITY 8: IDENTIFYING PROBLEMS OF AIR TRANSPORT

- What are the problems of air transport in Nigeria?
  _____
  _____
  _____
  _____
  _____
- Suggest possible solutions to problems identified above
  _____
  _____
  _____
  _____
  _____

Evaluation: The teacher will asks the following questions

1. What is air transport?
2. Mention two types of services provided by air transport
3. State any three problems of air transport and their possible solutions.

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson.

Assignment: Students will be asked to draw a sketch map of Nigeria and show and name the following:

i. Two international airports

ii. Two local airports

Lesson plan Four

Subject: **Geography**

Topic: **World population**

Sub-topic: **World population distribution and Density**

Group: **Experimental**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Strategy: **Cooperative Learning Strategy**

Instructional Materials: population and density Maps, Charts and Sketches

Objectives: By the end of the lesson the students should be able to:

1. Explain the concept of population
2. Identify two areas each for
   a. high population belt
   b. moderate population belt
   c. low population belt
3. Explain population density
4. Calculate the population density of any given area

Previous knowledge: Students have learnt about population of Nigeria in terms of size, structure, distribution etc.

Presentation:

- The subjects will be assigned into small heterogeneous groups of 5 subjects (boys and girls) to allow for better interaction between the students within the group. In order to ensure heterogeneity in each sub group, each sub group will be made up of average, above average and below average students. Each sub group will be assigned a leader among its members.

- Before the commencement of any activity, group leaders are to ensure that their members are appropriately in the groups and each sub group obtain the necessary materials.
- Each subgroup will be provided with answer sheet properly labelled to indicate the subgroup. This will be collected later from the leaders of different subgroups.
- The researcher will introduce the activities covered by the lesson and reminds the subjects of the need for cooperative work in their respective sub groups.
- To ensure role interdependence and individual accountability, each member in the group will be assigned a role. These include group leader, gate keeper, questioner, and group listener. It is the role of group leaders to read out the activities to their groups.

ACTIVITY 9: POPULATION DISTRIBUTION: IDNTIFYING AREAS OF HIGH, MODERATE AND LOW POPULATION IN THE WORLD

You are provided with world population map, study the map and answer the questions below:

- Explain what population is

  _____

  _____

- From the map, mention two areas each for high, moderate and low population
  High population _____
  Moderate population _____
  Low population _____

ACTIVITY 10: DETERMINING THE POPULATION DENSITY

You are provided with population density map, study the map and answer the questions that follow

- What is the total population of region B?

  _____

- What is the difference between the population of regions A and C?

- If population density = Total number of people / land Area, what is the population density of region A?

  _____

  _____

Evaluation: The teacher will ask the following questions:

1. What is population?

3. State the world population belts
4. Identify two areas from each population belt
5. If the land area of a place is 134, 703 and total population is 90, 000, 000, calculate the population density of the place

Lesson plan Five

Subject: **Geography**

Topic: **World population**

Sub-topic: **Factors affecting World population distribution**

Group: **Experimental**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Strategy: **Cooperative Learning Strategy**

Instructional Materials: population and density Maps Charts and Sketches

Objectives: By the end of the lesson the students should be able to:

1. Give and explain the human factors affecting population distribution
2. State and explain the physical factors affecting population distribution
3. State the reason for rapid growth of world population

Previous knowledge: Students have learnt about world population distribution patterns.

Presentation:

- The subjects will be assigned into small heterogeneous groups of 5 subjects (boys and girls) to allow for better interaction between the students within the group. In order to ensure heterogeneity in each sub group, each sub group will be made up of average, above average and below average students. Each sub group will be assigned a leader among its members.
- Before the commencement of any activity, group leaders are to ensure that their members are appropriately in the groups and each sub group obtain the necessary materials.

- Each subgroup will be provided with answer sheet properly labelled to indicate the subgroup. This will be collected later from the leaders of different subgroups.
- The researcher will introduce the activities covered by the lesson and reminds the subjects of the need for cooperative work in their respective sub groups.
- To ensure role interdependence and individual accountability, each member in the group will be assigned a role. These include group leader, gate keeper, questioner, and group listener. It is the role of group leaders to read out the activities to their groups.

ACTIVITY 11: IDENTIFYING FACTORS AFFECTING POPULATION DISTRIBUTION

You are provided with population map, carefully examine it and attempt the following questions**.**

- Identify the human factors responsible for the population distribution patterns

_____
_____
_____
_____
_____

Explain any three factors identified above

_____
_____
_____
_____

- Identify the physical factors responsible for the population distribution patterns

_____
_____
_____
_____

Explain any three factors identified above

_____
_____
_____
_____

Evaluation: The teacher evaluates the lesson by asking the following questions:

1. State any three human factors affecting population distribution
2. Explain any three physical factors affecting population distribution.

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson. The teacher will inform the students that the next topic would be on environmental problems/hazards.

Assignment: Students would be asked to read about environmental problems.

Lesson plan Six

Subject: **Geography**

Topic: **Environmental Hazard/problems**

Sub-topic: **Meaning and Types of Environmental problems**

Group: **Experimental**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Strategy: **Cooperative Learning Strategy**

Instructional Materials: Documentary, Illustrative Sketches and Diagrams

Objectives: By the end of the lesson the students should be able to:

1. Explain what environmental hazards are
2. Enumerate environmental hazards
3. Define flooding
4. Mention three causes of flooding
5. Explain what deforestation is

Previous knowledge: Students are familiar with some environmental problems in their community such as erosion, deforestation, flooding etc.

Presentation:

- The subjects will be assigned into small heterogeneous groups of 5 subjects (boys and girls) to allow for better interaction between the students within the group. In order to ensure heterogeneity in each sub group, each sub group will be made up of average, above average and below average students. Each sub group will be assigned a leader among its members.

- ❖ Before the commencement of any activity, group leaders are to ensure that their members are appropriately in the groups and each sub group obtain the necessary materials.
- ❖ Each subgroup will be provided with answer sheet properly labelled to indicate the subgroup. This will be collected later from the leaders of different subgroups.
- ❖ The researcher will introduce the activities covered by the lesson and reminds the subjects of the need for cooperative work in their respective sub groups.
- ❖ To ensure role interdependence and individual accountability, each member in the group will be assigned a role. These include group leader, gate keeper, questioner, and group listener. It is the role of group leaders to read out the activities to their groups.

ACTIVITY 12: IDENTIFICATION OF ENVIRONMENTAL HAZARDS

You are provided with illustrative diagram and documentary of environmental problems

❖ From the diagram and documentary you watched name the environmental problems affecting this area

1. _____
2. _____
3. _____
4. _____
5. _____

❖ Explain what flooding is

_____

_____

❖ Explain what deforestation is

_____

_____

ACTIVITY 13: CAUSES, EFFECTS AND CONTROL MEASURES OF FLOODING

❖ State three causes of flooding

_____

_____

_____

❖ State the effects of flooding

_____

_____

_____

❖ Explain three ways through which flooding can be controlled

_____
_____
_____

ACTIVITY 14: CAUSES, EFFECTS AND CONTROL MEASURES OF DEFORESTATION

❖ What are the causes of deforestation?

_____
_____
_____

❖ State three effects of deforestation

_____
_____
_____

❖ Explain three ways through which deforestation can be controlled

_____
_____
_____

Evaluation: The teacher evaluates the lesson by asking the following questions:

1. What is environmental hazard?
2. Enumerate any three environmental hazards
3. What is flooding?
4. Give two causes of flooding
5. State three effects of deforestation

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson. The teacher will inform the students that the next lesson would be on erosion and desertification.

Assignment: Students would be asked to read about erosion and desertification before the next lesson.

Lesson plan Seven

Subject: **Geography**

Topic: **Environmental Hazard/problems**

Sub-topic: **Erosion, Desertification & Pollution**

Group: **Experimental**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Strategy: **Cooperative Learning Strategy**

Instructional Materials: Documentary, Illustrative Sketches and Diagrams

Objectives: By the end of the lesson the students should be able to:

1. Explain what soil erosion is
2. Enumerate the causes of soil erosion
3. Define desertification
4. Mention the causes of desertification
5. Explain what pollution is

Previous knowledge: Students have learnt about flooding and deforestation in their previous lesson.

Presentation:

- The subjects will be assigned into small heterogeneous groups of 5 subjects (boys and girls) to allow for better interaction between the students within the group. In order to ensure heterogeneity in each sub group, each sub group will be made up of average, above average and below average students. Each sub group will be assigned a leader among its members.

- Before the commencement of any activity, group leaders are to ensure that their members are appropriately in the groups and each sub group obtain the necessary materials.
- Each subgroup will be provided with answer sheet properly labelled to indicate the subgroup. This will be collected later from the leaders of different subgroups.
- The researcher will introduce the activities covered by the lesson and reminds the subjects of the need for cooperative work in their respective sub groups.
- To ensure role interdependence and individual accountability, each member in the group will be assigned a role. These include group leader, gate keeper, questioner, and group listener. It is the role of group leaders to read out the activities to their groups.

ACTIVITY 15: EROSION: CAUSES, EFFECTS AND CONTROL MEASURES OF EROSION

From the documentary you listened to answer the questions below:

- Explain what soil erosion is

_____

_____

- What are the causes of soil erosion?

_____

_____

_____

- State three effects of soil erosion

_____

_____

_____

- Identify three ways through which soil erosion can be controlled

_____

_____

_____

ACTIVITY 16: DESERTIFICATION: CAUSES, EFFECTS AND CONTROL MEASURES

- Explain what desertification is

_____

_____

❖ What are the causes of desertification?

_____
_____
_____

❖ State the effects of desertification

_____
_____
_____

❖ How can desertification be controlled?

_____
_____
_____
_____

Evaluation: The teacher evaluates the lesson by asking the following questions:

1. What is soil erosion?
2. Enumerate any three causes of soil erosion
3. What is desertification?
4. Mention at least three causes of desertification

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson.

Lesson plan Eight

Subject: **Geography**

Topic: **Direction and Bearing**

Sub-topic: **Direction and Bearing**

Group: **Experimental**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Strategy: **Cooperative Learning Strategy**

Instructional Materials: Topographical Map, Sketches, Diagrams, Ruler, Pencil and Compass.

Objectives: By the end of the lesson the students should be able to:

1. Identify the major cardinal points
2. Find the direction of a place on a map
3. Determine the bearing of a place on a map

Previous knowledge: Students have learnt about map distance.

Presentation:

- The subjects will be assigned into small heterogeneous groups of 5 subjects (boys and girls) to allow for better interaction between the students within the group. In order to ensure heterogeneity in each sub group, each sub group will be made up of average, above average and below average students. Each sub group will be assigned a leader among its members.
- Before the commencement of any activity, group leaders are to ensure that their members are appropriately in the groups and each sub group obtain the necessary materials.

- ❖ Each subgroup will be provided with answer sheet properly labelled to indicate the subgroup. This will be collected later from the leaders of different subgroups.
- ❖ The research assistant will introduce the activities covered by the lesson and reminds the subjects of the need for cooperative work in their respective sub groups.
- ❖ To ensure role interdependence and individual accountability, each member in the group will be assigned a role. These include group leader, gate keeper, questioner, and group listener. It is the role of group leaders to read out the activities to their groups.

ACTIVITY 17: FINDING OUT THE DIRECTION AND BEARING OF PLACES

You are provided with sketch map of ODU DISTRICT

❖ Draw a cardinal point with its centre located at SOFIA settlement and then use a ruler to draw a straight line from SOFIA to ODU joining the two settlements. What is the direction of ODU from SOFIA?

_____

❖ Draw four cardinal points with its centre at ODU and then a straight line joining ODU and YAPO settlements. Place your protractor at ODU and the centre of your protractor should be at the centre of the "Cross". Then read the bearing in clockwise direction. What is the bearing of YAPO from ODU?

_____

Evaluation: The teacher evaluates the lessons by asking the following questions

1. Draw and label the eight cardinal points
2. On the sketch map provided,
    a. what is the direction of town A from town B
    b.what is the bearing of town A from town B

Conclusion: The teacher concludes the lesson by giving class work to students and going round to assist them.

Appendix C

Lesson plans for Control Group

Lesson plan one

Subject: **Geography**

Topic: **Transportation in Nigeria**

Sub-topic: **Modes of Transportation**

Group: **Control**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Method: **Lecture Method**

Instructional Materials: Charts, Map and Pictures

Objectives: By the end of the lesson the students should be able to:

1. Explain what transportation is
2. Mention the different modes of transport
3. Give advantages and disadvantages of road transport

Previous knowledge: Students have learnt what transportation is and means of transport in their localities such as Car, Lorry, and Train.

Introduction: The teacher introduces the lesson by asking the following questions:

1. What are the uses of cars/a Bus?
2. Have you ever travelled to any city/village?
3. What means of transport did you use?

Presentation: the teacher presents the lesson through the following steps:

Step I: The teacher explains clearly the concept of transportation

Step II: The teacher will identify and briefly explain the different modes of transportation. These are roads, rail, water, air, pipelines etc.

Step III: The teacher explains to students what road transport is and its importance in the economic life of Nigeria

Step IV: The teacher explains the advantages and disadvantages of road transport

Evaluation: The teacher asks the following questions

1. What is transportation?
2. State the different modes of transportation
3. Give any three advantages and disadvantages of road transport

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson

Lesson plan Two

Subject: **Geography**

Topic: **Transportation in Nigeria**

Sub-topic: **Water and Rail Transports**

Group: **Control**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Method: **Lecture Method**

Instructional Materials: Charts, Map and Pictures

Objectives: By the end of the lesson the students should be able to:

1. Explain what water transport is
2. State the types of water transport
3. Give advantages and disadvantages of water transport
4. Give advantages and disadvantages of rail transport

Previous knowledge: Students have learnt about roads transport in their previous lesson

Introduction: The teacher introduces the lesson by asking the following questions:

1. What are the modes of transportation in Nigeria?

Presentation: the teacher presents the lesson through the following steps:

Step I: The teacher explains clearly to students what water transportation is. The teacher explains the two types of water transportation, namely:

1. Inland water ways transport
2. Ocean navigation

Step II: The teacher will explain the advantages and disadvantages of water transport in Nigeria.

Step III: The teacher explains to students what rail transport is.

Step IV: The teacher explains the advantages and disadvantages of rail transport

Evaluation: The teacher asks the following questions

1. Differentiate between water and rail transport
2. State two advantages and disadvantages of rail transport
3. Give any two advantages and disadvantages of water transport

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson

Lesson plan Three

Subject: **Geography**

Topic: **Transportation in Nigeria**

Sub-topic: **Air Transport in Nigeria**

Group: **Control**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Method: **Lecture Method**

Instructional Materials: Charts, Map and Pictures

Objectives: By the end of the lesson the students should be able to:

1. Explain what air transport is
2. State the types of services provided by air transport
3. Give three problems of air transport and their solutions

Previous knowledge: Students are familiar with different modes of transportation.

Introduction: The teacher introduces the lesson by asking the following questions:

1. What are the modes of transportation in Nigeria?

Presentation: The teacher presents the lesson through the following steps:

Step I: The teacher explains to students what air transportation is. The teacher explains the two types of services provided by air transportation, namely:

1. International Services

2. Domestic Services

Step II: The teacher will explain to students the problems of air transport in Nigeria and their possible solutions.

Evaluation: The teacher asks the following questions

1. What is air transport?
2. State any three problems of air transport and their possible solutions.

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson

Assignment: Students will be asked to draw a sketch map of Nigeria and show and name the following:

i. Two international airports
ii. Two local airports

Lesson plan Four

Subject: **Geography**

Topic: **World Population**

Sub-topic: **World Population Distribution and Density**

Group: **Control**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Method: **Lecture Method**

Instructional Materials: Population and density Maps, Sketches and Diagrams

Objectives: By the end of the lesson the students should be able to:

1. Explain the concept of population
2. Identify two areas each for
   a. high population belt
   b. moderate population belt
   c. low population belt
3. Explain population density
4. Calculate the population density of any given area

Previous knowledge: Students have learnt about population of Nigeria in terms of size, structure, distribution etc.

Introduction: The teacher introduces the lesson by asking the following question:

1. What is population?

Presentation: The teacher presents the lesson through the following steps:

Step I: The teacher explains clearly to students the concept of population. For example, population can be seen as the number of people living in an area at a particular period of time.

Step II: The teacher explains what population distribution is and identifies the three (3) major population belts in the world. These are:

1. High population belts

2. Moderate population belts

3. Low population belts

Step III: The teacher will identify areas of high population, moderate population and low population belts in the world. High population belt: tropical Asia, Peninsular Europe, Eastern North Europe etc. Moderate population belts: the West Africa sub region, the Nile valley and Delta of Egypt, the temperate belt of South Eastern Australia. Low population belts: the desert land of Sahara, Atakama and Kalahari region, Central Africa etc.

Evaluation: The teacher asks the following questions

1. What is population?
3. State the world population belts
4. Identify two areas from each population belt
5. If the land area of a place is 134, 703 and total population is 90, 000, 000, calculate the population density of the place

Conclusion: The teacher concludes the lesson by giving class work to students and going round to assist them.

Assignment: 1**.** Differentiate between population density and population distribution

2. If the town A has total population of 120, 000, 000 people and land area of 152, 205, what is the population density of town A

Lesson plan Five

Subject: **Geography**

Topic: **World Population**

Sub-topic: **Factors Affecting World Population Distribution**

Group: **Control**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Method: **Lecture Method**

Instructional Materials: Population Map, Sketches and Diagrams

Objectives: By the end of the lesson the students should be able to:

1. Give and explain the human factors affecting population distribution
2. State and explain the physical factors affecting population distribution
3. State the reason for rapid growth of world population

Previous knowledge: Students have learnt about world population distribution patterns.

Introduction: The teacher introduces the lesson by asking the following question:

1. Is world population evenly distributed?
2. What are the reasons for disparity in population distribution between places?

Presentation: The teacher presents the lesson through the following steps:

Step I: The teacher will mention and explain the human factors affecting population distribution. These include industry, transport network etc.

Step II: The teacher will identify and explain the physical factors affecting world population distribution such as climate, soil, water availability etc

Step III: The teacher explains the various reasons for the rapid growth of world population which include increase in birth rate, decrease in death rate, religion, early marriage etc.

Evaluation: The teacher evaluates the lesson by asking the following questions:

1. State any three human factors affecting population distribution
2. Explain any three reasons for the rapid growth of world population

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson. The teacher will inform the students that the next topic would be on environmental problems/hazards.

Assignment: Students would be asked to read about environmental problems

Lesson plan Six

Subject: **Geography**

Topic: **Environmental Hazards**

Sub-topic: **Meaning and Types of Environmental problems**

Group: **Control**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Method: **Lecture Method**

Instructional Materials: Illustrative Sketches and Diagrams

Objectives: By the end of the lesson the students should be able to:

1. Explain what environmental hazards are
2. Enumerate environmental hazards
3. Define flooding
4. Mention three causes of flooding
5. Explain what deforestation is

Previous knowledge: Students are familiar with some environmental problems in their community such as erosion, deforestation, flooding etc.

Introduction: The teacher introduces the lesson by asking the following question:

1. Have you ever witnessed any environmental hazard in your community?
2. If yes, what cause it?

Presentation: The teacher presents the lesson through the following steps:

Step I: The teacher will clearly explain the meaning of environmental hazards to students. Teacher lists the different forms of environmental hazards. These include: flooding, erosion, deforestation, drought etc.

Step II: The teacher will explain to students the meaning and causes of flooding. Flooding is the accumulation of excessive quantity of water in an area without flowing away easily. Some of the causes of flooding include heavy rainfall, inadequate town planning etc,

Step III: The teacher explains the effects and control measures of flooding

Step IV: The teacher explains to students the meaning and causes of deforestation. Deforestation can be seen as an act of indiscriminate felling of trees as timber and for domestic and other uses thereby leading to destruction of forest resources.

Step V: The teacher explains the effects and control measures of flooding to students

Evaluation: The teacher evaluates the lesson by asking the following questions:

1. What is environmental hazard?
2. Enumerate any three environmental hazards
3. what is flooding?
4. Give two causes of flooding
5. State three effects of deforestation

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson. The teacher will inform the students that the next lesson would be on erosion and desertification.

Assignment: Students would be asked to read about erosion and desertification before the next lesson.

Lesson plan Seven

Subject: **Geography**

Topic: **Types of Environmental Hazards**

Sub-topic: **Erosion, Desertification and Pollution**

Group: **Control**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Method: **Lecture Method**

Instructional Materials: Illustrative Sketches and Diagrams

Objectives: By the end of the lesson the students should be able to:

1. Explain what soil erosion is
2. Enumerate the causes of soil erosion
3. Define desertification
4. Mention the causes of desertification
5. Explain what pollution is

Previous knowledge: Students have learnt about flooding and deforestation in their previous lesson.

Introduction: The teacher introduces the lesson by asking the following question:

1. What are the environmental hazards you know?

Presentation: The teacher presents the lesson through the following steps:

Step I: The teacher will clearly explain what soil erosion is.
Soil erosion: This is the wearing away of the top layer of soils by water, wind or ice.

Step II: The teacher explains to students the causes, effects and control measures of soil erosion. Causes of erosion include: overgrazing, bush burning, excessive rainfall, deforestation etc.

Step III: The teacher further explains the meaning, causes, effects and control measures of desertification to students.

Step IV: The teacher explains to students the meaning and types of pollution.

Evaluation: The teacher evaluates the lesson by asking the following questions:

1. What is soil erosion?
2. Enumerate any three causes of soil erosion
3. What is desertification?
4. Mention at least three causes of desertification

Conclusion: The teacher concludes the lesson by summarizing the main points of the lesson.

Lesson plan Eight

Subject: **Geography**

Topic: **Direction and Bearing**

Sub-topic: **Direction and Bearing**

Group: **Control**

Class: **SS II**

Age: **15-16 years**

Sex: **Mixed (Boys and Girls)**

Teaching Method: **Lecture Method**

Instructional Materials: Topographical Map, Sketches and Diagrams, Ruler and Compass

Objectives: By the end of the lesson the students should be able to:

1. Identify the major cardinal points
2. Find the direction of a place on a map
3. Determine the bearing of a place on a map

Previous knowledge: Students have learnt about map distance.

Introduction: The teacher introduces the lesson by asking the following question:

1. How many points a compass has?

Presentation: The teacher presents the lesson through the following steps:

Step I: The teacher explains clearly to students the concepts of direction and bearing. Direction refers to relative position of a point/place from a given location. Bearing, on the other hand can be defined as the difference in angles between two places and true north

Step II: The teacher mentions the two principal ways determining the direction and bearing of a place respectively. These are:

1. Compass points

2. Angular bearing

Compass points: This involves the use of four cardinal points, north, south, east and west to show the direction of places.

Angular bearing: This involves the use of protractor to determine the angular sss bearing of places which is usually measured in degrees and in a clockwise manner

Step III: With the aid of topographical map, the teacher gives examples on how to find both direction and bearing of places.

Evaluation: The teacher evaluates the lessons by asking the following questions

1. What are the four major cardinal points?
2. On the sketch map provided,
    a. what is the direction of town A from town B
    b.what is the bearing of town A from town B

Conclusion: The teacher concludes the lesson by giving class work to students and going round to assist them.