EFFECTS OF SELECTED INSTRUCTIONAL RESOURCES ON ACADEMIC PERFORMANCE OF UPPER BASIC SOCIAL STUDIES STUDENTS IN DELTA STATE

BY

ATUBI, Onamrewho Favour

DEPARTMENT OF SOCIAL SCIENCE EDUCATION, FACULTY OF EDUCATION, DELTA STATE UNIVERSITY, ABRAKA.

DECEMBER, 2021

EFFECT OF SELECTED INSTRUCTIONAL RESOURCES ON ACADEMIC PERFORMANCE OF UPPER BASIC SOCIAL STUDIES STUDENTS IN DELTA STATE

ATUBI, Onamrewho Favour
PG/19/20/257498

B.Sc. Geography and Regional planning, Delta State University, Abraka (2002), PGDE, Delta State University, Abraka (2017) and M.Sc. (Ed.) Delta State University Abraka (2019).

A Thesis Presented to the Department of Social Science Education, Faculty of Education and Submitted to the Postgraduate School, Delta State University, Abraka, in Partial Fulfilment of the Requirements for the Award of Doctor of Philosophy (Ph.D.) Degree in Social Studies Education.

DECEMBER, 2021

DECLARATION

I hereby declare that this is an original thesis successfully conducted by me ATUBI, Onamrewho Favour in the Department of Social Science Education, Faculty of Education, Delta State University, Abraka, in partial fulfilment of the requirements needed for an award of the Doctor of Philosophy (Ph.D.) degree in Social Studies

------------------------------   -----------------------------
ATUBI, Onamrewho Favour   **Date**

CERTIFICATION

We the undersigned certify that this Ph.D. thesis was undertaken by ATUBI, Onamrewho Favour in the Department of Social Science Education, Faculty of Education, Delta State University, Abraka.

------------------------------   ----------------------------
Prof. P.O. Dania   **Date**
Supervisor

------------------------------   ----------------------------
Dr. E.C. Ogheneakoke   **Date**

------------------------------   ----------------------------
Prof. P. O. Dania   **Date**
 Head of Department

DEDICATION

This research is dedicated to my husband Prof. A. O. Atubi and my children Clinton, Roland, Hilary and Jefferson Atubi.

TABLE OF CONTENTS

CHAPTER THREE

RESEARCH METHOD AND PROCEDURE

CHAPTER FOUR: PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The focus of this study was to ascertain the effectiveness of instructional resources of Aerial Photographs, Google Earth and Maps on the academic performance of Upper Basic Social Studies students in Delta State, the moderating and interaction effect of gender and school location on academic performance as it affects the use of these instructional resources were also investigated. Twelve research questions were raised and answered, while tweive hypotheses formulated and tested. The study was built on three theories, Gavriel Salomon Symbol Systems Theory: Jean Piaget Constructivism Theory and Howard Gardner Theory of Multiple Intelligences. A quasi-experimental pre-test and post-test control group with a factorial design of 4x2x2 was the research design employed for the study. A sample size of 260 males and female upper basic 8 students of Social Studies from four mixed schools were selected from a population of 80,912 students across the 453 public upper basic schools in Delta State. Multi-stage and purposive sampling technique were used to select the Local Government Areas and schools respectively. The instrument for data collection was an academic performance test titled "Social Studies Performance Test" (SSPT). The reliability of the instrument was ascertained with test-retest reliability method and a Pearson's Product Moment Correlation Coefficient (PPMC) of 0.81 was obtained. Descriptive statistics of mean and standard deviation were used to answer research questions, while Analysis of Covariance (ANCOVA) was employed for hypotheses testing at 0.05 level of significance. From the analysis of data conducted, the following findings were reported. There was significant effect of Aerial Photographs and maps instructional resources on academic performance of Social Studies students; there was no significant effect of Google Earth on students' academic performance; moderating effects of students gender was significant for Aerial Photographs but was not significant for Google Earth and Maps; moderating effect of school location was significant for Aerial Photographs and academic performance alone but was not significant for Google Earth and Maps. The interaction effect of gender, school location and Aerial Photographs on academic performance reported interaction between gender and Aerial Photographs but non- interaction was observed for school location; same interaction results were obtained for gender, school location and Google Earth; however, there was significant interaction effect between gender, school location and Maps on academic performance and there was significant interaction effect of Aerial Photographs, Google Earth and Maps on Students' Academic Performance. Following these findings, recommendations were made that Social Studies teachers should make vigorous efforts to implement the use of Aerial Photographs and Maps for Social Studies instructions in Upper Basic schools. The study contributed the following to knowledge, it established that Aerial Photographs and maps are promoters of academic performance; the study demonstrated that the use of Aerial Photographs is affected by gender and school location, while Google Earth and Maps are not affected by gender and school location and this study has provided evidence to the interaction effects of instructional resources, gender and school location on academic performance of Upper Basic Social Studies students in Delta State.
 (498).

CHAPTER ONE
INTRODUCTION

Background to the Study

Education is a major tool needed for the advancement of people and nations, it is the strongest instrument for imparting knowledge, attitudes, skills and habits into the younger generation from time immemorial. This explains why the National Policy on Education (NPE) in Nigeria stated that the education of the child is the child's right. This has made it necessary for several policies and curriculum of education to be implemented over the years. In other to achieve the national goals of education as stipulated in the NPE, the Government of Nigeria made basic education from basic 1-9 compulsory for all children in Nigeria (Federal Government of Nigeria, 2014). Basic education in Nigeria is achieved through the lower, middle and upper basic education. Within the basic education programme, several subjects like Social Studies, Mathematics, English language, Basic Science and others are taught to achieve the educational goals of Nigeria. In order to actualize the goals, aims and objectives of the National Policy on Education (Federal Government of Nigeria, 2014), academic performance of upper basic students has always been the instrument for measuring the achievement of educational goals as expressed in the NPE.

Recently, Social Studies educationists and researchers have expressed worry concerning the poor academic performance of upper basic students in Social Studies, the pathetic nature of this problem has made stakeholders of Social Studies education to brainstorm on the causes of the problem and the way forward. Before now poor academic performance of students was blamed on the failure of government to provide financial support to educational institutions in Nigeria, but with recent government investment and private sector financial support in providing better learning facilities and human resources to promote education one expects an improvement in the academic

performance of students but this has not been the case (Owan, Nwannunu& Madukwe, 2018). Since this has not become realizable it means that other factors may be responsible for the problem, factors which may include teacher factor, learning environment, individual student's barriers, instructional supervision, or non-usage of instructional resources may be associated with the poor academic performance of students especially those of Social Studies.

Academic performance refers to students' achievement of short termed educational goals, Kassarnig, Mones and Lehmann (2018) submitted that academic performance is the most important aspect of any educational process and research in the field of education. This is because schools are built for learners, therefore the academic performance of learners is used to assess the effectiveness of the entire school system. The problem of unsatisfactory academic performance in most subjects including Social Studies both in school and external examinations is disheartening. For instance, statistics obtained from the Delta State Ministry of Basic and Secondary Education Asaba shows that in the 2016/2017 academic session only 50 percent of the candidates who sat for the Basic Certificate Examination (BCE) passed Social Studies, in 2017/2018, 46 percent passed Social Studies, in 2018/2019 45 percent passed Social Studies and in 2019/2020, 51 percent passed Social Studies. This trend is below average performance and calls for an urgent need to improve the academic performance of students in the subject.

The low academic performance of Upper Basic Social Studies students in upper basic schools in Delta State arouses doubts on the effects of instructional methods and resources used by teachers in Upper Basic schools. As academic performance has always been measured by test scores or examinations results neglecting the effects of other factors such as learning environments, learning strategies and learning resources on academic performance (Oluwatosin & Bamidele,2014).This has generated a lot of interest among researchers of Social Studies including

this researcher on appropriate methodology, instructional resources and strategies that can be adopted in boosting the academic performance of students in Social Studies.

The economic, social and sustainable development of Nigeria is intrinsically linked to the academic performance of its students' as the academic performance of students' plays a pivotal part in producing quality citizens who will become the leaders and human resources of a country (Mushtaq & Khan, 2012). A good assessment of the educational system in Nigeria would show that factors which affects academic performance are numerous, factors like communication, teaching methods, teachers proficiency and learning facilities/resources are some of such factors. The non-consideration of these and other factors by teachers has led to high failure rate among upper basic students with many taking to examination malpractice in other to upgrade their academic performance. This inclination does not have effect on only upper basic students but has extended into the senior secondary schools and higher institutions of learning.

Stakeholders in the educational sector have different opinions as to the cause of this poor academic outcomes in upper basic schools in Nigeria, some blamed the teachers, others the government, students and their parents, while the importance of using evolving educational technology and media resources during the instructional process seems not to have been considered by many. Wayne (2018) posited that educational technological resources have introduced structural changes to Social Studies education by increasing the productivity and learning outcome of students. A close look at the Nigerian society shows that every aspect of society has experienced these changes and revolution except the educational system in Nigeria. The educational system and processes have remained stagnant without the usage of modern emerging educational technologies and resources such as multimedia, Geographic Information Systems (GIS) and Maps. Educational systems and processes are vital to societal development and progress therefore as society is

evolving every day the means and instructional resources used for educating the emerging society need to change also. A close look at the NPE revealed that Social Studies is one of such subject that can deliver on development and changes in the society.

The philosophy which introduced Social Studies as an operative and qualitative curriculum designed for all primary, junior secondary, Colleges of Education and universities in Nigeria emphasized the fact that its ideas, values and virtues by Social Studies learners must be properly planned and upgraded (Atubi, 2019). These virtues of human development have to be learnt and cultivated through classroom instructions and innovative resources. These innovative resources should take cognisance of evolving technical, scientific and computer assisted learning. Upon these backgrounds it becomes imperative to assess how the learning of Social Studies through technological and environmental based instructional resources such as Geographic Information Systems (GIS) and Maps can have effect on academic performance of students in the subject.

Instructional resources are educational inputs such as objects, people, places, visual and media resources, printed materials and many more which gives more meaning to school lessons (Egbule, Oghogho & Nkemdilim,2015). Atubi (2021) also classified multimedia resources as instructional materials that can be explore for Social Studies education. Instructional resources are vital to the successful implementation of any curriculum. They are the relevant resources that can be utilized by a Social Studies teacher during social studies instructional process to facilitate students understanding and retention of knowledge. Instructional resources are used to make learning more practical and less abstract, Esu and Inyang-Abia (2004) put that as regards the teaching of Social Studies instructional resources should be effectively used because of the practical nature of the subject. Edinyang, Ejoh and Adams (2020) substantiated the need to create awareness

for Social Studies teachers on the role of instructional resources in making the Social Studies classroom to become effective.

According to Dike (1989), instructional resources stimulates the teaching and learning process by extension academic performance, when they are not used learners may not comprehend very well. This implies that the inclusion of instructional resources in instructional process is key to the achievement of educational goals and objectives. Visual resources when used for instructional purposes can be supplementary, help consolidate what is learnt from textbooks and increase academic performance, as teacher explanation alone has been discovered to be inadequate for effective learning of Social Studies concepts.

Ekpenyong, Edem and Martin (2015) observed that secondary school students no longer have interest in Social Studies because of the failure of teachers and instructors to adopt instructional resources to stimulate their interest in the subject. This account for the unsatisfactory academic performance of students at all levels of Social Studies. Social Studies learners find it challenging to understand the abstract topics in Social Studies because as instructions are concentrated on teacher – centred approaches and non-usage of instructional resources. The subject Social Studies is integrated, interdisciplinary, multi-dimensional and made up of a group of subjects whose themes explain the issues and problems people face as they relate to the disciplines. Accordingly, there is need to apply instructional resources that are integrated, interdisciplinary and multidimensional in nature to explain the issues and problems of life to its learners.

Umudi (2012) argued that from the inception of Social Studies in 1968, at Ayetoro high school, appropriate instructional resources have not been successfully linked to the implementation of Social Studies curriculum. No wonder Daniel (2019) is of the view that the search for appropriate instructional resources in teaching school subjects like Social Studies is heightened

since, it looks like the traditional resources of textbooks and chalkboard used presently is not producing the desired results of increasing academic performance in internal and external examinations. Attempt need to be made by researchers in Nigeria to explore innovative teaching resources, like those that have been tested or adopted by different educators in other parts of the globe with the aim of adapting them in the researcher's environments. Thus, there have continued to be a search for appropriate instructional methods and resources in line with promoting how students can learn the subject and improve their scholarly performance.

Similarly, Mezieobi and Onyeanusi, (2011) claimed that the teaching of Social Studies in Nigeria have not accomplished its desired objectives due to the continuous use of traditional resources and non-usage of technological instructional resources by Social Studies teachers. The hurdles before Social Studies as a field of study in Nigeria is enormous, thus there is the need to inquire into more effective and innovative instructional resources that will change the narrative in the teaching and learning of the subject. Edinyang and Effiom (2017) put that the teaching of Social Studies is supposed to have improved from talk, chalk and blackboard affair to the use of innovative and computer based learning such as projectors, power points, magic board, e-book reader, GIS and Maps. This has become pertinent because of the integrated nature of Social Studies which gives attention to man in his environments.

There is also the issue of non- usage of multi-media resources which include GIS resources and Maps, this multi-media resources which can help educators and learners to access primary and inspirational content that will enhance and broaden the teaching and learning of Social Studies with technology are being neglected. This technology can link the Social Studies teachers to the internet and information systems, to gather instructional materials and resources that can be used to update Social Studies learning content and effectively teach the subject in this 21st century.

One of the major problems associated with poor academic performance of Social Studies at the upper basic school level has been the abstract nature of teaching Social Studies with little or no educational resources. This practice has little or no considerations for students' motivation or input in the process of learning. Social Studies teachers are not creative in making use of instructional resources for teaching, this does not encourage creative activities in the teaching process but rather make's learners' dormant participants. The individual absorbs knowledge better and has active interactions with the environment when there is a visual display of events and objects rather than abstract explanations (Mayer & Massa, 2003). Social Studies teachers seem to be finding it difficult explaining Social Studies concepts to learners as majority of Social Studies concepts are activity based, hence the poor performance of Social Studies students in the Junior Secondary Certificate Examinations (JSCE) and the Junior Secondary NECO examinations (Aghulor, 2019).

Osakwe and Itedjere (2005) emphasised the fact that instructional resources are precise ways of inculcating knowledge into learners. Their observation buttresses the fact that adopting relevant resources for Social Studies instructions are ways of attaining instructional objectives and improving the academic performance of learners. Therefore, latest innovative and technological applications should be applied as resources to enhance teaching the subject in schools, while innovative resources that are student's centred should be adopted as a feedback mechanism in promoting and enhancing the learning outcomes of Social Studies students. One of such instructional resource advocated by Aladag (2014) in teaching Social Studies is the use of components of Geographic Information Systems.

Geographic Information System (GIS) is a technology that is used to capture data, analyse and store data that are related to human and natural environment, relationships, time properties and settings. GIS is a technology that captures, stores and analyses all types of geographical information

in computer settings. Tecim (2008) stated that "GIS is a computer system that can collect, store in computer environment, modernize, control, analyse and do visualization of the earth's knowledge for special target". In all GIS is a computerized system which can store, analyse and can transport geographical information. GIS is broad and has many systems and components, components of GIS that can be adopted to enhance Social Studies lessons include:

Aerial photographs

Google Earth

Google Maps

Global Positioning Satellites (GPS)

Satellite image

These GIS components transmit real life data with the use of radio signals gotten from space to specific destinations, the information that is collected by the GPS instruments/devices are then analysed and used by geographic information scientists to provide data in various aspect of human life (Bennett, 2019). GIS can be applied to study the nature and spatial organisation of the earth, culture, drug and human trafficking, vegetation, climate, transportation (road network), rivers, medicine, education, agriculture and much more. These relationships are of essence when studying Social Studies. For instance, the Geographic Information Systems and Map concepts that are domiciled in geography are very important in learning about the physical and social environments which are the prominent themes in Social Studies.

On the other hand, the knowledge and skills of Maps are tools which can be beneficial in helping students prevent a good number of problems, like finding the location of places and understanding spatial information, thereby living a better life (Germehi, 2005). This is because men exist in a spatial world and not in vacuum and human activities are carried out in this space, all

experiences of man are acquired in space. A map therefore as representation of space, serves as the best tool to satisfy man's curiosity about the earth. The greater ability a student has to read and understand maps, the greater and better will be the student at interpreting and visualizing the world in which he/she lives. The individual will now understand the similarities and differences between people and places, also how these similarities and differences affects the actions and activities of man, the student will gain insightful information about physical and human performances from maps (Akengin, 2012).

In Social Studies issues and occurrences are always explained in relation to space where they exist or occur (Unal, 2012). Maps are engaging, they help students to identify places without being there physically and also contributing to socialization in the process. Moreover, maps are very important considering the fact that they help in solving spatial problems, for example the abuse of nature and its resources. Since all phenomenon occur in space and maps represents space, students with map skills are good at collecting data about space and take charge of important responsibilities for themselves and their immediate environment. Based on these backgrounds, spatial perception and maps should be used to teach Social Studies students to aid their future and introduction into a globalized world.

Teaching students with maps will assist students to learn, read, analyse, interpret and create their own maps. Maps help students to learn major Social Studies concepts and relationship. Teaching with maps will help Social Studies students to reason spatially and assist them in solving problems they encounter in real world. It is against this backdrop that the researcher undertook the study of maps and their effects on the academic performance of Social Studies students.

Gender is the biological characteristics of a person whether male or female. The effect of gender on academic performance of Nigerian students have been an educational issue to researchers

in the educational space. Oladotun (2020) asserted that gender have been discovered by many studies to have link with academic performance The emphasis on gender as it relates to academic performance is due to the socio-cultural differences that exist between male and females in regards to societal roles, professions and vocations. For example, Adigun, Onihunwa, Irunokhai, Sada and Adesina (2015) studied the importance attached to gender as regards academic performance and reported no significant difference in the academic performance between male and female students. Similarly, Awodun and Oyeniyi (2018) found no statistical difference in the academic performance of male and female students in Ekiti state. Also, Okereke (2011) reported no significance difference in gender and academic performance.

On the contrary, Parajuli and Thapa (2017) discovered that female students outperformed their male counterparts. Also Akpochafo (2001); Abaidoo (2018) and Adeyemi & Ajibade (2011) discovered that gender has significant effect on academic performance. With these different findings there seem to be no consensus on the role of gender on academic performance. Therefore, this variable was introduced into this study in other to determine the role of gender on academic performance as it affects Social Studies teaching resources and add to extant literature considering the role of gender in the topic under study.

The influence of location in respect of schools and academic performance has always given the picture that urban location presented better educational opportunities therefore urban students do better academically than their rural counterparts (Adepoju and Oluchukwu ,2010). Also, Umar and Samuel (2018) found out that urban students performed better than rural students in Basic Science. Jianzhong (2009) and Mhilwa (2015) reported same. However, Borishade (2011); Igwebuike & Ikponmwosa (2013) and Obro (2018) found no significant difference in rural and urban students' academic performance. This is due to the heavy presence of government and private

institutions in urban areas that can add educational value to school subjects especially Social Studies.

Social Studies is a unique subject that can be learnt in any environment, therefore students or school location can actually influence the learning experience of the student (Aina, 2019). For example, city schools have the advantage of gaining GIS knowledge from their immediate environment because of different higher institutions of learning, government and private owned libraries, constant access to electricity and high technology gadgets; availability of social amenities, infrastructures and high level of social interactions. Equally, opportunities to learning experience is common in urban areas than rural areas, internet facilities are available more in urban than rural areas. Against this backdrop rural schools may be short changed in the opportunities presented by GIS and maps which may cause disparity in their performance. This study is set to ascertain whether this is true or discover the contrary.

The application of Geographic Information Systems components like Aerial Photographs, Google Earth and Maps resources to enhance Social Studies teaching and learning have been applied to promote Social Studies performance in many countries. GIS resources and Maps have proven to play an important role in the promotion of better understanding and academic performance of Social Studies students in these countries. This is because GIS and Maps are multidisciplinary just as Social Studies, several studies such as (Kayer 2012; (Iran), Musakwa 2017 in South Africa; Aytac, 2014 in Turkey; Mzuza & Westhuizen 2019 in South Africa; Mccloughlin, (2015) (Dublin); Kerski, 2015 in the USA and Gokce, 2015 in Turkey, just to mention a few, have demonstrated the positive impact of GIS and Maps on academic performance of Social Studies students. Therefore, it is the view of this study to investigate the effect of Geographic Information

Systems resources of Aerial Photographs, Google Earth and Maps on academic performance of upper basic students in Social Studies.

Statement of the Problem

Social Studies is expected to develop the knowledge of interaction and interdependence between man and his environment. However, Umudi (2012) noted that classroom interactions of Social Studies in Nigeria have not produced the necessary knowledge, skills and changes needed by individuals to deal with their environmental and societal problems. In a modern world where students are expected to think critically as they come across complex political, environmental and social issues. Social Studies should be an avenue to meaningfully engage young minds in a technologically advancing world. On the contrary, much if not all of Social Studies curriculum and program in Nigeria place emphasis only on content knowledge instead of understanding the context of sourcing for information through instructional resources. The consequence of this is the unsatisfactory academic performance of Students in Social Studies at all levels. Teachers are supposed to be vigorously search for instructional resources to update information and content in Social Studies to enable students learn from accurate and verifiable sources in other to boost their academic performance.

Despite the derivable benefits of Social Studies in the National Policy on Education, non-usage of innovative instructional resources in the teaching of the subject remains a major challenge. Ekpenyong, Edem and Martin (2015) observed that upper basic school students no longer have interest in Social Studies classes because of the failure of teachers and instructors to apply instructional resources in stimulating their interest in the subject. This has accounted for the low academic performance of students in Social Studies at all levels. According to researchers such as

Egbule et tal, 2015, Edinyang and Effiom, 2017, it is very likely that non-application of technological and visual learning resources like those of Aerial Photographs, Google Earth and Maps could be responsible for the unsatisfactory academic performance of students.

Furthermore, it is disheartening to note that students' performance in Social Studies both in internal and external examinations in Delta State have been systematically poor over the years. Analysis of Basic Education Certificate Examination results provided by Delta State Ministry of Basic Education Asaba reported the following results in Social Studies for a four- year period: 2016/2017 = 50%, 2017/2018= 46%, 2018/2019 = 45% and 2019/2020 = 51%.

Visual and student-centred instructional resources of GIS like Aerial Photographs, Google Earth and Maps have been utilized in Social Studies and other disciplines like Geography and the Sciences. These studies were carried out in countries like South Africa, Ethiopia, Turkey, USA, Columbia, the United Kingdom and others and have proved to promote higher cognitive and academic performance among Social Studies students. In spite of the usefulness of these resources in promoting academic performance of students, the researcher noted that there are no studies on Aerial Photographs, Google Earth and Maps that has link to academic performance of Social Studies students in Delta State and Nigeria in general. Thus they are non-existent to the best knowledge of the researcher. Therefore, the question that this study attempts to answer is that, what is the effect of Aerial Photographs, Google Earth and Maps instructional resources on the academic performance of Upper Basic Social Studies students in Delta State?

Purpose of the Study

The main purpose of this study was to determine the effects of selected instructional resources such as Aerial Photographs, Google Earth and Maps have on academic performance of upper basic Social Studies students in Delta State. Specific purposes of the study were to determine:

i. effect of Aerial Photographs as instructional resources on the academic performance of Upper Basic Social Studies students;

ii. effect of Google Earth as instructional resources on the academic performance of Upper Basic Social Studies students;

iii. effect of Maps as instructional resources on the academic performance of Upper Basic Social Studies students;

iv. how well gender moderated the effect of Aerial Photographs as instructional resources and academic performance of Upper Basic Social Studies students;

v. how well gender moderated the effect of Google Earth as instructional resources and academic performance of Upper Basic Social Studies students;

vi. how well gender moderated the effect of Maps as instructional resources and academic performance of Upper Basic Social Studies students;

vii. how well school location moderated the effect of Aerial Photographs as instructional resources and academic performance of Upper Basic Social Studies students.

viii. how well school location moderated the effect of Google Earth as instructional resources and academic performance of Upper Basic Social Studies students.

ix. how well school location moderated the effect of Maps as instructional resources and academic performance of Upper Basic Social Studies students.

x. the interaction effect of gender, school location and Aerial Photographs on academic performance of upper basic Social Studies students in Delta State.

xi. the interaction effect of gender, school location and Google Earth on academic performance of upper basic Social Studies students in Delta State.

xii. the interaction effect of gender, school location and Maps on academic performance of upper basic Social Studies students in Delta State.

xiii. the interaction effect of Aerial Photographs, Google Earth and Maps on academic performance of upper basic Social Studies students in Delta State.

Research Questions

The following research questions guided the study:

1. What is the effect of Aerial Photographs as instructional resources on the academic performance of Upper Basic Social Studies students?

2. What is the effect of Google Earth as instructional resource on the academic performance of Upper Basic Social Studies students?

3. What is the effect of Maps as instructional resources on the academic performance of Upper Basic Social Studies students?

4. How well does gender moderate the effect of Aerial Photographs as instructional resources and academic performance of Upper Basic Social Studies students?

5. How well does gender moderate the effect of Google Earth as instructional resources and academic performance of Upper Basic Social Studies students?

6. How well does gender moderate the effect of Maps as instructional resources and academic performance of Upper Basic Social Studies students?

7. How well does school location moderate the effect of Aerial Photographs as instructional resources and academic performance of Upper Basic Social Studies students?

8. How would school location moderate the effect of Google Earth as instructional resources and academic performance of Upper Basic Social Studies students?

9. How well does school location moderate the effect of Maps as instructional resources and academic performance of Upper Basic Social Studies students?

10. What is the interaction effect of gender, school location and Aerial Photographs on academic performance of upper basic Social Studies students in Delta State?

11. What is the interaction effect of gender, school location and Google Earth on academic performance of upper basic Social Studies students in Delta State?

12. What is the interaction effect of gender, school location and Maps on academic performance of upper basic Social Studies students in Delta State?

13. What is the interaction effect of Aerial Photographs, Google Earth and Maps on academic performance of upper basic Social Studies students in Delta State?

Hypotheses

The following hypotheses were formulated to guide the study and were tested at 0.05 level of significance.

1. There is no significant effect of Aerial Photographs as instructional resources on the academic performance of Upper Basic Social Studies students.

2. There is no significant effect of Google Earth as instructional resources on the academic performance of Upper Basic Social Studies students.

3. There is no significant effect of Maps as instructional resources on the academic performance of Upper Basic Social Studies students.

4. Gender do not have any moderating effect on Aerial Photographs as instructional resources and academic performance of Upper Basic Social Studies students.

5. Gender do not have any moderating effect on Google Earth as instructional resources and academic performance of Upper Basic Social Studies students.

6. Gender do not have any moderating effect on Maps as instructional resources and academic performance of Upper Basic Social Studies students.

7. School location do not have any moderating effect on Aerial Photographs as instructional resources and academic performance of Upper Basic Social Studies students.

8. School location do not have any moderating effect on Google Earth as instructional resources and academic performance of Upper Basic Social Studies students.

9. School location do not have any moderating effect on Maps as instructional resources and academic performance of Upper Basic Social Studies students.

10. There is no significant interaction effect among gender, school location and Aerial Photographs on academic performance of upper basic Social Studies students in Delta State.

11. There is no significant interaction effect among gender, school location and Google Earth on academic performance of upper basic Social Studies students in Delta State.

12. There is no significant interaction effect among gender, school location and Maps on academic performance of upper basic Social Studies students in Delta State.

13. There is no significant interaction effect among Aerial Photographs, Google Earth and Maps on academic performance of upper basic Social Studies students in Delta State.

Significance of the Study

The outcome of the study will have a wide range of benefits for school administrator/principals, Social Studies teachers, upper basic Social Studies students, parents, curriculum planners as well as Social Studies researchers in the field of instructional effectiveness. This is because high academic performance in Social Studies will be enjoyed by the stakeholders mentioned above.

The study will be of significance to school heads and Social Studies teachers because modifying the educational experiences, of children by moving beyond the traditional instructional resources and applying GIS components such as Aerial Photographs, Google Earth and Maps effectively and interactively in secondary schools can improve educational outcome and better educational school plans. For the Social Studies teachers, it will diversify their teaching opportunities, resources and help them to connect school lessons to real life problems and situations. The study will make teaching easier and help the teacher to investigate many phases of human activities in the environment for example geographical, cultural, environmental, and economic spheres as well as government activities.

Students themselves will gain from this study because as teachers apply GIS and Maps instructional resources to Social Studies lessons, it will help their visual imaginations and concretize learning. On the other hand, it will enrich Social Studies instructions. Social Studies students will learn in a better, real, visual and meaningful environment, they will be motivated and become active participant of the learning process. GIS and Maps resources will also aid retention of lessons for them.

Parents who are responsible for the education of their children will also benefit from the study because their wards will tell those stories from the visual resources of GIS and they will be happy and fulfilled when their children are scoring high in Social Studies tests and examinations.

Curriculum planners will use the study as a reference point for resource materials in the formulation of Social Studies curriculum and in the innovation of school curriculum by considering the roles of GIS and Maps before taking policy decisions in the educational system as it concerns implementations of Social Studies programs in secondary schools.

Researchers and upcoming researchers will benefit from this study in many ways, researchers in Social Studies will draw inspiration from the results and findings of this study. The study will provide a framework for Social Studies researchers to understand the concepts of GIS and Maps as instructional resources and this will help researchers in related studies. Similarly, it will provide material for their review of literature and empirical studies. Finally, it will inspire Social Studies scholars to investigate further aspects of GIS and Maps resources that will not be covered in this study, as they relate to upper basic Social Studies.

Scope and Delimitation of the Study

The study focussed on the effects instructional resources such as Aerial Photographs, Google Earth and Maps instructional resources on academic performance of Upper Basic Social Studies students in Delta State. It examined the effect which the instructional resources have on academic performance of upper basic Social Studies students in Delta State. It also studied the moderating and interaction effect of gender and school location, as they relate to these instructional resources. GIS resources of Aerial Photographs, Google Earth and Maps were the independent variables. While academic performance of Upper Basic 8 (JSS II) students was the dependent variable. The study was delimited to all government owned upper basic school students in the

twenty -five local government areas of Delta State. The three senatorial districts of the state namely, Delta Central, Delta north and Delta South were covered using selected local government areas.

Operational Definition of Terms

The following terms were defined operationally as used in this study:

Academic Performance: Achievement in test scores

Aerial Photographs: These are photographs of the earth taken from high altitudes.

Gender: Refers to male or female students.

Geographic Information Systems: This is a technology which can collect, analyse and store data relating to human and natural environment, relationships and settings.

Google Earth: This is a computer programme with a 3Dimensional representation of the earth based on satellite images.

Instructional Resources: These are resources used for teaching in a classroom.

Location*:* This refers to a school location both urban (headquarters of LGAs) and rural areas.

Map*:* A map is a representation of an area of the earth surface showing its physical and human features.

Upper Basic 8 Students: These are Junior Secondary School 2 students.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The literature reviewed was organised under the following sub-headings:

i.   Theoretical Framework

ii.   Conceptual Model for the Study

iii.   Concept of Academic Performance

iv.   Concept of Instructional Resources

v.   Geographic Information Systems

vi.   Geographic Information Systems and Social Studies

vii.   Aerial Photographs and Social Studies

viii. Google Earth and Social Studies

ix.   Google Maps

x.   Satellite Images

xi.   Global Positioning Systems

xii.   Concepts of Maps

xiii. Maps and Social Studies

xiv.   GIS and academic performance

xv.   Maps and academic performance

xvi.   Gender and academic performance

xvii. School location and academic performance

xviii. Empirical studies

xix.   Appraisal of the Reviewed Literature

Theoretical Framework for the Study

The use of Aerial Photographs, Google Earth and Maps as instructional resources for promoting academic performance in Social Studies was hinged on three theories; they are;

Symbol Systems Theory

Constructivism Theory and

Theory of Multiple Intelligence

Symbol Systems Theory

Symbol systems theory was developed by Gavriel Salomon in 1977, the theory states that media affect the acquisition of information in many ways. They help learners to easily decode information, process knowledge and elaborate meanings (Salomon,1979). According to Salomon every media has the ability of transmitting knowledge though a system of symbols. The theory suggest that television needs lesser mental coding than reading of a book, however the knowledge extracted by a learner depends on the learners' inherent ability, the media resources is acting as a boost to the learning process. Gavriel Salomon, an educational psychologist spent time in inquiring about the effects of media on learning.

According to the theory:

> Learning is based on coding elements that serve different levels of mental processing. Codes such as pictures, words or graphs provide the learner with different types of information, with some information requiring less mental processing than others. Schema plays a significant role on how information is interpreted. (Learning and ID information media project 2014.p: 1).

The theory posited that pictures, graphs, maps and words when they are visually displayed and viewed by learners, assist them in the acquisition of knowledge. He named words, graph, maps and pictures as representation codes of information. According to the symbol systems theory, Codes and symbol systems are the communication words used in media to send a message, the major part of the research focussed on a television programme called the "Sesame street", later on the research was expanded to cover computer framework (Salmon, Perkins and Globberson, 1991). Children that watch Sesame Street with interest and mind to learn were found to acquire knowledge from the programme, but when they watch the show in a passive manner, knowledge was not obtained.

Basic Principles of Symbol System Theory

1. Symbolic coded element of a media requires different mental processing.

2. The knowledge and skill of an individual affects how a specific media sequence will have impart on the individual's mental faculty

3. Specific media sequence is affected by the nature of learning task.

4. The message that will be perceived can influence the social context of the media presentations.

5. Reciprocal relationships exit between media and the learner, one has influence on the other.

The summary of symbol systems theory affects the attainment of knowledge in many ways. First of all, they bring to the spotlight different elements of a subject/content. Secondly, they are different with assimilation ease. Thirdly, the coding elements have the ability to help the learner in overcoming difficulty in elaborating knowledge. Fourthly, the coding elements are different in respect to how much processing that is needed or allowed and finally they are different because the system defines who and how much knowledge will be gotten from the media and what type of messages can be acquired. Salomon also observed that each medium has the ability of transferring

content through specific inbuilt symbol systems. For instance, Salomon opined that visual display of information need less mental reasoning than reading and that visual knowledge tend to be less complicated when compared to abstract knowledge.

Salomon (1981) stressed the mutual nature of instructional media, communications environment and the learner. He argued that an internal representation of the world plays a huge role in the determination of how information are perceived and conveyed, in terms of creating a prevention preconception that influences the information and its interpretation. Furthermore, visual media create new internal representation that will affect later cognitive understanding. Symbol system theory is explained further below with five points which are:

1. The symbolic coding systems of specific media needs, different mental processing and therefore affects the mastery of particular skills.

2. The level of cognition and skill possessed by an individual will determine the impingement of specific media successions.

3. The nature of task or data to be processed can affect the impingement of specific media successions.

4. The social setting of media demonstration can impact what information is transferred

5. There is a mutual relationship between media (information and the learner, media/data can influence the learner and vice versa.

Constructivism Theory

This theory can be traced to the works of educational psychologist Jean Piaget between 1896-1980, the constructivism theory holds that people make active construction of knowledge from their own experiences. Thus the theory canvasses personal construction of meaning by the

learner through personal and practical experience. The theory also believe that prior knowledge and new events also influences knowledge. The following are the main principles of constructivism theory

1. Knowledge is a product of construction and cannot be abstractly absorbed, knowledge in humans is constructed and new knowledge is built upon previous knowledge.

2. The learning process is an active one, this means that learners' construct meaning to learning through active engagement with methods, resources and processes of learning.

3. Learning is an activity that is socially constructed, it is achieved by interaction with others or media resources. All learning is an issue of socially sharing and discussing real knowledge from guided learning.

4. Every individual has their own personal view of knowledge based on their previous knowledge and values. This means the same learning or activity could lead to different learning experiences for different learners based on their subjective construction of the lesson. This principle of the constructivism theory seems to contradict the third principle, hence Fox (2001) argued that even though learning is socially constructed, each individual learning may be influenced by other factors such as learning resources, culture, gender and child's exposure.

5. Learning is constructed by the mind, learners will continue to develop their own mental picture of the world. New experiences will continue to update their mental perceptions to update new information, thereby constructing their own meaning of reality as learning must not be directly linked to the real world (Driscoll,2000).

Constructivism theory holds that knowledge is not transferable from person to person but is developed through construction. GIS and Maps resources can assist in construction of knowledge by the learner.

Theory of Multiple Intelligences

Multiple intelligences theory was put forward by Howard Gardner in 1983 a professor of education in Harvard university. The theory suggests that there are eight forms of intelligences inherent by each person, they are musical, linguistic, logical/mathematical, bodily kinaesthetic, spatial, intrapersonal, naturalistic and interpersonal (Marenus, 2020). According to Gardner, focus should be given to the intelligence that is particular to the individual during teaching and learning. For instance, if a person has a strong spatial intelligence he/she should be propelled to develop such skills.

Principles of the Theory: The theory has three main principles

1. Each individual learner should be allowed to apply their intelligences with preference.

2. Instructional aids, resources and activities should be the type that can appeal to multiple intelligences.

3. Learning should be assessed or measured by the various types of multiple intelligences.

Gardner made it clear that the different intelligences do not only stand for different learning domains but as learning strategies. Furthermore, the theory explains that an assessment of individual intelligence should be measured by all other forms of intelligences and not just one or two.

The theory of multiple intelligences focuses mostly on the development of children intelligence at all ages and demonstrated that learning a computer programme or software such

as GIS or Maps will involve the use of multiple intelligences such as logical, mathematical, spatial and programming abilities. The steps taken by the learner in engaging in a computer/GIS programme and maps will boost intrapersonal intelligence or thinking, while interpersonal skills may also be used to perform computational skills through working with other students in a team. Kinaesthetic intelligence will also be boosted while the student work with the GIS program itself.

Relevance of Symbol Systems Theory to the Study

This theory is of significant relevance to this study because it is based on the use of coded media, Aerial Photographs, Google Earth and Maps are all good examples of coded media. Rocketbooks (2017) posited that the application of technology such as Geographic Information Systems (GIS) components and Maps to educational processes assist in shifting from the passive learning mode of convectional classrooms, it also stimulates learning and make it fun. Being stimulated to learn will aid better student involvement because students will be enthusiastic to learn the technological visual materials presented to them. The symbol systems theory of Gavriel Salomon promotes learning contexts that offers students visual display (media) of information. The role of the teacher is shifted to media technology, the teacher only helps to facilitate meaningful construction of the Aerial Photographs, Google Earth and Map knowledge to the Social Studies concepts. This theory does not support the use of traditional resources for teaching where the teacher is the only source and transmitter of knowledge, while the students are passive recipient of whatever that is dished out to them. According to the Symbol Systems Theory, learning is based on coded elements just as Aerial Photographs, Google Earth and Map are based on coded data in the form of images, digital maps, tabular and spatial data. The coded elements in the symbol systems theory are also pictures (images), graphs and words. The symbol system theory provides the learner

xli

with different types of media resources and forms of information, so also Aerial Photographs, Google Earth and Maps provides learners with various forms of information through the visual display of this information. Schema plays a significant role in the way information is interpreted in the theory, so also Aerial Photographs, Google Earth and Maps are internal and integral representation of the world, they help to organise concepts that can present new information about the world we live in.

Geographic Information Systems components of Aerial Photographs, Google Earth and Maps are symbol system learning resources and are aimed at helping learners to discover knowledge through the programming of data into computer files/software's and used to present data in real life situations. Salomon theory also observed that each system medium has the ability of transferring content through specific inbuilt symbols, GIS and Maps uses a medium known as data base management system (DBMS) to collect and manage data through models, pictures, images, tables, graphs and maps (symbols).

Salomon (1991) asserted that the Symbol System Theory is an activity based learning, this also implies to Aerial Photographs, Google Earth and Maps, they provide students with opportunities to explore their environment, think constructively and discover nature as it is. Akinbolola and Afolabi (2009) affirmed that students learn more when they construct meaning from educational tasks on their own with the teacher as a guardian.

In Social Studies teaching and learning, the major objective is not knowledge alone as Social Studies and the Social Sciences are seen as systems with models that distinguish between the ideal worlds and how the way world is presently. According to Ercan (2014) the social science models acquire their validity not from how accurate they describe the ideal world, but from the

accuracy of any forecasting which may be based on the models. These systems and models represent the symbols and coding elements stated in the theory.

GIS components of Aerial Photographs, Google Earth and Maps resources can assist Social Studies students in developing new insights and connect them to their previous knowledge. GIS information are presented visually and holistically as broad concepts and then broken down into segments. Aerial Photographs, Google Earth and Maps are student centred and students can ask the teacher questions, carry out their own analysis, make their own comparisons and arrive at their own conclusions.

The application of Aerial Photographs, Google Earth and Maps resources for Social Studies instructions can offer a clear departure from traditional teaching resources and strategies. The goal is for the students to play active roles, through the use of visual displayed data to absorb knowledge into their mental faculties. The ability of students to gain and apply knowledge from Aerial Photographs, Google Earth and Maps will add more value than just memorizing these information and concepts. The symbol systems approach requires the teacher to dispense with his/her purpose as sole ownership of knowledge and instead apply his/her knowledge of curriculum planning and instructional methods. The central point here is that in using Aerial Photographs, Google Earth and Maps, students construct their own knowledge of their world as it is being transmitted into their minds, by these technologies. It is the student who makes sense out of the learning process. GIS components of Aerial Photographs, Google Earth and Maps are scientifically proven resources that help students to construct their own knowledge on complex topics like the earth, culture, population, environmental resources, management and conservation, agriculture, climate and vegetation. The teacher can help in explaining areas of conflict or misunderstandings and make concepts easy to understand. When students are given time and chance to examine abstract topics

through the use of exploration technological resources like GIS resources and Maps, greater understanding and retention is the result, (Day et al, 2013).

Aerial Photographs and Maps though primarily designed to "portray different levels of data on serial foundation maps and geographical related phenomenon, has been in existence longer than the invention of computers (Environmental Science, 2009), the use of GIS and Maps as instructional resources for teaching Social Studies is an innovative alternative to the abstract dominated and non- usage of instructional resources of teaching the subject in Nigeria with the mind set of improving the academic performance of Social Studies students in upper basic schools in Delta State.

Figure:2.1. CONCEPTUAL MODEL FOR THE STUDY.
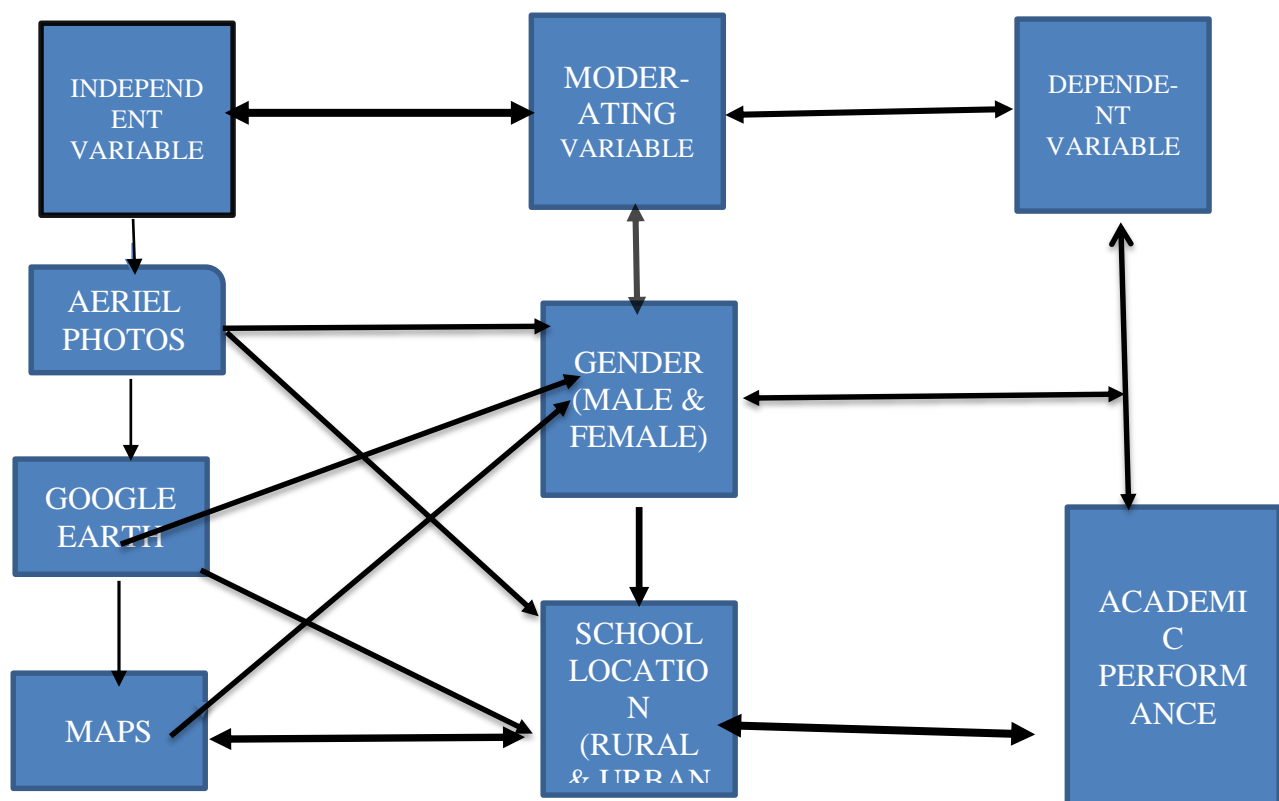
Source: Constructed by Researcher, Atubi (2021).

The study is interested in improving upper basic Social Studies students' academic performance in the subject as shown in the model above. Aerial Photographs, Google Earth and Maps are the independent variables that are under study, as it is believed that they have the ability of boosting the academic performance of the students. This is investigated with regards to the moderating variables – gender (male and female) and school location (Rural and Urban) of the participants. On the other hand, the conceptual model for the study postulates that the mutual interaction of the independent variables and probably the moderating variables are likely to promote the academic performance of upper basic students in Social Studies. In other words, the use of Aerial Photographs, Google Earth and Maps by the teacher in explaining Social Studies concepts had a significant impact on the academic performance of students when they were evaluated based on the topics taught using these instructional resources.

The model guided the researcher in organizing the study for a holistic understanding in such a way that the study has positive impact on the academic performance of upper basic Social Studies students in Delta State. In addition, the model above enhanced the understanding of the researcher of what constitute the independent, dependent and moderating variables.

Concept of Academic Performance

The academic performance of learners is a major aim and goal of educational programmes around the world. Narad and Abdullahi (2016) put that academic performance is the total knowledge that students have gained which the teacher can obtained through administration of tests or examinations. Kumar et tal (2021) saw academic performance as a behaviour that can be quantify within a time frame of learning. Sharm (2012) put that academic performance is the tool

used to measure the success of educational institutions. York et tal (2015) defined academic performance in terms of students' level of understanding of academic discourse, issues and context. Simpson and Weiner (1989) stated that academic performance are measurable output of an individual's behaviour after a learning situation.

Anyone or institution linked to education should immensely be concerned with academic performance of students (Osiki,2001). As a matter of fact, academic performance is the nucleus upon which the whole of educational activities revolve around. This is why academic performance of students at all levels and especially at the basic level of education which form the foundation of education is an area that educational researches have concentrated on over the years. Schools, parents and all stakeholders in the education field also have huge interest and concern for academic performance of students.

At the basic level of education, whether an educational programme have fail or succeed is determined by the academic performance of pupils and students in the country. Narad and Abdullahi (2016) suggested a good academic performance of students at the basic education level is a signal of higher academic achievement at the higher education level and a good pointer to career prospects for student's future. This follows that good academic performance of students is linked to the socio-economic and political development of any country therefore good academic performance is a guarantee for a country's prospect for socio-economic and manpower development.

According to Martin et tal (2017), there is a need to investigate factors that can affect and promote the academic performance of students because as Garbanzo (2007) submitted, high academic performance is not just about student intelligence level but is associated with multiple factors such as student's personality, individual difference, motivation level, teacher and environmental factor as well as instructional aids and resources. As numerous research have shown

that the process of teaching and learning can lead to better academic performance of students in any subject especially Social Studies (Razak,et tal, 2019).

Concept of Instructional Resources

Instructional resources in the teaching parlance refers to anything, place, person or media that will be of assistance to the teacher in or outside the classroom, they allow students to make use of as many senses as possible to learn. Since the central focus of Social Studies is man and his environments instructional resources come very handy in making lessons to look real and practical (Egbule et tal, 2015). Instructional resources can make learning become less tedious and more functional for the learner and teaching easier for the teacher. In making use of instructional resources, the teacher must make efforts to identify the relevant resources for a particular topic or concept and make extensive use of them. A wide range of instructional resources include but not limited to textbooks, charts, pictures, maps, internet resources, aerial photographs, real objects, Google Earth, resource persons and many more.

Judicious use of instructional resources will help increase the all-round development of the cognitive, affective and psychomotor educational domains of learners (Edinyand et tal 2020). Ogbaji (2017) studied the perception of Social Studies teachers on the application of instructional resources in Calabar, Cross River state in Nigeria, the study discovered that the perception of the teachers was positive towards their usage. The teachers all agreed that instructional resources will make the teaching and learning of Social Studies to become efficient and effective. Obro (2021) pointed out that technological advancement and the internet has introduced projected and electronic resources like Aerial photographs, Google Earth and digital maps to ensure real life learning experiences for learners by proving veritable and substantive examples to learning. Instructional

resources encourage students to find out and deeply explore sources of information which is a core skill and objective of Social Studies. instructional resources (Gonser, 2019).

Instructional resources are parked full of essential opportunities of learning, to the extent that making use of them in teaching provides a unique environment for the Social Studies classroom. They cause the interest and curiosity of learners to be consistently stimulated, by acting as catalysts and helping the teacher to achieve the objective of the lesson in the long run. Nelson, Segali and Durham (2021) advocated for the focus of material things as means of analysing Social Studies lessons. Similarly, Olokooba (2021) push for effective utilization of instructional resources for Social Studies to promote the skills of problem solving, sensitivity to the society and skill of social inquiry because learners are attracted to real life experiences. Also Obro, Ogheneakoke and Akpochafo (2021) explored the effect of innovative teaching strategies and resources for Social Studies pedagogy, they discovered in their study that innovative resources such as simulation improved the learning outcome of Social Studies learners in Delta and Edo states in Nigeria.

Personal observations have shown that the use of instructional resources in upper basic schools in Delta State are scarce hence teachers have resorted to the continuous usage of chalkboard and talk only. It is based on these advantages and more that spur this study, but since instructional resources that can be used to teach Social Studies are very numerous and all of them cannot be looked at in one study. This researcher has decided to narrow the study to instructional resources of Aerial Photographs, Google Earth and Maps.

Geographic Information Systems

Educational curriculum of a country is a reflection of the type of society that exist in that country, more often than not they also take opportunities of technological changes and advancements as well as the demands of their educational system. The arrival of a novel and

permeate technology like GIS for displaying and computing digital data has provided a condition that is highly favourable for technology and curriculum developments (Forer and Unwin, 1999).

Iwena (2017) stated that the acronym GIS, means Geographical Information Systems or Geospatial Information Science, while the discipline is called Geoinformatics. GIS is the science underneath the concepts and application of geographic information systems, it is comparatively broad and connected to many processes and components, it can also be applied to various fields such as engineering, planning, management, transportation, business, telecommunication, insurance and education. GIS can also be used to predict environmental disasters like floods and earthquake as well as emergency cases. Examples of geographic data according to Iwena include paths of rivers, roads, settlements, towns, railway lines, position of buildings and boreholes. Geographic data may be sourced from Aerial photographs, Google earth, Google maps, Satellite images, field survey and existing statistical records.

GIS software provides the means to combine huge amount of information, manage and obtain the information in a usable form. Another name for GIS is Geospatial Information System. The system can store, retrieve, share, display, integrate, analyse and edit geographical information. GIS is a science that employs concepts, applications and instruments that are geographical (Environmental Science, 2009). GIS can be used for researches that are scientific in nature, environmental assessment, town planning, agriculture, education, management of resources, marketing and economic trend, fighting crime, transportation, infrastructural developments and land ownership. GIS software for all functions performs six main undertakings.

Input data

Manipulate data

Manage data

Retrieve data

Analyze data

Visualize data

The crucial data needed for GIS are images, digitalized maps, tabular data and spatial data. These data must have been transformed to a digital form in order for it to be usable. This process involves changing data from real life situations or paper into computer files. Presently many geographical data exist in GIS digitalize format, that can be inputted right away into a GIS. Manipulation of geographic data in GIS can involve any of the following generalization, aggregating data, projection changes and the elimination of unwanted data. A data base management system (DBMS) is used to manage collected data in GIS. DBMS have different models but the model that is applicable to GIS is called the relational model DBMS. The relational model stores data in a conceptual manner of tables and related tables are linked together. Due to the fact that the relational model has a simple design it has been greatly used and widely deployed for GIS and other purposes. Iwena, (2017) posited five major components of GIS, and they are hardware, software, data, methods and people. GIS can also retrieve stored spatial information with the help of a structured query language (SQL), for instance you can ask such probing questions such as

Where are all the physical features?

What is the dominant topography in Nigeria?

Which state have the highest number of voters?

These questions can be answered with timely information from GIS software that has already been inputted with the related data and this can help to make an informed decision. Analysis of data is another major task of GIS software, the software investigates data already

inputted uses them to create points, lines and features already stored in its database. For example, how much area is covered by forest? How much area is covered by a particular group of people? Or what portion of a country is a conflict zone? Furthermore, GIS provides visual display of hardcopies and softcopies of statistical summaries, maps, tables, spatial information, graphical data and models. GIS provides new and innovative tools for visualizing information to users (Environment Science, 2019).

Cofrep, Canovas, Fries, Valdviviesco, Jaramillo and Cofrep (2018) stated that GIS is a collection of tools that consist of software, hardware and the users, it allows for the capturing, storage, management and analysis of digital information. Against this backdrop GIS helps to create, share and employ useful information with the help of data and maps. Ned (2017) refers to GIS as an instrument and procedure for manipulating, analysing and delivering spatial data. Ned also reported that GIS can be applied to common needs of society and the social sciences such as Social Studies, sociology, urban geography, economics as well as the environmental and physical sciences. Thus GIS have been used to specifically teach through lectures, class demonstration and laboratory exercises. Examples of topics that can be pursued using GIS include mineral resources, culture, population studies, climate, settlements the spread of infectious diseases such as Ebola virus and corona virus and patterns of terrorism in Nigeria.

According to Forer and Unwin, (1999) the growth of GIS in the last decade can be attributed to high demand and academic feat that has been achieved in GIS. GIS has penetrated education and Social Studies as a subject cannot be left out of these advancements. GIS is inextricably linked to society hence it has a huge educational agenda to carry through, GIS popularity is growing and this has created a need to move beyond the collection and processing of information into a deeper comprehension of what spatial data is and how we can creatively make use of it in education and

analyses (Forer and Unwin, 1999). GIS has become a growing tool in making everyday decisions such as market decisions, organising data and social systems.
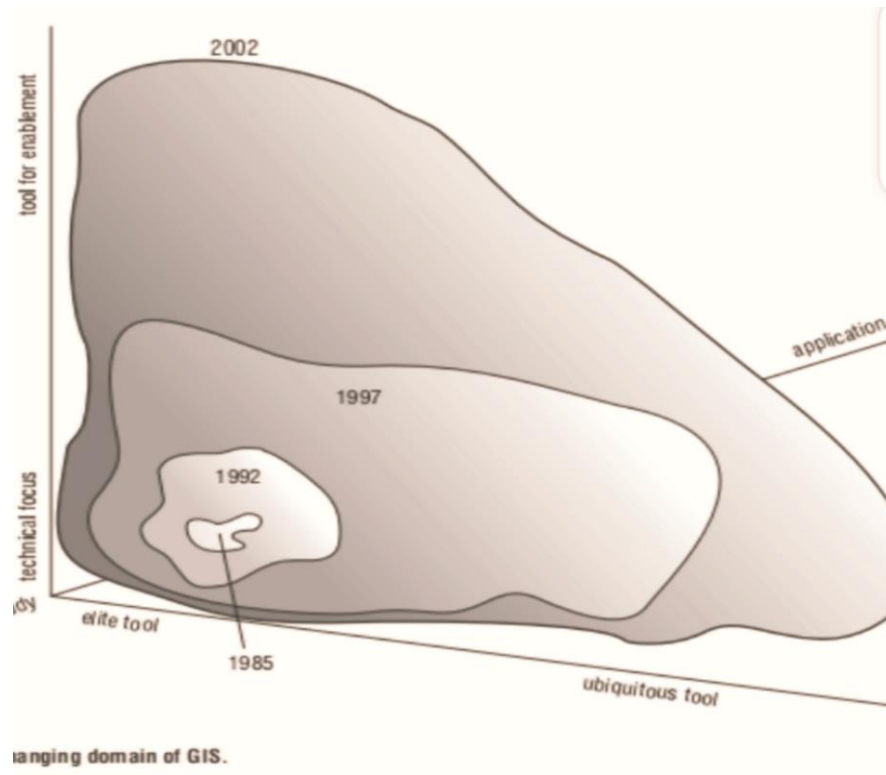
Figure. 2.2: The changing Sphere of GIS

Source: Forer and Unwin (1999).

The figure above adopted from Forer and Unwin (1999), is an illustration of how the application of GIS has grown over the years. Even though GIS cannot be claimed to be a perfect technology, it has been given a good try in the educational development of many countries. No single textbook in the world today seems to have attracted great followership like. In order to meet the educational demand of GIS, a range of teaching resources such as maps, software and books have been produced by GIS experts and educators. Similarly, to assist student, cheap software's have been designed to function on basic hardware. Forer and Unwin concluded that GIS education

today is a great success and many tertiary institutions around the globe have recorded over 800 academic GIS departments.

US Geological Survey (2010) advocated the use of GIS in management of ecosystem problems through comprehensive assessment and evaluation of the ecosystem. Upon this premix GIS can be used to model social values among groups located in an environment which has maximum value known as "Ecosystem Services Social Values Model and Value Mapping Model". Similarly, with easy interface with GIS we can view cultural images of various people from different parts of a country or the world, providing huge information about people, their history and culture (Brooklyn College Library,2020). Furthermore, Khashogi & Murad (2020) submitted that GIS will be effective in supporting public health in the aspect of decision making by governments, health organizations and other bodies by using GIS analytical tools and methods. GIS can also be used in creating a model of accessibility to health providers/services with spatial data. Carl (2013) also put that GIS through integrated approach can increase civic engagement, participation and assessing civic services such as housing, businesses and public places.

In Nigeria, some initiatives have been taken by the federal government to tap into the benefits of GIS these initiatives include organizing workshops for the geography related disciplines and associations. The first committee on GIS was inaugurated in 1980, over the years' implementation has mainly been concentrated on technological development of the geographic space with little or no attention to its application in education and human resource development (Dekolo & Oduwaye,2005). The state governments have not seen the need to harness the potentials of GIS to drive the economy, develop infrastructures, develop human capacity and promote educational development. Only Lagos Sate has attempted a GIS project used to develop and plan the city under the state Ministry of Physical Planning and Urban Development. (MPPUD). The

present study therefore is suggesting a structure of achieving the implementation of GIS in education, especially in Social Studies.

Emphasis need to be placed on developing GIS to meet the educational needs in institutions of learning in Nigeria, because of the immense benefit it will deliver on the academic performance of learners with its wide range of resources. Hence Yahaya and Ubayo (2014) supported the use of GIS learning resources across secondary schools in Nigeria. In a similar vein, Otese, Njoku and Ndiyo (2016) posited that the implementation of GIS curriculum in classrooms in Nigeria has high expectations for advancing learning opportunities, therefore it is needful to incorporate this resources into the educational curriculum of the country at all levels including the Colleges of Education as they train teachers so that the benefits of GIS can be harnessed by both teachers and students.

Geographic Information Systems and Social Studies

The subject Social Studies was conceived in the United States of America (USA) from where the idea spread to Europe and thereafter to Africa through the Mombassa Conference of African Educators that was held on the 16th – 30th August, 1968. The conference which was also attended by American and British educators had Nigeria, Kenya, Sierra Leone, Ghana, Uganda, Ethiopia, Lesotho, Malawi, Tanzania, Zambia and Botswana representatives (Azubike & Mohammed, 2014). During this conference, it was suggested by participants that Social Studies should be introduced at primary, secondary and teacher training colleges levels as part of their curriculum reform, thus African Social Studies Programme was birthed from the Mombassa Conference of 1968 (Ezegbe, 2012).

Innovative instructional resources are necessary for teaching the subject because according to Golam (2018), they assist the learners to put their full potentials into use. It is based on this

premise that innovative resources such as the application of Geographic Information Systems (GIS) and the use of Maps should be introduced and injected into the teaching and learning of Social Studies. The premise for the introduction of GIS and Maps is based on the facts that they enable visual learning, promote knowledge retention, make learning fun and easier, aid access to numerical data, stimulate learners interest improve creativity, help in comparison, develop critical thinking and enable spatial analysis.

Furthermore, Ughamadu (2012) noted that for the instructions in school subjects to be effective there is need to apply educational technology as a means of automating the act of teaching with resources that have the ability to amplify, transmit, reproduce and stimulate learning. Applying technology to educational processes such as the teaching of Social Studies is a systematic approach to instructional design, combining alternative methodologies, use of media aids in relation to learning objectives, together with the content of learning and subject matter. Hence educational technology such as the components of GIS aerial photographs and Google Earth will give a more comprehensive conceptualization to Social Studies. The relevant and latest technological advancement such as Geographic Information Systems and Maps are instructional resources which can be used to inculcate Social Studies knowledge into learners.

Akinlaye (2003) described Social Studies as a study of man in his environments which can be physical, social, cultural, economic, political and scientific, this involves the dealings and interactions of man with these environments. Social Studies also involve the reciprocal relationship between man and these environments. Thus in Social Studies we study the physical and geographic space, cultural and information systems, social, political, economic and all aspects of environments that have to do with man. The environmental landscape therefore is of utmost importance to Social Studies learners and educators, this is because the study encompasses the actions and experiences of

man living in an environment and helps us to bridge the difference between the known and the unknown.

Sofadekan (2012) explained that the physical environment to a large extent affects the type, content and system of education, for example children who grow up in riverine area learn how to fish and those brought up in grassland environments learn horse riding and cattle rearing. The child obtains knowledge and learns from observing the physical environment such as the rivers, vegetation, climate, relief, animals and so on. This educational process continues to adulthood and it determines the child's behaviour towards the physical and cultural environments.

United Nations Educational, Scientific and Cultural Organization (UNESCO) (2010) submitted that the aims and objectives of Social Studies include the comprehension of the immediate environment by children; this environment has a lot to do with the immediate surroundings and locations of phenomenon and the effect of the physical environment on man. The implication of the UNESCO statement shows that Social Studies is "a study of the total experience and understanding that a child acquires having been exposed to a course of study based on man's problems in his or her environment" (Olatunde, 2006). The specific aim of Social Studies knowledge is relevant to the relationship between man and all spheres of environment. That is why Social Studies help's man to acquire the needed basic skills to solve environmental and societal problems. Therefore, the use of innovative teaching resources and techniques should be used to teach the subject in actualizing these aims and objectives of Social Studies education in Nigeria, as this will lead to sustainable development of the country (Obro, 2021).

Abrandi and Sarnoff (2006) discussed theoretical and conceptual advances to substantiate their support for combining Social Studies education with GIS. The study also suggested GIS resources for Social Studies teachers and learners such as Arc 3.3 and geo references. Also Hong

and Melville (2018) introduces effective designs for incorporating GIS into the professional development of Social Studies teachers through collective participation, time for practice, lesson development and lesson presentation. The study, participants were trained on how to use Arch GIS online components, the Social Studies teachers were exposed to practical sessions, they were able to develop inquiry based lessons with GIS.

In addition, Alibrandi and Palmer-Moloney (2001) introduced GIS as a viable technology with positive implications for teacher trainee program. This is so because GIS presents a new view in the representation and analysis of data that can transform the teaching and learning of school subjects including Social Studies. This study is very important because presently, government agencies and private industries with networks make use of GIS for their businesses such as real estate, planning and travelling. Krogman (2015) used GIS to give a geo spatial perspective of historical statistics to Social Studies students, this is innovative and worthy of emulation by the Social Studies teachers of Delta State.

Aladag (2014) substantiated the importance of GIS to Social Studies, when Aladag evaluated GIS and Social Studies lessons, Aladag maintained that GIS when used today by Social Studies teachers and students will help them access and make use of current data instead of just passing on obsolete and abstract information. Since a huge portion of Social Studies lesson content and concepts are taken from the physical environment, GIS as a system of spatial data can be utilized to store, analyze, visualize and interpret these data. GIS therefore is a valuable tool in promoting the ability of Social Studies students to understand and conceptualize information. "GIS is an information system providing an integrated fulfilment of the following instructions: the collection, storage, analysis and presentation of graphical and non-graphical data obtained through location based activities" (Yomrahoglu, 2002: 49).

Karabas and Sahin (2007) explained that GIS is a significant tool for helping students to acquire geographical knowledge, which can help in organising, protecting and conserving the natural resources that belongs to humans. Reed and Bodzin (2016) investigated how geospatial analysis thinking and reasoning skills of GIS can be used to improve understanding of lesson contents. The findings discovered significant effect of GIS on reasoning and deduction, also that web GIS when properly designed through subjects' curriculum can improve learning outcomes in health education. If this can be obtainable in health education, then surely it can do better for Social Studies.

Sherrose (2010) demonstrated that GIS can be used to build social values that can assist in protecting the ecosystem which is the physical environment. Geography which is a study of the physical environment is a major part of Social Studies because it deals mainly with man and his physical environment, why Social Studies study physical and social environment majorly. However, studying and analyzing data pertaining to physical environment will help taking decisions about it easier and also broaden the students' knowledge about not only the physical environment which is a huge part of Social Studies but also the social environment as man must exist in a physical landscape.

The Environmental Systems Research Institute (ESRI) also provides teachers with GIS programmes and software's that can be used for classroom teachings (ESRI, 2017). When teachers go to ESRI website, they can see Geoinquiries (a GIS package) which they can obtain free of charge. With Geoinquiries they can teach map-based content that are common in school textbooks. ESRI also provides online training for interested teachers which can be accessed from online ESRI Academy. Here there are short courses and strategies which are presented on ways of incorporating GIS into school lessons and interactions. Administrators and teachers especially in the United States

make free requests for GIS school bundles for teaching purpose. An environmental based subject like Social Studies can make use of Google Earth to make inquiries, for example how social awareness influences population growth. GIS is of immense benefit to Social Studies education irrespective of the GIS programme teachers decide to use in the classroom for enquiry learning or activity based learning. Likewise, the engagement of GIS can help Social Studies learners in choosing a career path for themselves (Brooklyn College Library, 2020)

Osman (2013) held that technological gadgets such as internet, mobile phones, visual screens and GIS has become increasingly important, also they are taking the centre stage in social relationship and the acquisition of knowledge by students. So also is the use of social media networks. Against this background, there has been an increase in research about the part played by technology in supporting educational development. Osman also opined that visual and quality technology motivates students to learn at the same time making them attentive. In considering the effective teaching tools in Turkey recently, attempts of using information technologies such as GIS has been made (Bednarz and Schee, 2006). Osman further posited that GIS can be seen as a system that is based on the consolidation of a common database developed for the analyses of statistics and maps and this singular function differentiates it from the normal computer systems.

Using GIS as instructional aid can help Social Studies students to solve real problems by making use of real information, schools can also benefit irrespective of their size in taking policy decisions with regards to school buildings, make safety plans and streamlining transportation routes because of the transportation network information that has been obtained with the help of GIS. When there is an increase in the population of a region, town or city, GIS can help in mapping out areas where new schools and other infrastructure can be developed (Bennett, 2019).

According to Bennett, (2019), students are now conversant with GIS through "Pokémon Go" a kind of computer game which has a combination of real and abstract environments. This game app was introduced by GIS specialists in 2016 and has already recorded over 500 million downloads. The video game help students to be conversant with urban environments that have already been produced by the GIS software called "*city engine*" and also students that have been driven in a car with GPS or a mobile app with synergistic application maps from apple, goggle or Bing, must have gotten a first-hand knowledge how GIS data can combine real life with a practical world. These students' first-hand knowledge can help give a background of GIS and Social Studies teachers will find it easier teaching them with GIS.

Aytac, (2014) noted that, in the general school curriculum, aims and objectives of Social Studies, information is paramount and appropriate. Aytac further explained that information in forms of map, diagram, image, tables, charts which are time bound are of utmost concern to Social Studies and these are the kind of information's presented by GIS. Isioye, Moses & Nzelibe, (2013:1) are of the view that "the world in which we live today is engulf in science and technology, and characterised by tremendous explorations and ever increasing discoveries, inventions and innovation". In this regard students need to be brought up in spatial thinking and information; therefore, there is the demand and need for GIS to provide the required tools and knowledge for a world of inventions and innovations in various disciplines Social Studies inclusive. Similarly, Aladag (2014) also advocated the applicability of GIS through the use of Google Earth to Social Studies lessons, in line with this aim 14 Social Studies teachers in Ayden Turkey, received 6-hour training course about GIS, the training included theoretical data on GIS, a practical presentation of Arc GIS 9.2 a GIS software used worldwide and researcher's prepared GIS teaching materials in line with the Turkish National Social Studies curriculum for primary schools. The study discovered

that Social Studies teachers in Turkey found GIS immensely useful in primary Social Studies education considering the fact that it helps students with visual learning, improved their map learning and enhanced their retention level.

Social Studies education and GIS are intertwined and blended together, this is so because Social Studies is multidisciplinary in nature just as GIS is also multidisciplinary (Kerski, 2015), GIS makes use of data and maps from various disciplines. Thus teachers and students who make use of GIS are taking advantage of information from a wide range of disciplines and their content. Similarly making use of GIS in Social Studies is holding fast to the major themes in Social Studies (National Council for the Social Studies, 2010). The study of culture and globalization are better studied from a spatial perspective which can be provided for with GIS in terms of the theme "time, continuity and change". GIS makes it easier for space and time to be studied together. It is easier to study science and technology when learners and teachers can identify the source and time of data creation, science and technology is one of the major themes of Social Studies and using GIS to know data source help the class to make decisions on the suitability of the data for the study.

In the same vein, it has also been demonstrated that GIS is good in boosting citizenship studies (Vander Schee, 2003 & Kerski, 2004), this is in line with citizenship education a major theme in Social Studies. Most significantly are the major phenomenon of climate change, environmental protection, political unbalance and beyond, all these are major aspects of Social Studies which can also be analyzed from the perspective of GIS. Furthermore, having an understanding of geographic situations helps in understanding Social Studies and GIS gives a robust picture of geographic phenomenon. Social problems can be studied in many dimensions. For instance, the participation of voters in an election can be represented as lines and shades on the map

of a state or country. Statistical characteristics can be presented with charts and maps, the same can be done with a "social landscape".

Kerski (2015), while connecting GIS to Social Studies education posited that the analysis of populations,' phenomena, distribution and its implications are major components of Social Studies and they are some of the many Social Studies components that is heightened by the use of spatial analysis from GIS.
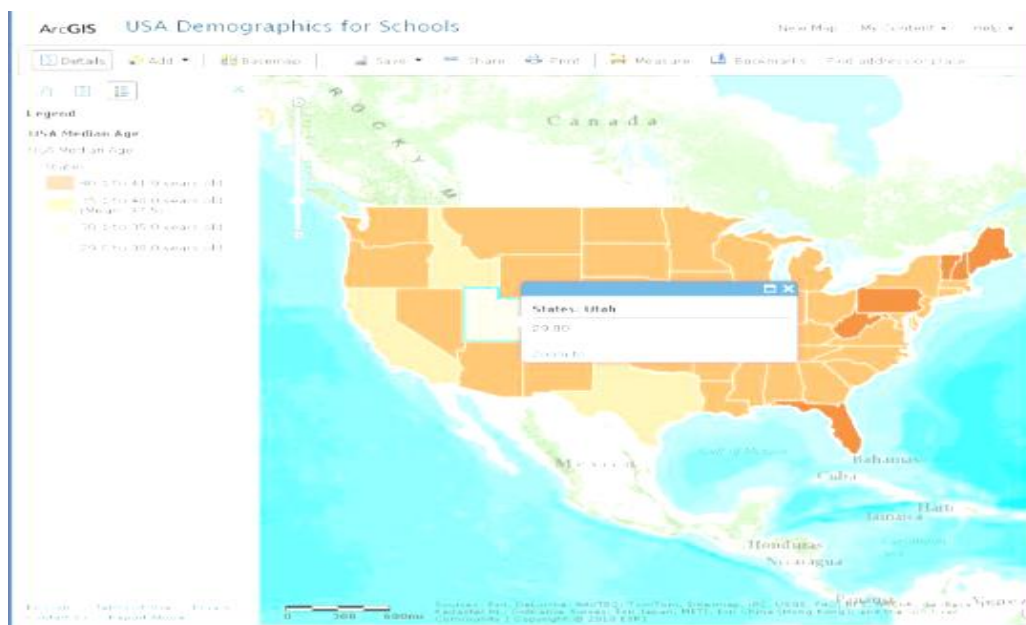
Figure. 2.3: A Map produced with Arc GIS showing median age of a population
Source: Kerski, (2015).

The map above shows the median age of a population and it was produced within seconds using Arc GIS (online www.arcgis.com). Kerski maintained that the use of GIS to teach Social Studies will enhance the grounding of Social Studies students in the subject, physical and cultural environment, real-world settings to social issues, geography, and help develop their critical thinking skills. It will also help to connect social problems to global issues, as social problems have a major impact on the daily lives of people on planet earth. GIS as a technology, gives the ability to collect

information that are geographical in nature and this information can be used in the development and enhancement of all human activities and environment.

Aytac (2014) opined that any technology and information that can be used for the educational development should be in a stored system like GIS and be used for impacting knowledge. Most importantly if that information is related to maps, GIS is an avenue to apply stored information to education. In Turkey's Social Studies curriculum objectives, it is clearly stated that visual data such as maps, graph, sphere, tables, diagrams that are time band should be developed and used in their schools (Aytac, 2014). This has become a national law for geography concept and teaching in Social Studies so that the students can learn geography topics that are in Social Studies with ease. Thus GIS give credence to Social Studies lessons that are geographical in nature. Aytac found out that GIS quicken the understanding of geography in a classroom setting and therefore recommended that Social Studies teachers and students need to be aware of GIS and use them to teach geography related topics in Social Studies.

Goodchild (2009) pointed out that GIS is all about space and space is critical to locations, but very many social scientists do not understand the importance of the study of space. It is worthy to note that the course that leads to crime, deprivation, family disharmony, war, conflicts and crisis in the world today are the same everywhere. But in the thinking of many social scientists today, education, unemployment and the economy are far more important than geographic space. Geographers seem to be alone in their study or concern for space in the past. Anthropologists, economists, sociologists, political scientists and demographers have been unconcerned about the concept of space but recently, the narrative is changing, many social scientists have come to the realisation that man does not exist in a vacuum but in space. Therefore, the spatial analysis that is

presented by GIS will be of utmost benefit to Social Studies education. Interest in GIS is increasing as well as spatial model analysis that has been made possible by GIS.

Figure 2.4: GIS specialists, mapping and collecting of data relating to malaria and health studies

Source: Goodchild, (2009)

Mccloughlin, (2015) reviewed a series of research relating to the importance and application of GIS in school subjects and the methods that were applied for better understanding of these processes. Mccloughlin review raised the argument that GIS and geography education is deficient in construction quantitative research. Efforts made at closing the gap between the integration of GIS in primary and secondary schools and the applications of these research is very slow (Bednarz & Ludwig, 1997) reported in Mccloughlin, (2015). Bednarz and Ludwig examined the inculcation of GIS into US. K-12 school system in the later part of the 90s and discovered the importance and benefit of integrating GIS in schools. In order to promote the integration of GIS into education some states in the United States added GIS to their educational delivery systems. Similarly, organisations like Environmental Systems Research Institute (ESRI) and National Science Foundation (NSF) also promoted GIS through seminars, workshops and conferences, distributing GIS software free of charge and forming new alliances. Mccloughlin also advocated for the removal

of barriers that hinders integration of GIS into schools such as teacher education in technical issues should be addressed. This can also be addressed through improving the training curriculums of pre service teachers.

Sousa, Richter and Nel, (2017), is of the opinion that multimedia resources like GIS makes it possible for Social Studies teachers to incorporate maps, graphics, text and other communication technology into one collection to give a comprehensive information to their students in order to achieve specified learning objectives. It allows the presentation of very difficult processes into a highly synergistic, expressive manner so that teaching materials can be interconnected with congruent topics in an innate and intuitive manner.

Jarosievitz (2011) prompted lecturers of faculty of education in universities to take the benefits of information and communication technology, multimedia resources (maps, videos, images, graphics and interactive) and new technological advancements like those offered by GIS to teach undergraduate trainee teachers, in order for them to have enough knowledge and capable skills before graduating from universities. With this kind of development, it will be possible and easy for the trained Social Studies teachers to make use of multimedia resources such as GIS and Maps to teach their students at the appropriate time. Malik and Aganual (2012) similarly supported Jarosievitiz by claiming that multimedia based learning atmosphere render students with the capability to find solution to problems through self-exploration, cooperation and active participation. Audio visual media that are ample study materials, when incorporated in an organised way can increase the acquisition of knowledge that is novel, prompt and heighten peer learning, personal creativity and invention.

Environmental Systems Research Institute (ESRI), (2017) claimed that structuring GIS into geography and history studies in the form of Social Studies will be beneficial to Colombian students. According to Luz Angela Rocha, a university professor in Colombia,

> "It provides the students with the geographic context of where events happened, which may have had an influence on why a particular event happened. However too often, our social studies teachers have strong educational background in history and limited knowledge of geography so they naturally emphasize history in their classes" (ESRI, 2017:2)

From the quote above, it can be deducted that GIS will broaden the history and geography horizon of Social Studies students but most especially geography in Colombia. Hence this will broaden the geographic knowledge of Social Studies teachers, and help them in explaining the physical environment of man. If this can be the case in Colombia, Nigeria and of course Delta State Social Studies teachers can borrow a leaf from the ESRI study in Colombia to begin an evaluation of how we can apply the rich knowledge provided by GIS and use it to enrich our Social Studies lessons. Many of the Colombian students and teachers interviewed after preliminary usage of GIS software to teach Social Studies revealed that GIS is a good learning tool to explore things, places and events in depth and to have a better understanding of our environments (ESRI, 2017).

Geospatial Cooperation (2019) pointed out that as there is an accelerated change in technological advancement in the world of work today, the educational system should evolve along with it. Geospatial cooperation further reiterates that one key instrument that can help every subject matter to advance with the pace of technological innovations is GIS. GIS should be embedded into education, environmental science, physical sciences, business studies, and all fields of engineering, geography, history, Social Studies and many other subject areas. Geospatial cooperation explains the ease of bringing GIS to students, since they already use GIS to locate places fast with their phones, to locate restaurant and eateries around their campuses and get to know places. So therefore

it will be better to meet them at their GIS knowledge base and take it from there since students are now using the technology in their individual lives, it will be proper to surpass their knowledge of GIS by teaching Social Studies and other subjects with it.

Mzuza and Westhuizen (2019) argued that despite the widespread popularity and usage of GIS, many teachers around the globe still struggle with the usage of GIS applications to school lessons. This they attributed to the inadequate materials such as smart boards, projectors, computers and electricity. Their findings reported shortage of computers in schools as well as lack of GIS knowledge by more than 61% of the teachers used for their study. Other impediments included high cost of computers and GIS software/programme packages, poor technical training and support system and inadequate or lack of guidelines for teachers to follow in GIS (Fleischmann, 2016; Fleischman & Westhuizen, 2017). Also there are so many countries with computers but the teachers do not possess the knowledge or the ability to use the tools in teaching.

Artvinli, (2010) examined the place of GIS in the study of geography and posited that; formerly the use of computer technology in educational purposes has been considered a fad which cannot stand the test of time. Many stakeholders in the educational sector were indecisive about the usefulness of computers for the promotion of education and the arousal of students' interest. Similarly, they also reckon with problems of adaptability of computer technology to school curriculum and subject contents. The availability of infrastructures such as computer hardware, software and electricity as well as financial considerations are presently more difficult issues to find solution to, if the use of GIS technology can be adopted. For instance, according to Demirci, Tas and Ozel (2007) reported in Artvinli, (2010), they studied the use of technology in geography lessons in Turkey the study revealed that only 48% of schools has computers, 35% had LCD projectors and just 26% have connections to internet. From the 48% schools with computers just

7% declared that they used the computers and 2% agreed that they make use of LCD projectors in geography lessons. From the data above it can be seen that less than 50% of schools has the resources to make use of GIS in Turkey, yet the number of teachers that are willing to make use of the few available resources is less than 10%. This therefore implies that teacher's willingness and readiness to apply GIS knowledge for teaching is paramount for GIS application to education.

Biebrach (2007) advocated for the use of different instructional resources like visual media, GIS and Maps as means of attaining exceptional achievements among secondary school students. Biebrach attributed this to the use of GIS for the analysis and interpretation of different maps to obtain information and recognising interaction pertaining to spatial structures. The study also recognised the fact that there is a huge gap in between the grandness of GIS and the level of utilization in schools. This gap if filled will promote the usage of GIS for spatial understanding enquiry based learning, vocational learning, help to link data to identified relationships and motivate students to learn. Thus, "if the user of GIS can have these positive benefits, why then is its use in secondary schools relegated to the background? Biebrach provided some answers to this question which include, teachers perceive GIS to be complex, cost of software and hardware, time intensive, access to data, class suitability, teachers are not compel to use GIS and very little research done on the evidence of its positive impacts (Biebrach, 2007).

Industry Focus (2015) clearly stated that teaching students to think spatially authorizes them with the ability to comprehend and find solutions to the big problems such as climate change, environmental degradation and the likes facing the planet earth. They reiterated that from historians and ancient scholars in Greece, China and Rome, geography has been studied for over 2,500 years ago, therefore the study of geography to think spatially is more important now than ever, especially with issues of globalization economically and climatically, overpopulation, loss of biodiversity,

poor quality and quantity of water, environmental hazards that have assumed a global dimension and is threatening our everyday living. To solve these problems, we need a population of people that are grounded in spatial thinking. A population that can view the "wider scenario" and in the same way comprehend how the various patterns and trend of these issues are interconnected, from a universal dimension to their own local environment. Spatial science (GIS) is about all the relevant problems we experience today, this is so because all these problems have geographical and social dimensions. GIS helps to analyze these issues using maps in quantitative form or framework, instead of abstract documents, these maps are expressive and can be merge with other maps, multimedia, charts and databases. Industry focus also indicated that GIS is best for an inquiry based and problem solving methods of teaching. According to them, it integrates field study and also gives a tract for a career that is in high demand. It assists students to think evaluative and judgmentally, it makes use of tangible data and links the students to their own environment which is the major objective of Social Studies. GIS can be used to achieve all these at the primary, secondary and tertiary level of education for visual learning of today.

The use of GIS in Social Studies does not only provide an entire content of knowledge, it also offers a means for learners to think about their world (Bednarz, 2004; Kerski, 2008) as reported in Geospatial World (2018). GIS provides a geographical perspective for all disciplines for instance epidemiologists uses GIS to study the spread and spatial location of diseases, scientists use GIS to study climate change, business people uses GPS to locate new business establishments. All these examples are of major concern to Social Studies as there are used for spatial analysis.

Aerial Photos and Social Studies

Aerial photograph is a term used to describe photographs taken from high altitude like aeroplanes and they are used to prepare maps, they provide a bird's eye view of images and phenomenon's. Aerial photographs perform major roles in the acquisition of data for GIS and maps; they help in gaining knowledge about physical features of the earth structure such as vegetation, environmental resources, population, settlement, agriculture and many others (Kolukisa and Aladag, 2006). Aerial photographs have similar history with photography per se; the first aerial photograph was taken in 1858 by Nader who snapped the photo of a French chateau beneath him from a balloon (Eller, 2000). Over time, many other methods have been developed to take aerial photographs; recently aerial photographs have become a huge reservoir of knowledge and information which can be applied in engineering, mapping survey, transportation, planning and education. Aerial photographs are used in GIS to create visual resources therefore are components of GIS, aerial photos which can be easily surfed for from the internet can be effectively be used for educational purposes.

Aerial Photographs is among the most important resources of GIS, Kolukisa and Aladag (2006) studied the use of aerial photographs in geography education and realized that aerial photograph is among the most useful resources for teaching geography; hence it is possible for Social Studies teachers to find the aerial photographs of places around them and relate them to Social Studies concepts. Once Social Studies students understand the elements of aerial photographs, the teacher can give them opportunities to become proficient and build their interpretation skills progressively. Additionally, since aerial photos are intrinsically linked with GIS and maps, they can help Social Studies students to develop their understanding of concepts such as location, distance, direction and view. Adem (2009) noted that aerial photography is now a new GIS technological development as a teacher training resources, because they help trainee teachers

gain aerial perspective thereby improving the spatial cognition of the trainees. This cognition can be used to guide Social Studies learners too.

Aerial photographs can be effectively be used in teaching Social Studies to excite the curiosity of students Sprague (2000), like geographers worldwide Social Studies can make use of aerial photos to observe, experience and develop an understanding of nature, the world and their location in the environment. Adem (2007), Todd & Delahunty (2017) explained that though aerial photographs may look complicated to teachers, it is actually simple because it is a concept that is already incorporated into videos, movies and screen shows. This same sense of entertainment can be extended to increase the geographic literacy of Social Studies students. Aerial photographs will promote the observation and understanding of the local environment which is the core of Social Studies. But unfortunately, Social Studies teachers today do less of such exploration offered by resources such as aerial photographs.

Mason (2021) posited that any student can observe and interpret Aerial Photographs as they are veritable source of knowledge and information especially when studying the local environment. This means that they can be applied in the teaching of subject and lessons that are environmental base like Social Studies, depending on the topic. On a similar note, Mitali (2019) also explained that images from Aerial Photographs are easy to analyse and understand thus are appropriate for educational usage for the purpose of identifying places and objects as well as learning about the importance of Geography in Social Studies.

Google Earth and Social Studies

Bennett (2019) posited that the most perceived way of using GIS in schools today is by making use of Goggle Earth, this programme can be openly and easily sourced for from the

internet, downloaded and installed in computerized learning devices which can be used to teach different aspects of Social Studies such as culture, trafficking routes, history, climate, agriculture, geography, environmental studies, economics, effects of relief and topography on man's activities. Google Earth is among much free software that is obtainable free of charge from Google. Google Earth software combines satellite images around the globe with 3D computer graphics giving a strong visual appearance, Google Earth can be used to present, enrich and provide learning content for geography and Social Studies lessons (Britt and Fontaine, 2009).

Dempsey (2012) affirmed that Google Earth is one of the latest software technology which promises to revolutionalize the science of location, with this software pictures of everything on earth from man –made buildings, trees, hospitals, schools, parks relief are all available in one piece. It is a system of gathering information about any location under study from around the world, all that is needed to do this is the Google Earth software, a computer and an internet connection and you can go on a discovery mission around the world on your desktop. In addition, Google Earth makes the information about your search objects of anywhere in the world available it is absolutely easy. Bearing all these in mind one can understand and appreciate the benefits of this feature on the GIS platform.

Google Earth as a GIS resource have high prospects for Social Studies education, because Google earth is a customized software the feasibility of using it for Social Studies classes becomes unlimited (Pantazes,2008). The only limitation will be lack of creativity of the Social Studies teacher. According to Pantazes the advantages of Google earth for Social Studies lessons include being a great resource for visual learning; interesting way of presenting maps in a lesson, the interaction makes students to become creative learners and assisting teachers to show students

precisely what they need to know. Nevertheless, it is worthy to note some of the limitations in utilizing Google Earth for Social Studies classes, these limitations include-

1. Too much workload for educators because of the superabundance features of the software.
2. It takes diligence to master the program.
3. Unavailability of good resources online to assist Social Studies teachers and no central repository of programs for teachers.
4. It is time consuming.
5. High level of expertise is needed.

Irrespective of these limitations, there are tips for social studies teachers who are interested in making use of this GIS resource just like the researcher of this study want to do; these tips include the following-

1. The teacher must have a well laid down plan on how to use the software even before opening it.
2. Prepare the locations and angles you want to make use of to save time.
3. Zoom on any location you want to use so that students can have a good view.
4. Be creative on ways to incorporate Google Earth into your Social Studies lesson, you really don't need a bogus plan.

Saah (2016) alleged that with Google earth, Social Studies students can learn everything about their lives, culture and that of others around the world and with this knowledge comparisons and similarities can be establish. What this means is that students can be taken on a virtual trip around the globe with Google earth. Unarguably Google earth brings the world to the Social Studies classroom. Berman (2019) explore how GIS tools like Google Earth is usable for teaching Social

Studies students about the history of people and places. What more, Google earth also provides lesson plans for using the software; this can be a laudable point to begin for the Social Studies teacher who is new to the use of digital materials in the classroom.

County (2016) posited that Google Earth and Google maps enable people to see the world in a distinctly new way. The beauty of this is that it helps to improve learning for example, with Google maps and images, learners' can compare before and after images of deforestation.

Foresman (2019) said that Google earth is a new GIS and mapping tool which help Social Studies students to interpret maps, with the aim of providing a new learning engagement for students. Google Earth enables maps to be specified and organized into visual narratives which have helped Social Studies students of high school in Austin, Texas to create knowledge (Foresman, 2019). Brooklyn College (2020) experimented GIS, Google Earth and Google Maps data visualization applications and discovered that they are interwoven and allows for a virtual journey to any location around the world with their wide collection of photographs, information and interactive display of data for students' exploration. Google Earth as a GIS device can offer students the ability to explore, share and create knowledge; it has huge advantage when compared to the lecture method of teaching. With Google earth, students should be able to place shapes, lines and dots over maps in order to locate events, people and locations such as markets, schools, worship canters, residential and business neighbourhoods. The tools which will enable Social Studies teachers and students to do all these and more are presently available at Google Earth on the web.

Henry, (2009) investigated the possibility of using Google Earth for the practical use of internet GIS in Iceland, the study examined the prospect of exhibiting and processing GIS data in a new way making use of Google Earth lay out in three ways which are access to GIS data, GIS

modelling and dissemination of spatial information (this is the concern of education). The research created a systematic framework in order to achieve its goal, the results showed that geographic information can be effectively visualized and represented with Google Earth. The results also proved that Google Earth can be used in developing GIS applications such as internet resources which can be utilize in processing and displaying data for educational purposes in Social Studies. These findings are applicable to this study because Google Earth will assist internet GIS in accessing, facilitating and processing GIS for use in the Social Studies classroom.

Google Maps

Google map is a map service developed by Google, it is used with other GIS components like Aerial photographs, and satellite images to produce maps. This maps give specific information about geographical locations of regions all over the world. Google maps provides aerial and visual view of very many places, cities and towns. In many cases they offer street views of human and vehicular activities. Jarret (2016) presented effective ways of using Google maps to teach school lessons, these involves using them to describe different settings, mapping, as inspiration for art classes, perform virtual trips and as entry behaviour in Geography classes.

Satellite Images

Satellite images are images of the earth surface retrieved by satellites, this service is carried out by Governments and private cooperation's worldwide. The images are licenced by governments and satellite imaging companies such as Google maps or Apple. Through satellite images we know what the moon, star earth and other planets in space look like. The National Aeronautics and Space Administration (NASA) produce these satellite images and make them available for public

consumption free of charge. Satellite images applications are used in Agriculture, Biodiversity, Forestry, Geology, Regional planning, Cartography and Education. Satellite images and aerial photographs are complimentary as one can be used in place of the other.

Global Positioning Systems (GPS)

GPS is a United States satellite network that provides navigational systems and applications globally, students are now having the awareness of the use and importance of this satellite navigation as it affects using them to obtain security and intelligence report from anywhere in the world. A major advantage of GPS in education is that it promotes outdoor education such as fieldtrips, excursions and community education. When efficiently used in social studies, it can help the learner to respond meaningfully to spatial technologies like GIS (Gikunda,2020).

From the literature reviewed on GIS and Social Studies, one would see that GIS and Social Studies are strongly connected and related. GIS is multidisciplinary just as Social Studies is also multidisciplinary in nature. GIS adheres to the major themes of Social Studies such as science and technology, time and change, climate change, physical environment, social issues, political environment and more. GIS helps to enhance a strong foundation in Social Studies. GIS also expresses the relationship between man and the environment, which is the heart of Social Studies. Finally, the teaching and learning of Social Studies with GIS gives relevance and real-life contexts to Social Studies and social issues. Other components of GIS were explained briefly but will not be study in this research.

 Concept of Maps

A map is a depiction of the earth surface; maps show mostly physical features but can also be used to present information on human activities. Maps help to present information in a simple and visual form, they teach us about the location of places, countries and the distance between them they are the best tools for representing space. Maps make difficult information to become easy to analyse, they support spatial thinking and help students to visualize places and countries in affinity to one another by making the students to become proficient in geographical skills (Dorbecker, 2019).

An indication of the unfolding importance of maps is the growing interest among psychologists, geographers and scientists in spatial reasoning, the type of reasoning that supports studying and interpreting maps (Bednarz, Acheson & Bednarz, 2006). Map knowledge helps the mind to use and analyse spatial maps, concepts and graphs and the course of thinking in order to be coordinated and solve problems. Traveller, sailors and explorers always make use of global positioning system (GPS) to find their location and this help them in locating their destinations. The GPS is also becoming common in tracking automobiles. The most popular internet searcher Goggle now gives map users map scales and remotely sensed visual displays (images) which internet users can view from all point. Organisations make information available through printed and online maps, for examples census data maps, land use maps, town planning maps etc. this is to help people in spatial interactions and development. Today animated and still maps are now commonly used in newspapers and social media (Bednarz et al, 2006).

As spatial knowledge and understanding improves when students study maps, it will be simpler for the student sensory faculty about the world to develop and as this study of maps continue, sooner or later the students will begin to see themselves as world citizens (Catling, 2005; Tas, 2006 & Kayer, 2012).

Maps are used daily on television to forecast weather, in newspapers for illustration, on the internet to express social, political activities and events. This common but powerful and flexible tool has immense benefits for solving many real life daily problems people encounter such as recovering stolen vehicles to having an understanding of the weather in order to plan your day. The University of Edinburgh (2016) affirmed that maps are visualization tools and therefore should be considered a necessary aspect of digital humanist instrument, by enhancing geospatial analysis.

The world today is becoming a global village because of transportation and information communication technology, therefore a good world knowledge about the earth which can be provide through globes and maps is becoming very imperative. The use of maps can be dated back to 2,300BC (Dewett, 1999) cited in Yousaf et al (2012), these maps were on Babylonian clay tablets and were studied for centuries, maps offer valuable geography tools and spatial images in the learning of many Social Studies topics that are mainly connected to geography. Maps are becoming very useful to people on a daily basis because they offer expressions of data in the electronic and print media, it can present bulky information in a quick visual form. The appropriate use of maps is like taking a shorter route in the teaching and learning process as it saves time and effort. It offers first-hand information to students and gives the accurate information on distance, direction and size of land.

Maps and Social Studies

The distinctive nature of Social Studies, demands that teachers need to deviate from the traditional teaching resources to innovative instructional resources especially those provided by modern technological advancement like Maps. Shifting from teacher centred instructional methods to student/visual instructional methods will remove the abstract nature of learning Social Studies

curriculum and this will help to improve the test scores of upper basic students in the long run. According to National Association of Geoscience Teachers (NAGT) (2013) using maps in Social Studies classroom provokes curiosity, encourages inquiry and stimulate the skill of problem solving. The relevance and application of maps as a teaching resource has an ultimate goal towards enhancing and improving the academic performance of Social Studies students. Several studies such as Yousaf, Aziz and Hassan (2012), Bednarz, Acaeson and Bednarz (2006); Gokce (2015) and Geospatial World (2018), investigated the effects of maps on Social Studies students' performance and attested to the fact that the use of maps to teach related Social Studies content improved the academic performance of students.

Bednarz et al (2006) pointed out that there is a growing interest in the use of maps in the world today not only by geographers but by scientists and psychologists. This they argued supports spatial learning and reasoning. Teaching students with maps help them to understand Social Studies concepts better, read, interpret and analyze maps effectively. On the same note, Yousaf, Aziz and Hassan (2012) maintained that maps and globes are effective resources in the teaching of Social Studies lessons. They compared the performance of students taught Social Studies with globes and maps with those not taught with maps and globes and the results revealed that the use of maps did not only enhanced the academic performance of students but it increased their class attendance, participation and interest.

Yousaf, Aziz and Hassan (2012) compared the performance of students that were taught Social Studies with maps and those that were taught without maps and discovered that the understanding and assimilation level of the cognitive domain of those taught with maps greatly improved compare to those that were taught without maps. Their study also revealed that using maps to teach Social Studies do not only increase academic performance but in the same vein

increased students' participation, learning interest, class attendance and homework performance. Yousaf et al opined that the aspect of geography in Social Studies provides a permanent, capable and applicable knowledge about the world which is required for critical analysis and evaluation of world issues/problems.

Bednarz, Acheson and Bednarz (2006), argued that geography cannot exist without maps, they stated that renowned geographers have often revolved their works around maps and their uses. Hagget (1990) share this same view when he posited that "Geography is the art of the map able" (Bednarz, Acheson and Bednarz 2006: 398). The relevance of maps and other image representations has become even more imperative to both geographers and non- geographers. This can be largely attributed to the growth and diffusion of GIS; maps play an integral role in expressing and recreating space (Lefebvre, 1991, cited in Bednarz et al, 2006). The United States election map of 2004 where blue states represented states won by democrats and red states represented those won by republicans, constructed by geographers from the University of Michigan provided a better and precise picture of votes casted in the elections.
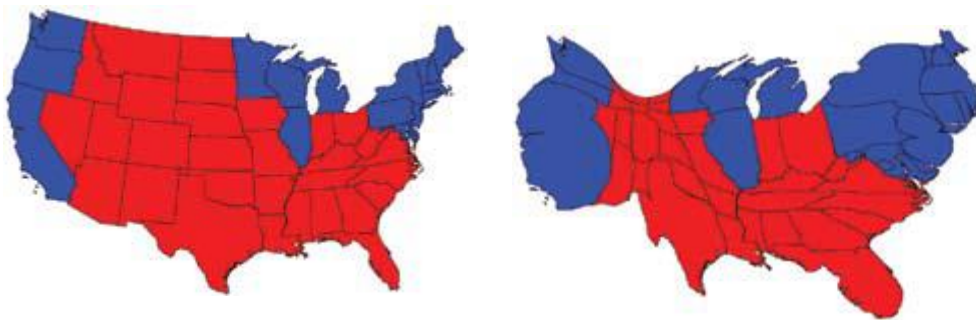
Figure 2.5: A map showing picture of precise votes casted in a US election
Source: Bednarz et tal, (2006).

Today maps are not used by geographers alone, this has made it necessary for educators in Social Studies to place emphasis on learning with spatial thinking. An assessment by National Assessment of Educational Progress (NAEP) disclosed that generally students are not efficient map users (Bednarz et al 2006). Perhaps this poor map usage can be attributed to low awareness among

Social Studies teachers on the increasing relevance of maps or they are ill – prepared to teach Social Studies with maps. Teaching Social Studies with maps signifies giving students the skills of map reading, interpretations and map productions it will also develop their problem solving skills by exposing them to the real world as depicted by maps.

Gokce (2015) looked at how map skills can be used in improving the study of Social Studies by students. Gokce further reiterated the importance of map skills as a part of "spatial perception skills" (p: 1346). Map skill is a major skill in geography that helps to perceive space, eliminate many problems of everyday life and make life easier for people (Gersmehl, 2005). This is because primarily people live within a geographical space that can be mapped and space is fundamental to human existence. People should be curious to learn about the space they live in and maps are veritable ways to learn about space. Consequently, it is when a Social Studies student is able to understand maps that he/she will be able to analyze the spatial information connecting to the earth and where the student lives. As map skills of Social Studies students improve they will be able to comprehend the distance between places on the globe and their interdependence. They will also gain more knowledge about the relationship that subjects such as geography and Social Studies have with human and physical processes (Akengin, 2012). People, events and concepts in Social Studies are always explained in reference to the place they exist or where they are observed (Unal, 2012), therefore the study of map assist students to adjust their lives to their immediate environment and this is a major benefit to an individual socialization attainment.

Gokce (2005) also advocated for the use of maps in training both Social Studies teachers and trainee teachers, they should be trained on the strategies, methods as well as the techniques they can use to incorporate maps as teaching tools into subject lessons and should also be trained on how to prepare their own maps for teaching. Gokce also opined that teacher training programmes be

upgraded, teacher's quality in map skills and Social Studies textbooks should be designed to better promote students map skills. According to Unal (2012) teachers must improve their competence and quality of teaching, through the application of maps when teaching topics and concepts related to location of people and places to boost students' comprehension through visual knowledge.

Geospatial world (2018) argued that maps help to spur up imaginations and inspire inquiry into the unknown, in modern times, the relationships between places and regions are studied with maps. These spatial analyses are done in computerized manner with the help of a GIS model. In GIS maps are high powered they can be combined with various multimedia dimensions and other maps to provide spatial knowledge.

GIS and Academic Performance

Geographic Information System is a computerised system created to collect, store, and influence, handle, analyze and lay out geographic data in a visual form (Martindale, 2019). GIS as a resource, when exposed to Social Studies students help to improve their conceptual understanding of geography related topics (Aytac, 2014). This idea of using GIS means that GIS when used for instructions in Social Studies is able to improve students' academic performance. Aladag (2014) evaluated the impact of GIS on the academic performance of Social Studies students in Turkey and discovered that Social Studies teachers are positively disposed to its applicability in Social Studies, not only that, it also promotes the map skills of students and help in knowledge retention.

Kerski (2015) identified the connections between Geographic Information Systems and academic achievements in Social Studies. GIS if effectively used to teach Social Studies, will go a long way in helping the learners, to understand the geographic concepts of the subject and by so doing improve the academic performance of Social Studies students. Kerski is of the view that since

Social Studies is multidisciplinary in nature, GIS which is also multidisciplinary is a vital tool in enhancing academic performance of Social Studies students. The presupposition is that giving students the opportunity to learn with GIS, diversifies their learning experience and therefore motivates them to produce better results.

McCloughin (2015) also supported the use of GIS in promoting the academic performance of Social Studies students. He stressed the positive effects of technology such as that provided by GIS on the knowledge of students because it offers a problem solving initiative to students. The effect of GIS learning is express in the learning gained by the learner. The teacher has to apply strategy in his/her capacity to cope with the learning challenges provided by GIS for it to be beneficial to learners from multiple backgrounds and help in achieving high academic scores which is the ultimate aim. Mccloughlin also revealed that GIS can be used as a learning tool in science, mathematics, history and integrating subjects into a single whole.

Maps and Academic Performance

Geographers describe maps as a major part of geography. It is believed that maps give a strong impression about the earth and space. Maps help students of geography and Social Studies in spatial analysis of information. As map skills improve, comprehension/understanding improves and so is academic performance (Gokce, 2015). Akengin (2012) asserted that since Social Studies study's people, events and places, using maps as a reference point in teaching about these phenomena will promote students learning and academic performance, also he posited that the use of maps for Social Studies lesson will have a beneficial effect on overall academic performance of students.

Finding the connection between maps and student's performance, Gokce employed a qualitative research method to interview 20 participants. All were teachers of geography, history and Social Studies. Suggestions from these teachers were that Social Studies, History and Geography lessons should be taught with maps, appealing maps should be created for students, study on current events should be conducted with maps and printed maps and technology should be included in teaching resources. Against these suggestions it can be deduced that these teachers must have considered the impact of maps in improving the academic performance of students in these subjects before making these suggestions.

Bednarz, Acheson and Bednarz (2006), discussed the importance of maps and other pictorial representations in the study of geography. This they attributed to the growing usage of GIS, with the increase in computer usage, global positioning satellites and remote sensing of images around the world the need to promote the interest of learners on maps is becoming inevitable. An assessment study by Bednarz, Acheson and Bednarz brought to the front burner the incompetency of students in the aspect of map skills. They also explained that just a small number of Social Studies teachers are knowledgeable on the growing necessity of maps, they are not prepared to use maps during their teacher training programmes and the motivation to do so is absent. From the foregoing therefore, this study is very timely in creating the importance, interest and motivation for Social Studies teachers to begin the consideration of incorporating maps in geography related and other aspects of Social Studies.

Bednarz, Acheson and Bednarz (2006) examined maps and map learning in Social Studies. Their study was based on the importance of maps and other graphics symbols to geographers and Social Studies experts. They studied how these people used map to structure information, solve problems and make inquiries, the study which is theoretical in nature presented ways in which map

resources can be used to rethink Social Studies and Geography. The content, symbols and styles which maps represents can be used as a vehicle to conceptualize, formulate and have a construction of the world in which we live, this have a strong influence on social interactions (Acheson & Bednarz, 2004).

Madiwalar, (2012) investigated the factors affecting the performance and usage of maps by students of selected secondary schools in Asela town, Ethiopia. The study was based on the teaching and learning of map skills in these secondary schools, the study adopted quantitative and qualitative approach with stratified random sampling to select 180 students and 6 teachers. From the study, some of the reasons that lead to low performance of students in map skills were inadequate and lack of effective map study, no interests to do homework that are map related and teachers not focusing on map aspects of content. It was clear from the analyses of the study's results that teachers did not lay emphasis on map and students too were not willing and this led to poor academic performance of the students. Against this background it is clear that the students should have performed better if they were taught with maps.

Gender and Academic Performance

The issue of Social Studies students performing below expectations in Nigeria Secondary Schools has been a subject of serious discussion among stakeholders of Social Studies in the educational sector. So many causes of this problem have been looked at from various perspectives

such as family background, school location, government perspective, students' habit etc. (Adigun, Onihunwa, Yusuf and Adesina, 2015). Gender also has been a major researchable topic in literature that has high effects on student academic achievements mainly in the science disciplines. Gender refers to the biological structures of the individual, be it male or female. The socio cultural disparities between the male and female gender also make it important to investigate academic performance in relation to gender.

Glasser and Smith (2008) and Dania (2014) also discussed the effect of gender on students' academic performance. Akpochafo (2009) also explained the meaning of gender. These studies tried to explain the concepts of gender and how it affects or determine the educational performance of individuals. Demographic features when viewed from the angle of male and female task performances in test, examinations, homework and assignment means the way gender determines achievements educationally by individuals. This implies that the performance of students in school subjects Social Studies inclusive may be determined by the gender of the individuals. Other factors can include interest, learning environment and family background as well as peer influence.

Abaidoo (2018) studied the factors that contributes to academic performance of students of junior high school Gomoa Manso Basic School in Gomo East Ghana. The study adopted purposive and mixed method with descriptive research design A sample of 87 respondents was used for the study. The findings showed that gender has a positive effect on academic performance. Therefore, the study recommended that other areas affecting academic performance should be researched on.

Yusuf and Adigun (2010) investigated the influence of gender, school type and location on students' academic performance in secondary schools of Ekiti State. A sample of forty (40) schools that were randomly sampled was used and a questionnaire on school type, gender, location and students' academic performance (STSLSAP) was used to gather the data used for the study. After

data analysis with percentage scores and t-test statistics, the three null hypotheses tested at 0.05 level of significance revealed that school type; gender and school location have no significant impact on student's academic achievements.

Lynch and Feeley, (2009), are of the opinion that gender disequilibrium exists in educational domain in respect of subjects liking and performance. The opinion of Lynch and Feeley is a signal that the role of gender as it relates to academic performance need to be attended to and the roles of individuals in the society should be dictated by socio-cultural factors and not by gender. The considerations of these authors give explanations why many male students seem to study the sciences while female students dominated the arts.

Abdu-Raheem (2012) observed that level of retention is a differentiating factor between the academic performance of male and female Social Studies students. Abdu-Raheem reported that there is no difference between the retention mean score of gender in an experimental study carried out on 240 sampled upper basic school students. Upon this premix gender does not play an important role on the academic achievement of Social Studies students. His study suggested that the view of gender in the consideration of academic achievement need to be re-considered.

Adigun et al (2015) studied the effect of gender on academic achievement of computer science students in New Bussa, Niger State. Questionnaire of 30 multiple choice items was used to collect data from 275 students from both public and private secondary schools of the study area and results were analysed with t-test. The findings of the study showed insignificant difference in the performance of male and female students, with the males obtaining a slight higher performance than the females and this higher achievement was recorded only in the private schools. This research shows that the difference between male and female students in the area studied is insignificant,

therefore the researchers recommended further studies in the areas of gender and academic performance in other subject areas.

Akpochafo and Oghenakoke, (2015) confirmed the assertion that gender is worth considering when relating it to the individual competence and skills express by male and female students in Social Studies. Their research unveiled the fact that academic difference in gender is a matter of competence. This competence can be in the area of subjects' knowledge/skills, learning competence, language competence and so on. The competence means the qualities that are inborn in the individual and his/her capabilities to express them. Therefore, according to them, academic performance of learners is not dictated by their individual gender rather it is their competence in relative to their cognitive skills such as understanding, reading, writing and being able to reproduce knowledge that has been learnt during the period of tests and examinations.

Gender and GIS concept was developed by Bernadetter and Karlee (2015), they looked at gender equality, equity and the practise of GIS. According to them a condition in which gender equity is achieved can imply when boys and girls have equal opportunities to GIS resources, educational access and employment. GIS can be used to incorporate gender dimension in government policies and programmes, differences exists between gender in the impact of GIS and its usage in education. It is this differences that GIS educators are trying to assess whether male and female students in a school setting behave the same or differently, when GIS is used to measure academic performance in school subjects particularly in Social Studies.

Yousaf, Aziz and Hassan, (2012) examines the effect of maps and globes on the academic performance of Social Studies teaching in Islamabad using experimental research method they examined 26 students in control and 28 students in experimental groups. After both groups were tested, data analysis revealed that the achievement level of those in the experimental group was far

higher than those of the control group. This study testified to the fact that the use of maps improves the academic feat of both male and female students because both gender was used in the study and there was no difference observed in the performance of male and female Social Studies students.

School Location and Academic Performance

Essien (2017) examined the influence of the location of schools as it affects the academic achievements of Social Studies students in Cross River State Nigeria and discovered that location has no influence on academic achievements. Likewise, Essien (2017) examined the effect of school location on the academic performance of Social Studies students in Colleges of Education in Cross Rivers State, Nigeria and came to the findings that difference in gender does not affect academic performance. Schools in Delta State are located in rural and urban settlements. In the context of the study, both rural and urban schools need to be educated in Social Studies with the use of GIS and Maps. The teaching and learning of Social Studies in both rural and urban areas are faced with multiple challenges that have necessitated the demarcation in the academic performance of Social Studies students in both the rural and urban areas.

In terms of population, urban and rural settlements have different meaning. Urban settlements have higher population. They are developed with both residential and commercial buildings, administrative offices, good roads, social amenities and concentration of infrastructures (National Geographic Society, n.d). Rural settlements are the direct opposite of urban centres, their population is small. According to Federal Government of Nigeria (2006) as cited by Aina (2019), a rural population in Nigeria is between 20,000 thresholds. A rural settlement is made up of many underdeveloped lands, little or no infrastructures and a few social amenities like schools, health centres etc.

The location of a school whether rural or urban has a considerable influence on students' educational life and academic performance. Little wonder therefore that many stakeholders in the education field and scholars have made it a major concern of research. Experience and observation has shown that many young Nigerians migrate from the village rural settlements to urban centres such as towns and cities in search of good education and social amenities. It is believed by these migrants that urban centres will afford them better educational chances and resources such as those provided by geographic information systems, computers and the internet, in the same vein there is this popular assumption that urban schools boast of more qualified and properly trained teachers because of the high standard of life that is obtainable in cities and towns.

Owoeye and Yara (2011) studied the relationship of school location and academic performance in Ekiti State of Nigeria between 1990 and 1997. The population of the study was 50 secondary schools that are located in both rural and urban areas. Instrument of the study was the West African school certificate examinations (WASCE) results of the 50 schools in the period under review. The study attested to the fact that students in urban schools performed better in academic feats than those of rural schools. The study recommended a bridge in the gap in order to provide rural areas with a better educational environment.

Adepoju and Oluchukwu (2010) examined the academic performance of secondary school subjects at the SSCE class in 10 secondary schools of Oyo State in Nigeria. The performance of only two subjects was investigated in five rural and urban schools respectively. The investigation showed that urban school students performed better than their mates that are in rural schools. The reasons for this as discovered by the researchers are because of improved learning atmosphere in urban centres with many learning resources such as internet, computers, electricity, mass media and libraries.

The study of Ntibi and Edoho, (2017), looked at how school location influences the attitude and performance of students in mathematics and science. They discovered that there was no significant difference in the mean score performance attainment between rural and urban students in mathematics and science. Akpomudjere (2020) studied the impacts of school location on student's academic performance on a population of 2579 business studies students in Sapele LGA of Delta State; the study revealed that location does not have significant influence for student's academic performance.

Moreover, Mhiliwa, (2015) also investigated the effect of school location on students' performance in Makambako town council; Njobabe in Tanzania, the study was conducted on 12 teachers, two educational supervisors and 200 students. The study revealed that the long walking distance, trekked by students to school had a negative effect on their performance because of the rural nature of the school. This has caused mass failure; the study recommended that efforts should be made to remedy the situation if not rural secondary schools in the area will continue to record poor academic performance.

Bamidele and Adekola (2017) determined the effect of gender and students' academic performance in junior secondary school basic science of Ibarapa region in Oyo State. Survey research design was used for 450 JSS II students that were randomly sampled; gender and socio economic status were used as criteria for academic performance. A t-test statistics was used to analyse the data and findings showed significant difference in academic performance of male and female students.

From the foregoing therefore, for Social Studies teachers to be able to incorporate and integrate GIS and Maps into Social Studies lessons, there is need to consider the effects of gender and school location on the subject.

Empirical Review of Related Literature

The section presents an empirical review of related literature on the independent variables which are instructional resources of Geographic Information Systems (GIS) and Maps, how various scholars and researchers succinctly dealt with the variables in their investigations. The dependent variable is upper basic Social Studies students' academic performance; therefore, the study is carried out to justify existing gap for the current study. The review is organised under appropriate sub-headings.

Empirical Studies on Geographic Information Systems

Artvinli, (2010), investigated how GIS can contribute to geography education in secondary school and the general attitude of secondary school students to GIS. The population of the study was all secondary school students in Istanbul, Ankara, Mersin, Manisa, Samson, Conin, Gaziantep, Kutahya and Erzurum during the 2008/2009 academic session. A sample of 665 students was used for the study; sampling techniques were stratified cluster sampling technique. Data was collected using the Al-kamali scale, analysis was done with mean and standard deviation, Pearson Correlation Coefficient and t-tests. Findings revealed that students' attitudes to GIS was positive, but there is the need to create new applications that will make it easier for students to make use of GIS in a motivated manner. Since the study revealed that the students' attitude towards GIS is positive, therefore GIS can be a positive tool to use in studying Social Studies since Geography is an aspect of Social Studies that is concerned about the physical environment.

Abba (2012), analyzed primary school public facilities in Funtua Educational zone with Geographic Information Systems, data that were gotten with GIS included the names and addresses of primary schools with Global Positioning (GP) receiver that was held with hand, the results were

produced with tables and charts. Similarly, 77 copies of questionnaire were given to primary school teachers to fill in the study area. The results of the study showed that there were more primary schools in Southern Funtua but more enrolments in Funtua central. Nearest neighbour analysis was used and findings revealed that 30% of primary schools in Funtua had six or more classrooms. Schools with staff rooms 86%, those with libraries 95% and 8% had computers. The study therefore recommended that government and P.T.A. should make adequate arrangements to provide computers for information and communication technology like GIS to thrive. Against this backdrop, it will be possible for pupils from those primary schools to create, manage and analyze geospatial information that will aid learning.

Oman (2013), examined the use of GIS in the study of geography, the study focused on the importance of geography and benefit from GIS technology so that a more effective teaching and learning of geography can be achieved. The study adopted a literature review method to investigate the need for GIS application in geography. The study highlighted the advantages to include enrichment of geography course content, promote a permanent retention for students, support activity based learning and making the teaching of geography easier. Thus if GIS can have all these benefits when used for geography teaching, then it would be worth the while to extend these benefits to Social Studies, since geography is part and parcel of Social Studies.

Thankachan and Franklin (2013) determined the impact of GIS application of Google earth on students learning with a hundred and two (102) sixth (6th) grade students from different schools in south east Ohio, United States. Post- test only control group research design was used for the study, the results show that Social Studies students of average grades using Google earth performed better than the students who used printed maps. With these results, the researcher believes that the

prospect of Google earth to increase teachers' efficiency and Social Studies students' performance is very high.

Ganyaupfu (2013) also demonstrated that instructional methods are very important to learning when he studied the effects of three methods (teacher – students' interactive method, teacher centred method and student centred method). Ganyaupfu analysed 109 undergraduate students' academic performance using ANOVA technique F (2,106) statistics (= 10.125; p > 0.05) and Turkey HSD post Hoc Analysis and the results showed that teacher centred approach to learning has the least effects on student academic performance.

Olubadewo, Abdukarim and Ahmed (2013) used GIS as an educational support system for primary schools. The study was done in Fagge L.G.A. of Kano state, Nigeria. The study analysed the spatial spread of primary schools in the LGA to create a database of schools. Method of data collection was through GPS coordinates and Arc GIS 9.3 while SPSS was used for data analysis. The analysis revealed that the spread of primary schools in the LGA is concentrated more in the area around Fagge A, B and D more than around Kuna. Findings reported 222 classrooms, 12,693 pupils and 558 teachers in Fagge LGA. The study concluded that GIS should be made part of the educational support system (EDSS) and therefore recommended the use of GIS for academic planning.

Aladag (2014) undertook a study on the evaluation of GIS in Social Studies lessons, with the use of teachers' view on the issue. The aim of Aladag study was to assess the application of GIS for Social Studies lessons in Turkey. Consequently, 14 Social Studies teachers in Aydin State were given GIS training with Arc-GIS 9.2, these materials were prepared in congruence with the Social Studies curriculum of Turkey. After the training, teachers' opinions and views were sought on the potential benefit and barriers of GIS application through a researcher's designed interview form.

Data was analyzed with content analysis, findings revealed that the teachers saw GIS to be of immense benefit to primary and secondary Social Studies education because of the visual learning it presented, development of map skills and the heightening of retention levels. Nevertheless, the teachers also saw a number of difficulties in GIS use such as poor teacher's computer skills, inadequate computers, time consuming and that a number of students may see GIS as difficult. By implication therefore GIS is significant to the academic performance of students in Social Studies irrespective of its difficulty.

Kerski, (2015), established eleven (11) major linkages that exist between GIS and Social Studies. These linkages were used to explain how Social Studies can be taught effectively using GIS. The first was that GIS is multidisciplinary in nature just as Social Studies is multidisciplinary in nature, GIS keeps to the ten (10) themes of Social Studies which include the concept of time, culture, societal impact of science and technology, space and time, citizenship awareness, civic ideals and practice. Thirdly, GIS promotes a strong foundation in Social Studies. Fourthly Kerski asserted that Social Studies involve the study of cultural, social and physical environments and how humans impact these environments and the use of GIS to examine these environments, promotes spatial skills and perspective in Social Studies. Fifthly, the use of GIS to learn Social Studies concepts help in promoting real and meaningful learning of Social problems globally, this will raise the awareness not to look at social issues in isolation but rather in a global context. Other benefits of using GIS according to Kerski includes, promoting critical reasoning skills, applying technology to understand social issues, use data of large magnitude, encouraging learning outside the normal classroom environment and giving a holistic picture of social issues faced globally today. Since Kerski study provides a linkage between Social Studies and GIS resources, the researcher would like to recommend its use in Upper Basic 8 Social Studies students.

Kilia Zacharos & Ravanis, (2015) Show how children between ages four to six can make use aerial photographs as a learning resource, the research sample comprise of eighteen (18) preschool children of a public school in Greece. Findings highlighted the ability of these children to use aerial photographs to locate places in space including the very location they were. Not only that, few of these children were also able to track objects in real space using these photographs. The import of this is that if children of four to six years old can make use of aerial photographs to acquire this much knowledge, how much more can upper basic nine Social Studies students who are thirteen and above make use of it in knowledge acquisition.

Singh, Rathakrishnan, Sharif, Talin and Eboy, (2016), worked on the effect of instructional strategies on learning outcomes and motivation of Geography students in Turkey. The study adopted quasi experimental design, a concurrent triangulation with a mixed method i.e. qualitative and quantitative research methods to answer research questions. The study made use of forty-four (44) students as sample for treatment group and forty (40) students as control group. Findings revealed that the post- test achievement mean score of students exposed to GIS based teaching performed significantly higher than the achievement mean score of those belonging to the control group. The triangulation of both qualitative and quantitative data shows that GIS based instructions has more positive effect when compared to the traditional lecture teaching method. Hence the study concluded that the use of GIS in teaching Geography has a positive impact on the participation, performance and motivation of students of Geography. Consequently, the researcher has a similar view as Geography is embedded inside Social Studies.

Sousa, Richter and Nel (2017), assessed the effect of multimedia like GIS on the teaching and learning of social science disciplines, specifically at the tertiary education level. The purpose of the research was to establish the connection between multimedia and social science concepts. A

quasi experimental design was used for a total of 315 university education students, results were analyzed with ANOVA. The findings revealed that the use of multimedia enhances the teaching of geography and other social science, it also makes learners experience to be meaningful. This indicates that GIS is a strategic learning application tool to social science disciplines which could also be used to improve the teaching and learning of Social Studies.

Environmental Systems Research institute (ESRI) (2017) studied how GIS can be introduced to Colombian Social Studies educators. A total of 124 Social Studies teachers across Colombia were used for the study. Only 24 teachers were able to conclude the GIS course offered them and 23 out of the 24 teachers think that an integrated geography and history studies with GIS has potentials for Social Studies lessons. With about 20% of the teachers attesting to the use of GIS as instructional resource for Social Studies, the effort will be worth the try.

Kanickaraj (2018) identified five components that a working GIS must integrate and they include hardware, methods, software, data and people. The hardware is the physical computer through which the GIS can operate; the software supplies the functions and tools that are needed for data processing, display and storage. The method is the blueprint and rules which are unique to each model or operating practices, while data which can be seen as the most important of all the components, because it is the raw facts that can be in the form of letters, numbers, statistics, maps and so on, then people who manage the system and develop plans and applications of GIS. People ranges from GIS experts who design programmes and sustain the system to the people who make use of GIS daily. GIS can become a major educational tool to use as instructional resources in the hands of Social Studies teachers.

Grind, GIS and Remote Sensing (2019) a blog that write about GIS articles and tutorials explained the application of GIS to the social sciences because GIS has now assumed a role and

become an integral part of the social sciences. Grind GIS clearly identify some of the major applications of GIS to the social sciences to include the mapping of public health systems to track the outbreak of infectious diseases and illnesses, it also involves the use of GIS for the prevention and control of different diseases which can be mapped and displayed digitally for easy compression of its spread and management. Similarly, real estate mapping, geographical statistics and locating addresses are other ways of GIS contribution to the development of the real estate sector. In like manner, urban and rural development like construction of electricity facilities, transport routes like roads and railway lines, optic fibre and sewage lines can be built and controlled with the help of GIS. Population studies in the social sciences can also be mapped and analyse using GIS, other aspects of GIS applications to social sciences are emergency planning, historical studies, criminal investigations, intelligence services and transportation modelling.

Kogure and Takasaki, (2019), demonstrated that GIS can be employed to study the effects of spatial occurrences, but the method that can be utilize is quasi experimental research as experimental research is difficult to carry out with spatial problems. Kogure and Takasaki investigated how the use of GIS can be used to pattern out transparent empirical investigations. For example, the spatial distribution of social infrastructures and amenities such as roads, schools, health and portable water facilities, like the study of Abba (2012) that use GIS to analyse facilities in public primary schools of Funtua, Katsina State in Nigeria. Since GIS can be used in Katstina state for the analysis of educational facilities, it can be used for analysis of educational facilities in other parts of Nigeria also.

The empirical studies reviewed are related to this research because this study is out to determine the effect of GIS instructional resource like Aerial Photographs, Google Earth and Maps on academic performance of upper basic students in Social Studies. From the empirical review on

GIS, it was discovered that there exists a positive correlation between GIS instructional resources and Social Studies as well as academic performance of Social Studies students. Therefore, this study wants to advocate for the use of Aerial Photographs, Google Earth and Maps resources in the teaching of Social Studies to stimulate the interest of students thereby promoting their academic performance in the long run.

Empirical Studies on Maps

Yousaf, Aziz and Hassan (2012) conducted a study and compared the academic performance of Social Studies students taught with maps and those that were taught without the use of maps. Their study was an experimental one, conducted with two sets of grade six students of federal government secondary school in Islamabad. Both groups had equal achievement at the pre-test level experimental group was taught with the aid of map and control group were taught the same lesson but without maps. At the end of the experiment, both groups were administered the same post- test and data analysed with t-test, results revealed that the achievement level of the students taught with maps improved, had better understanding and their results was far better than those in the control group. The implication of these results therefore means that Social Studies teachers should use maps as instructional resources in order to increase the academic comprehension and performance of students in Social Studies.

Ugodulunwa and Wakjissa (2015). Assessed the teaching of map sketching with portfolio technique in Geography, which is part and parcel of Social Studies in Jos, Nigeria The quasi experimental study selected two schools from a total of 51 schools in the south of Jos. Each was allotted 49 students for experimental group and 51 for the control group. Geography achievement test (GAT) was the instrument of data collection. The study discovered that portfolio assessments

promotes students' scores in map sketching and location. The experimental group recorded a higher mean gain of 33.32 over the 1.65 mean gain from the control group. Results of t-test analysis reported that gender had no equivalent effect on the GAT post-test of both groups, therefore portfolio assessments was recommended.

Gokce (2015) examined the use of maps in improving Social Studies understanding. Survey and qualitative research method was used to conduct a semi-structured interview on twenty (20) Social Studies teachers in Eskisehir Turkey. Content analysis was used to analyze the data collected and the results showed that the map skills of students in the study area was poor, therefore the teachers recommended that better opportunities should be given to students to improve their map skills. If the Social Studies teachers of Eskisehir can recommend map skills to be taught to Social Studies students, it therefore means that maps are full of contents, potentials and concepts to be used in the study of Social Studies.

Filgona, Filgona and Sababa (2016) investigated the effect of practical hands on learning as a strategy to boost the achievement of Geography students in maps. Study was done in Mayo Belwa Local Government Area in Adamawa state in Nigeria, the research design for the study was quasi-experimental pre-test, post-test control group.205 Geography students from 4 schools who are in SSS 111 were the sample of the study. Findings shows statistical significance difference in mean scores of students taught with map and those taught without maps. There was also a noticeable increase in the retention level of students taught with maps. Hence maps hands on learning strategy was recommended for teaching Social Studies, since Geography represent the study of physical environment in Social Studies.

Bugdayci and Selvi (2017) reiterated the strategic importance of maps when they studied the reason for social science and geography students' inability to read, analyze and understand maps.

The study was carried out in Turkey; the objective was to appraise undergraduate students' knowledge about geographical location. The subjects of the study included teachers and sixty (60) students of Social Studies, History and Geography Education Departments, in Necmettin Erbakan University. Their map knowledge was tested with questionnaire that contains the meaning of longitude, latitude, meridians, parallel and absolute location. It was discovered that majority of teachers and students could not tell the difference between parallels, meridians, latitudes and longitudes. Only 55% were able to express absolute location accurately. The study therefore recommended that more investigations concerning maps and their uses by social science teachers be carried out and maps should be harnessed in the teaching of social science subjects.

Bolaji (2020). Examined the influence of students' attitude towards map reading in Geography, descriptive survey design was used with intact classes of SSS 111 students selected from twenty schools in Oyo state, Nigeria. Geography attitudinal scale (GAS) was used as method of data collection, data was analysed with multiple regression. Results reported significant relationship between students' attitude and their performance in map reading. However, results indicated no important difference between male and female students' attitude. Based on the findings, recommendations that teachers should make efforts in improving the map skills of students were made. The only way to achieve this is by adopting maps as instructional resource in Social Studies when necessary.

The empirical studies above are related to this research because it seeks to establish the relationship between the use of maps as instructional resources and academic performance of Social Studies students. The result of empirical review shows that Map resources can be predictors and enhancers of Social Studies students' academic performance. This present study has a similar

objective with those reviewed therefore the learning opportunities that map resources provide should be applied in Social Studies delivery to boost students' academic performance.

Appraisal of the Reviewed Literature

The review examined relevant concepts and studies around the dependent variable (academic performance), independent variables GIS resources of Aerial Photographs, Google Earth and Maps. Moderating variables (gender and school locations). In the review, it was discovered that different studies reviewed showed positive interaction between the independent and dependent variables. Also it was revealed that GIS resources of Aerial Photographs, Google Earth and maps when used as instructional resources boosted the academic performance of Social Studies students. The review also revolved around the moderating variables gender and school location. There was no common ground on the effect of the moderating variables as some studies reported that they are significant to academic performance while others reported otherwise. To investigate the problem thoroughly, the study was hinged on three theories Jean Piaget constructivism theory, Howard's Gardner theory of multiple intelligences and symbol systems theory of Gabriel Salomon, which explains the effect of multimedia resources on learning and was adopted in line with the goal of this study of improving the academic performance of Social Studies students.

Secondly, the study undertook empirical review on the dependent and independent variables to determine the extent and scope of other scholars' contribution to GIS resources of Aerial Photographs, Google Earth and Maps studies across Nigeria and the world. Around the world there are a good number of empirical studies on these resources and their effect on academic performance in countries such as Turkey, Dublin, Iran, USA, Columbia and others. In Africa there are also studies linking the resources to academic performance in countries like South Africa and Ethiopia.

However, from the reviewed literature and to the best of the researcher's knowledge, it was clear that no research has been carried out on instructional resources of Aerial photographs, Google Earth Maps and academic performance of upper basic Social Studies students generally in Nigeria and particularly in Delta State. In addition, it was the researcher's observation that the influence of gender and school location as it relates to the use of the instructional resources in Nigeria is scarce. The scarcity of these studies inspired the researcher to conduct this study.

Despite the fact that Aerial photographs, Google Earth and Maps have gained global and regional recognition and acceptance, as learning resources in increasing the academic performance among Social Studies students. The researcher noted that research on the resources and academic performance of Social Studies students generally in Nigeria and particularly in upper basic Social Studies in Delta State, is scarce. This aspect of the subject seem not to have received enough consideration by academic stakeholders in the field of Social Studies. Thus it became imperative that this gap be filled with this study as a springboard.

CHAPTER THREE
RESEARCH METHOD AND PROCEDURES

In this chapter, the researcher described the methods and procedures that were adopted for this study. The sub-headings discussed in this chapter include the following.

i.   Research Design

ii.   Population of the Study

iii.   Sample and Sampling Techniques

iv.   Research Instrument

v.   Validity of the Instrument

vi.   Reliability of the Instrument

vii.   Method of Data Collection

vii.   Method of Data Analysis

Research Design

This study utilized the quasi experimental research design involving pre-test, post-test of experimental and control groups of non-randomised (intact) class. The design enabled the researcher to adopt a factorial design of 4x2x2. Where '4' represents four groups that will be taught with GIS instructional resources of Aerial photographs, GIS resource of Google Earth, Maps and one control group. The first '2' represent gender that is male and female while the last '2' represents urban and rural students that were sampled. This factorial design helped the researcher to test the effect of use of Aerial Photographs, Google Earth and Maps resources on treatment group by improving their Social Studies academic performance. The factorial design of this study is further explained in table 3.1.

Table 3.1: The Study's Factorial Design

Groups	Pre-test	Treatment	Post-test
GIS Resources of Aerial Photographs	O_1	X_1	O_2
GIS Resources of Google Earth	O_3	X2	O_4
Map Group	O5	X3	O6
Control Group	O7		O8

Where

O_1 = Pre-test for experimental group 1

X_1 = Treatment for experimental group 1

O_2	=	Post-test for experimental group 1
O_3	=	Pre-test for experimental group II
X_2	=	Treatment for experimental group 1I
O_4	=	Post-test for Treatment for experimental group 11
$O5$	=	Pre- test for experimental group 111
$X3$	=	Treatment for experimental group 111
$O6$	=	Post- test for experimental group 111
$O7$	=	Pre-test for control group
$O8$	=	Post-test for control group

Population of the Study

The targeted population for the study comprised of all the Upper Basic 8 Social Studies students in Delta State, consisting of 80,912 students for 2020/2021 academic session from 453 public upper basic schools (Source: Ministry of Basic Education, Asaba, 2020). These schools are geographically located across the three senatorial districts of Delta State: Delta North with 168 public secondary schools, Delta Central 187 and Delta South 116 public secondary schools. Numbers of schools in each local government areas will be in the appendix II.

Upper Basic 8 students were chosen because the Upper Basic 7 students are fresh students therefore are not matured enough to understand the concepts that will be taught and may not be serious enough to take part in the experiment. The Upper Basic 9 students will be very busy preparing for their Basic Certificate Examinations, on this wise they will not be able to take part in the quasi experimentation. Hence Upper Basic 8 Social Studies students were chosen for the study because they are matured and are not preparing for any external examinations

Sample and Sampling Techniques

A sample size of two hundred and sixty (260) Upper Basic 8 Social Studies students accounting for 0.5% of the population was drawn from four (4) mixed public schools (intact class) through a Multi-stage sampling technique. This number was taken due to the fact that the research is quasi experimental and does not need too many subjects in order not to contaminate the quasi-experiment. A balloting process was used at the first stage to sample the three senatorial districts from where the participants were selected for the study.

In the second stage, one LGA was randomly selected from Delta North and Delta South senatorial districts while two were also randomly selected from Delta Central senatorial district. In the third stage, a school was purposely picked from each of the four LGA. In the fourth stage, balloting was employed in picking an arm of Upper Basic 8 class. In a similar vein, purposive sampling technique was applied in selecting two schools from urban areas and two schools from rural areas. This make a total of four (4) schools that were used for the study. While selecting the schools, only mixed schools were selected because gender is one the variables to be investigated. Schools purposively selected for the study are shown in table 3.2:

Table 3.2: Study Sample.

Senatorial District	L.G.A.	Sample school	Location	Class Size	Treatment

Delta North	Ukwuani	Obiaruku Grammar School, Obiaruku	Urban	65	GIS. Aerial Photos
Delta Central	Ethiope East	Abraka Grammar School, Abraka	Rural	57	GIS. Google Earth
	Udu	Ogbe-udu Secondary School, Ogbe-udu	Rural	75	Map group
Delta South	Warri South	Essi College, Warri	Urban	63	Control group

Research Instrument

The main instrument for this research was an academic performance test titled Social Studies Performance Test (SSPT). The test items were selected from past Social Studies questions of Basic Certificate Examinations (BCE) set by the Ministry of Basic and Secondary Education, Asaba, Delta State. The instrument comprised of 50 multiple choice questions which were drawn from three selected topics taken from Social Studies Upper Basic syllabus given to public school teachers by the Ministry of Basic and Secondary Education, Asaba, Delta State. The three topics were for a period of six (6) weeks. The test items were made up of four options; one correct answer and three wrong options, each question carries a total of two (2) marks. This instrument was designed to test participants' knowledge on the topics that were taught with GIS and Maps and based on the table of specifications. The topics that were taught and their lesson plans are shown in Appendix iii.

Validity of the Research Instrument

The face and content validity of the SSPT was done by two experts in the Department of Social Studies who are the supervisors of the study, one expert of test and measurement and three Social Studies teachers, who have been teaching the subject for so many years now. An initial draft

of the instrument was submitted to these experts who determined the face and content validity of the instrument and made necessary corrections and adjustments. They removed some questions, added a few and corrected others. Some of the options were adjusted in a way that they all have similar length and characters for it to be suitable and usable. Their comments and remarks were added to develop the contents of the SSPT; it was on this basis that a final copy of the Social Studies Performance Test (SSPT) was produced.

In drawing up the Social Studies Performance Test (SSPT), the study took into consideration, the Educational Testing Service (ETS) (2002) taxonomy of the cognitive domain which requires three cognitive skills of reasoning. Remembering, Understanding and Thinking (RUT) in a 1:2:1 ratio. ETS have initiated many measurements in the field of education and ETS psychometricians make sure all test items are valid, reliable and fair (Education Testing Service, 2015). ETS focus is on test items development, research and administration. The test items were distributed among these three levels as remembering 25%, understanding 50% and thinking 25% - all gave the total of 100%. The use of the educational testing service has been recommended for the testing of Junior Secondary School Certificate Examination by the National Board for Educational Measurement (2014). See table 3.3.

Table 3.3: Table of Specification for Social Studies Performance Test (SSPT)

Social Studies Topics	No of Questions	%	Remembering 25%	Understanding 50%	Thinking 25%	Total
Human Trafficking	17	34%	4	9	4	17
Drug Trafficking	17	34%	4	9	4	17
Cultural Studies	16	32%	4	8	4	16

| Total | 50 | 100% | 12 | 26 | 12 | 50 |

Reliability of the Instrument

The reliability of the SSPT was ascertained with the test-retest method. Thirty copies of the instrument were administered twice, within two weeks' interval in-between the two administrations to thirty (30) Upper Basic 8 Social Studies students of Gana Mixed Secondary School in Sapele LGA. This is outside the LGAs to be used for the study. The scores from the first and second administrations of the instrument were correlated with SPSS using Pearson Product Moment Correlation Coefficient (PPMC) statistics, a coefficient value of 0.81 was obtained. This indicated that the instrument is reliable for this study.

Method of Data Collection

The quasi-experimental study was carried out in the 2020/2021 academic session and it took a period of six weeks, with three lessons taught. The researcher approached the school heads of the four schools that were used for the study to take permission in order to carry out the study in their schools, then four social studies teachers from the selected schools were trained by the researcher with the help of a GIS specialist from the department of Geography and Regional Planning, Delta State University, Abraka. The training exercise took a period of one week, Aerial Photos, Google Earth software, projectors, computer and Maps were used to train four Social Studies teachers. While maps were collected from the Department of Geography and Regional Planning Delta State University Abraka and other maps downloaded online and printed on banners, for the Map experimental groups.

Social Studies teachers in the selected schools were used to administer the instrument because they are experienced and expressed the willingness to take part in the study. Therefore, they were

trained on the skills of analysing Aerial Photos, Google Earth and Map information; the training began with explaining the meaning and uses of Aerial Photos, Google Earth and Maps to the teachers and thereafter the Google Earth software was displayed with the help of a computer system and projectors to zoom on images then teachers were trained on how to apply Aerial photographs, Google Earth and Maps to the teaching and learning of the three selected Social Studies topics and content. Explaining the information displayed on the projector screen step by step, teachers were given the opportunity to ask questions and an instructional guide in the form of lesson plans and notes to aid the teachers' delivery process were also given to the teachers.

Treatment Procedure for Aerial Photographs and Google Earth.

Two (2) Social Studies teacher were used to teach the two experimental groups, one teacher used aerial photos while the other teacher made use of Google Earth. The two groups were first of all pre-tested and their results kept aside.

 STEP: I Introduction, here the students were introduced to the topic/unit e.g. the physical environment of Nigeria. This was to prepare them ahead for the main lesson mentally

STEP: II The Aerial Photographs and Google Earth software were used to teach the lessons for the selected topics; it consisted of explanations, drill and visual applications for six weeks. The topics were the same Social Studies topics taught in the Maps and control groups. The students were free to study and visualize the photographs and images displayed by the projectors, expressed themselves, asked questions and contributed to the lesson, while the teachers explained, observed performance and progress.

The teachers made sure that the students understood and master one topic/unit very well before proceeding to the next topic, the procedure for the Aerial photographs and Google Earth

experimental groups was that topics were taught with photos and images projected and explained by the teachers, students studied these resources very well to understand them.

STEP: III Teachers and students perused the photographs and images of areas under study, locations under study were opened with the Google Earth software. Questions were entertained by the teacher for further clarifications in return then the lesson will end. This was the routine for the six weeks' period.

Maps Treatment

The treatment was administered by one Social Studies teacher who is the research assistant to one group of students, the lesson was designed to improve Social Studies map skills and the students were first of all pre-tested. The lessons were taught with the use of wall Maps related to the topics under study. The maps were provided by the researcher and the lesson took the following steps.

Step I: Introduction, here the students were introduced to the topic/unit e.g. the physical environment of Nigeria. This was to mentally prepare them ahead for the main task.

Step II: The teacher presented the lesson and position the related map on the wall, the teacher explained and tried to achieve the stated objectives and goals. This she did by presenting and explaining the content of the lesson and incorporated the maps, displayed into the main lesson. After these students performed the class activities by analysing and observing the maps to learn deeper about the topic. Thereafter they asked questions.

Step III: Evaluation, this means that the lesson has ended, the teacher now quizzed and questioned the students to get feedback on the extent of instructional objectives

achieved. The teacher did this by interacting orally or giving the class a written assignment.

Control Group Treatment

This treatment was administered by one Social Studies teacher and it took the form of just teaching without any of the experimented instructional resources for the control group after pre-testing the subjects. The content of the lesson was the same as that of the Aerial photographs, Google earth and Map groups, but this group were not exposed to any of the above resources. Lesson plans and notes were given to the teacher to teach the topics selected.

After a period of six weeks of intense teaching, a post-test was administered again to the participants of both the control and experimental groups. The students' test scores were then shared into male and female and urban rural scores, in order to test for the effects and interaction effects of instructional resources, gender and school location. The data generated was then statistically analysed.

Method of Data Analysis

The data collected from the pre-test and post-test were statistically analysed to establish the effect that GIS and Maps resources have on Social Studies students' academic performance. Descriptive statistics of mean and standard deviation were used to answer research questions. For research questions 1-3, if the post-test mean score is higher than the pre-test mean score the effect of the instructional resources is adjudged significant. Then for questions 4-12, once there is a mean

gain with a confidential interval of above 50 percent, the moderating effect of the variable is significant. While Analysis of Covariance (ANCOVA) was used to test the null hypotheses at 0.05 level of significance. ANCOVA was chosen because it can control the extraneous variables which can lead to the relationship between variables, that is independent and the dependent variables. It is also a combination of regression analysis and variance, ANCOVA as a statistical tool assist in removing the proportion of variance present in the criterion variable before the experiment was conducted.

CHAPTER FOUR
PRESENTATION OF RESULTS AND DISCUSSION

In this chapter, the researcher presents the analysis of data collected from the pre-test and post-test administration and was presented under the following sub-headings:

i.   Presentation of Results

ii   Discussion of Findings

iii.   Presentation of Results

Research Question 1: What is the effect of Aerial Photographs as instructional resources on the academic performance of Upper Basic Social Studies students?

Table 4.1: Mean and Standard Deviation showing the results of Pre-test and post-test Scores of Students taught with Aerial Photographs.

Test	n	Mean	SD	Mean Gain
Pre-test	65	41.49	9.66	
				25.99
Post-test	65	67.48	10.56	

The above Table 4.1 shows the test for mean effect of Aerial Photographs on academic performance of Social Studies students, as students taught with Aerial Photographs had a mean score of 67.48 against 41.49 of pre-test. A mean gain score effect of 25.99 was recorded. This implies that teaching students Social Studies with Aerial Photographs has effect on their academic performance and thus it would be tested in hypothesis 1 to ascertain if this effect is statistically significance.

Research Question 2: What is the effect of Google Earth as instructional resources on the academic performance of Upper Basic Social Studies students?

Table 4.2: Mean and Standard Deviation showing the results of Pre-test and post-test Scores of Students exposed to Google Earth.

Test	n	Mean	SD	Mean Gain
Pre-test	57	35.75	7.77	
				25.86
Post-test	57	61.61	7.43	

Table 4.2 shows the results from the pre-test and post-test of students exposed to Google Earth. The pre-test mean score is 35.75, while the post-test mean score is 61.61. The mean gained was 25.86. This depicts there exist effect of Google Earth when used as instructional resources for teaching Social Studies. The statistical significance of this mean gain was tested in hypothesis two.

Research Question 3: What is the effect of Maps as instructional resources on the academic performance of Upper Basic Social Studies students?

Table 4.3: Mean and Standard Deviation showing the results of Pre-test and post-test Scores of Students taught with Maps.

Test	n	Mean	SD	Mean Gain
Pre-test	75	36.64	8.98	
				25.70
Post-test	75	62.34	9.55	

Table 4.3, shows a pre-test mean score of 36.64 and a post-test mean score of 62.34 for students taught Social Studies with Maps as Instructional Resources. These findings revealed a mean difference of 25.70 mean gain. This implies there is effect using maps as instructional resources. The effect would be tested for statistical significance in hypothesis 3.

Research Question 4: How well does gender moderate the effect of Aerial Photographs as instructional resources on academic performance of Upper Basic Social Studies students?

Table 4.4: Test of Moderating Effect of Gender and Aerial Photographs

Dependent Variable	Mean	Mean gain	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Post_Test	62.254[a]	25.039	.784	60.711	63.797
Pre_Test	37.215[a]		.685	35.865	38.565

a. Covariates appearing in the model are evaluated at the following values: Gender = 1.4731.

Table 4.4, shows the moderating effect of gender on Aerial Photographs as instructional resources and academic performance of upper basic social studies students. Post and Pre Test show mean of 62.254 and 37.215 with Std Error difference of 0.099. Thus, the moderating effect of gender on the Aerial Photographs was 1.4731 with mean gain of 25.03 with a confidential interval (CI) of 63.797 percentage. However, this would be tested for statistical significance in hypothesis four. There is no doubt that gender moderated the effect of Aerial Photographs as instructional resources as it relates to academic performance of upper basic Social Studies students.

Research Question 5: How well does gender moderate the effect of Google Earth as instructional resources on academic performance of Upper Basic Social Studies students?

Table 4.5: Test of Moderating Effect of Gender and Google Earth

Dependent Variable	Mean	Mean gain	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Post_Test	60.305[a]	24.972	.888	58.557	62.053
Pre_Test	35.333[a]		.768	33.820	36.845

a. Covariates appearing in the model are evaluated at the following values: Gender = 1.4731.

Table 4.5, shows the moderating effect of gender on Google Earth as instructional resources and academic performance of upper basic social studies students. Post and Pre Test show mean of 60.305 and 35.333 with Std Error difference of 0.12. Thus, the moderating effect of gender on the Aerial Photographs was 1.4731 with mean gain of 24.972 with a confidential interval (CI) of 62.053 percentage upper bound. However, this would be tested for statistical significance in hypothesis five. There is no doubt that gender moderated the effect of Google Earth as instructional resources as it relates to academic performance of upper basic Social Studies students.

Research Question 6: How well does gender moderate the effect of Maps as instructional resources on academic performance of Upper Basic Social Studies students?

Table 4.6: Test of Moderating Effect of Gender and Maps

Dependent Variable	Mean	Mean gain	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Post_Test	60.373[a]	24.805	.806	58.787	61.959
Pre_Test	35.568[a]		.698	34.193	36.943

a. Covariates appearing in the model are evaluated at the following values:
Gender = 1.4731.

Table 4.6, shows the moderating effect of gender on Maps as instructional resources and academic performance of upper basic social studies students. Post and Pre Test show mean of 60.373 and 35.568 with Std Error difference of 0.108. Thus, the moderating effect of gender on Maps was 1.4731 with mean gain of 24.805 with a confidential interval (CI) of 61.959 percentage upper bound. However, this would be tested for statistical significance in hypothesis six. There is no doubt that gender moderating effect of Map as instructional resources as it relates to academic performance of upper basic Social Studies students.

Research Question 7: How well does school location moderate the effect of Aerial Photographs as instructional resources on academic performance of Upper Basic Social Studies students?

Table 4.7: Multivariate Test of Moderating Effect of School Location and Aerial Photographs.

Dependent Variable	Mean	Mean Gain	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Post_Test	64.564[a]	25.837	.687	63.211	65.917
Pre_Test	38.727[a]		.658	37.432	40.021

a. Covariates appearing in the model are evaluated at the following values:
Location = 1.4923.

.
Table 4.7, shows the moderating effect of school Location on Aerial Photographs as instructional resources and academic performance of upper basic Social Studies students. Post and Pre Test show mean of 64.564 and 38.727 with Std Error difference of 0.029. Thus, the moderating effect School Location on Aerial Photographs was 1.4923 with mean gain of 25.837 and a confidential interval (CI) of 65.917 percentage upper bound. However, this would be tested for statistical significance in hypothesis seven. There is no doubt that location has moderating effect on Arieal Photograph as instructional resources as it relates to academic performance of upper basic Social Studies students.

Research Question 8: How well does school location moderate the effect of Google Earth as instructional resources on academic performance of Upper Basic Social Studies students?

Table 4.8: Test of Moderating Effect of School Location and Google Earth.

Dependent Variable	Mean	Mean Gain	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Post_Test	59.289[a]	24.475	.923	57.471	61.106
Pre_Test	34.814[a]		.807	33.224	36.404

a. Covariates appearing in the model are evaluated at the following values: Location = 1.4923.

Table 4.8, shows the moderating effect of School Location on Google Earth as instructional resource and academic performance of upper basic Social Studies students. Post and Pre Test show mean of 59.289 and 34.814 with Std Error difference of 0.116. Thus, the moderating effect of School Location on Google Earth was 1.4923 with mean gain of 24.475 and confidential interval (CI) of 61.106 percentage upper bound. However, this would be tested for statistical significance in

hypothesis eight. It endorsed that school location has moderating effect on Google Earth as instructional resources as it relates to academic performance of upper basic social studies students.

Research Question 9: How well does school location moderate the effect of Maps as instructional resources on academic performance of Upper Basic Social Studies students?

Table 4.9: Test of Moderating Effect of School Location and Map.

Dependent Variable	Mean	Mean gain	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Post_Test	59.710[a]	24.439	.835	58.065	61.354
Pre_Test	35.271[a]		.730	33.832	36.709

a. Covariates appearing in the model are evaluated at the following values: Location = 1.4923.
.

Table 4.9, shows the moderating effect of School Location on Maps as instructional resources and academic performance of upper basic social studies students. Post and Pre Test show mean of 59.710 and 35.271 with Std Error difference of 0.105. Thus, the moderating effect of Location on the Map was 1.4923 with mean gain of 24.439 and a confidential interval (CI) of 61.354 percentage upper bound. However, this would be tested for statistical significance in hypothesis nine. There is no doubt that school location has moderating effect on Maps as instructional resources as it concerns academic performance of upper basic social studies students.

Research Question 10: What is the interaction effect of gender, school location and Aerial Photographs as instructional resources on academic performance of upper basic Social Studies students in Delta State?

Table 4.10: Interaction Effect of Gender, School Location and Aerial Photographs.

Dependent Variable	Aerial_Photograph	Mean	Mean gain	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound

Post_Test	Selected	67.332[a]	26.262	.983	65.397	69.268
Pre_Test	Selected	41.070[a]		.907	39.284	42.855

a. Covariates appearing in the model are evaluated at the following values:
Location = 1.4923, Gender = 1.4731.

Table 4.10, shows the interaction effect of Gender, School Location and Aerial Photograph as instructional resources on academic performance of upper basic social studies students. Post and Pre Test show mean of 67.332 and 41.070 with Std Error difference of 0.076. Thus, the interaction effect of gender, school location and Aerial Photograph was 1.4731 and 1.4923 with mean gain of 26.332 and a confidential interval (CI) of 69.268 percentage upper bound. However, this interaction would be tested for statistical significance in hypothesis ten.

Research Question 11: What is the interaction effect of gender, school location and Google Earth as instructional resources on academic performance of upper basic Social Studies students in Delta State?

Table 4.11: Interaction Effect of Gender, School Location and Google Earth.

Dependent Variable	Mean	Mean Gain	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Post_Test	59.760[a]	24.447	1.142	57.511	62.010
Pre_Test	35.313[a]		1.008	33.329	37.298

a. Covariates appearing in the model are evaluated at the following values:
Location = 1.4923, Gender = 1.4731.

Table 4.11, shows the interaction effect of Gender, School Location and Google Earth as instructional resources on academic performance of upper basic social studies students. Post and Pre Test show mean of 59.760 and 35.313 with Std Error difference of 0.134. Thus, the interaction effect of gender, school location and Google Earth was 1.4731 and 1.4923 with mean gain of

24.447 and a confidential interval (CI) of 62.010 percentage upper bound. This interaction would be tested for statistical significance in hypothesis eleven.

Research Question 12: What is the interaction effect of gender, school location and Maps as instructional resources on academic performance of upper basic Social Studies students in Delta State?

Table 4.12: Interaction Effect of Gender, School Location and Maps.

Dependent Variable	Mean	Mean Gain	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Post_Test	60.317[a]	24.229	.990	58.368	62.266
Pre_Test	36.088[a]		.870	34.374	37.802

a. Covariates appearing in the model are evaluated at the following values:
Location = 1.4923, Gender = 1.4731.

Table 4.12, shows the interaction effect of Gender, School Location and Maps as instructional resources on academic performance of upper basic Social Studies students. Post and Pre Test show mean of 60.317 and 36.088 with Std Error difference of 0.120. Thus, the interaction effect of gender, Location and Map was 1.4731 and 1.4923 with mean gain of 24.229 and a confidential interval (CI) of 62.266 percentage upper bound. However, this interaction would be tested for statistical significance in hypothesis twelve.

Testing of Hypotheses

Hypothesis 1: There is no significant effect of Aerial Photographs as instructional resources on the academic performance of Upper Basic Social Studies students.

Table 4.14: ANCOVA Summary on the Effect of Aerial Photographs on Upper Basic Social Studies Students' Academic Performance.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	20657.350		826.294	12.032	.000
Intercept	384419.342	1	384419.342	5597.503	.000
Aerial Photos	923.315	1	923.315	13.444	.000
Pre-test	15237.945	24	634.914	9.245	.000
Error	16070.404	234	68.677		
Total	959336.000	260			
Corrected Total	36727.754	259			

Table 4.13 shows the test for hypothesis 1, that there is no significant effect of Aerial Photograph as instructional Resources on the academic performance of upper Basic Social Studies Students. From the table $F_{(1, 234)} = 13.444$, where $p < 0.000$. Testing Ho1 at an alpha level of 0.05, the p-value is less than 0.05 level of significance. From the results, the result of the post-test was significant because p value was below 0.05 level of significance. Therefore, the null hypothesis which states that there is no effect of Aerial Photographs on academic performance of Social Studies students is rejected in favour of the alternative which state that there is significant effect of Aerial Photograph as instructional Resources on the academic performance of upper Basic Social Studies Students. This because the p value is less than 0.05 level of significance.

Hypothesis 2: There is no significant effect of Google Earth as instructional resources on the academic performance of Upper Basic Social Studies students.

Table 4.15: ANCOVA Summary on the Effect of Google Earth on Upper Basic Social Studies Student's Academic Performance.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	19799.966[a]		791.999	10.948	.000
Intercept	312273.945	1	312273.945	4316.695	.000
Google Earth	65.931	1	65.931	.911	.341
Pre-test	19494.716	24	812.280	11.228	.000
Error	16927.788	234	72.341		
Total	959336.000	260			
Corrected Total	36727.754	259			

Table 4.14 shows the test for the hypothesis that stated that there is no significant effect of Google Earth as instructional resources on the academic performance of Upper Basic Social Studies students. From the table, F (1, 234) = 0.911, p = .341. The p-value is greater than 0.05 level of significance. The decision rule is that since the p > 0.05, we retain the null hypothesis which state there is no significant effect of Google Earth on academic performance of Upper Basic Social Studies students in Delta State. The p value was above 0.05 level of significance, therefore there is no significant effect of Google Earth on academic performance of Upper Basic Social Studies students in Delta State. This implies that the use of Google Earth did not promote the academic performance of students thus the null hypothesis is accepted, because p value is greater than 0.05 level of significance.

Hypothesis 3: There is no significant effect of Maps as instructional resources on the academic performance of Upper Basic Social Studies students.

Table 4.16: ANCOVA Summary on the Effect of Maps on Upper Basic Social Studies Students' Academic Performance.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	23064.084[a]		922.563	15.800	.000
Intercept	297345.406	1	297345.406	5092.250	.000
Maps	3330.049	1	3330.049	57.029	.000
Pre_Test	8322.398	24	346.767	5.939	.000
Error	13663.670	234	58.392		

Total	959336.000	260				
Corrected Total	36727.754	259				

Table 4.15 data is the test for hypothesis 3 that stated there is no significant effect of Maps as instructional resources on the academic performance of Upper Basic Social Studies students. The test indicated $F (1, 234) = 57.029$, $p = .000$. Since the p-value is less than 0.05 level of significance. The null hypothesis 3 is hereby rejected and alternate hypothesis accepted which state that there is significant effect of Maps as instructional resources on the academic performance of Upper Basic Social Studies students. This shows that Maps had a significant effect on academic performance of students in Social Studies. This can also be observed from their mean scores as their pre-test mean score was 36.64, while the post-test mean score was 62.34 a mean difference of 25.70. Therefore, the null hypothesis is rejected as the p value is less than 0.05 level of significance.

Hypothesis 4: Gender do not have any moderating effect with Aerial Photographs as instructional resources on academic performance of Upper Basic Social Studies students.

Table 4.17: ANCOVA Summary on the Moderating Effect Gender on Aerial Photographs and Upper Basic Social Studies Students' Academic Performance.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	31365.275[b]		1254.611	13.791	.000
Intercept	623347.712	1	623347.712	6852.111	.000
Aerial Photograph	623.043	1	623.043	6.849	.009
Pre_Test	24406.841	24	1016.952	11.179	.000
Error	21287.362	234	90.972		
Total	1393320.000	260			
Corrected Total	52652.637	259			

a. Weighted Least Squares Regression - Weighted by Gender

Table 4.16 shows ANCOVA analysis of the moderating effect of gender on the use of Aerial Photographs as instructional resources. The independent variable was gender, while the Aerial photographs post-test was the dependent variable here, the pre-test scores were used as the covariate. The value of was F (1, 234) = 6.849, p = .009). From the results, the moderating effect was statistically significant as p< 0.05 level of significance was obtained. From the analysis of the results in the research questions gender moderated at a confidential interval of 61.37 percent, this shows that there was a significant difference in performance as it regards gender of students. We therefore reject the null hypothesis and state that gender moderated the effect of Aerial Photographs instructional resources on academic performance of Upper Basic Social Studies students.

Hypothesis 5: Gender do not have any moderating effect on Google Earth instructional resources and academic performance of Upper Basic Social Studies students.

Table 4.18: ANCOVA Summary on the Moderating Effect Gender and Google Earth on Upper Basic Social Studies Students' Academic Performance.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	30835.058[b]		1233.402	13.229	.000
Intercept	498150.345	1	498150.345	5342.810	.000
Google_Earth	92.827	1	92.827	.996	.319
Pre_Test	30361.716	24	1265.072	13.568	.000
Error	21817.579	234	93.238		
Total	1393320.000	260			
Corrected Total	52652.637	259			

Table 4.17 shows ANCOVA analysis of the moderating effect of gender on the use of Google Earth as instructional resources. F (1, 234) = 0.996, p = .319. The independent variable here is gender and Maps instructional resources, while the dependent variable is the post-test of students

taught with maps. Pre-test scores was the covariate. Since p-value is greater than p< 0.05 level of significance, we therefore accept the null hypothesis which stated that gender do not have any moderating effect with Google Earth as instructional resources on academic performance of Upper Basic Social Studies students. The implication of this result is that the gender of students whether male of female did not play any role in influencing their academic performance.

Hypothesis 6: Gender do not have any moderating effect on Maps instructional resources and academic performance of Upper Basic Social Studies students.

Table 4.19: ANCOVA Summary on the Moderating Effect Gender and Maps on Upper Basic Social Studies Students' Academic Performance.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	31005.120[b]		1240.205	13.406	.000
Intercept	555884.281	1	555884.281	6008.861	.032
Maps	262.888	1	262.888	2.842	.093
Pre_Test	29649.425	24	1235.393	13.354	.000
Error	21647.517	234	92.511		
Total	1393320.000	260			
Corrected Total	52652.637	259			

Table 4.18 reveals the result of the tested hypothesis 6 where F (1, 234) = 2.842, p = 0.093). Thus, since the p-value obtained 0.093 was higher than 0.05 level of significance, we will not fail to accept the null hypothesis statement that gender do not have any moderating effect with Maps as instructional resources on academic performance of Upper Basic Social Studies students. The meaning is that there was no significant difference in the performance of male students when compared to the performance of female students. The magnitude of difference as seen in the p value of 0.093 is high in favour of the male students, therefore male students that were taught with

Google Earth performed far better than their female classmate that were also taught with Google Earth.

Hypothesis 7: School location do not have any moderating effect on Aerial Photographs instructional resources and academic performance of Upper Basic Social Studies students.

Table 4.20: ANCOVA Summary on the Moderating Effect School Location and Aerial Photographs on Upper Basic Social Studies Student's Academic Performance.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	36208.642[b]		1448.346	13.041	.000
Intercept	604331.362	1	604331.362	5441.550	.000
Aerial_Photograph	2879.170	1	2879.170	25.925	.000
Pre_Test	21612.551	24	900.523	8.109	.000
Error	25987.729	234	111.059		
Total	1398232.000	260			
Corrected Total	62196.371	259			

Table 4.19 reveals the result of the hypothesis 7. The result shows $F (1, 234) = 25.925$, $p = .000$). since the p-value 0.000 less than 0.05 level of significance, we reject the null hypothesis and state that school location has moderating effect with Aerial Photographs as instructional resources on academic performance of Upper Basic Social Studies students. This connotes that school location is an important factor to be considered before utilizing Aerial Photographs to teach Social Studies. Therefore, the null hypothesis is rejected and alternate hypothesis accepted as the p value of .000 is less than 0.05 level of significance.

Hypothesis 8: School location do not have any moderating effect on Google Earth instructional resources and academic performance of Upper Basic Social Studies students.

Table 4.21: ANCOVA Summary on the Moderating Effect School Location and Google Earth on Upper Basic Social Studies Student's Academic Performance.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	33399.448		1335.978	10.856	.000
Intercept	400182.147	1	400182.147	3251.827	.000
Google_Earth	69.976	1	69.976	.569	.452
Pre_Test	32824.423	24	1367.684	11.114	.000
Error	28796.923	234	123.064		
Total	1398232.000	260			
Corrected Total	62196.371	259			

Table 4.20 shows   the result of the hypothesis test analysis that school location has no moderating effect on the use of Google Earth and academic performance of students, $F (1, 234) = 0.569$, $p = .452$ at 0.05 level of significance. The obtained p-value is greater than 0.05 which therefore means that school location does not have moderating effect on Google Earth as a resource for teaching Social Studies, hence the null hypothesis is accepted. The implication of the result is that students can be taught with Google Earth in any place be it urban rural or remote location as long as there is internet connection there.

Hypothesis 9: School location do not have any moderating effect on Maps instructional resources and academic performance of Upper Basic Social Studies students.

Table 4.22: ANCOVA Summary on the Moderating Effect School Location and Maps on Upper Basic Social Studies Student's Academic Performance.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	33508.371[b]		1340.335	10.933	.000
Intercept	461365.596	1	461365.596	3763.230	.000
Maps	178.898	1	178.898	1.459	.228
Pre_Test	32241.651	24	1343.402	10.958	.000
Error	28688.000	234	122.598		

Total	1398232.000	260			
Corrected Total	62196.371	259			

Table 4.21 shows the analysis of the test for the hypothesis 9. The obtained $F_{(1, 234)} = 1.459$, p = .228 at 0.05 level of significance with the p-value (.228) is greater than 0.05 which therefore means that school location has no moderating effect on Maps Earth as a resource for teaching Social Studies, hence the null hypothesis is accepted. This connotes that school location is not significant when using Maps as Social Studies instructional resources to improve academic performance of students. Maps can be a viable instructional resources in Social Studies anywhere and anytime. Hence the null hypothesis is accepted.

Hypotheses 10: There is no significant interaction effect among gender, school location and Aerial Photographs instructional resources on academic performance of upper basic Social Studies students in Delta State.

Table 4.23: ANCOVA Summary on the Interaction Effect of Gender, School Location and Aerial Photographs on Upper Basic Social Studies Student's Academic Performance.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Intercept	624556.233	1	624556.233	2859.718	.000
Aerial_Photograph * Pre_Test * Gender * Location	24123.084 29393.960 7333.794	110.455 96 163	218.398[a] 306.187 44.993[b]	6.805	.000

Table 4.22 shows the interaction effect between gender, school location and Aerial Photographs instructional resources, the table reveals significant interaction between the variables. The $F_{(96, 163)} = 6.805$, p = .000 at p < 0.05. Since the obtained p-value (0.000) is lower than 0.05 level of significance. Therefore, there is significant interaction effect among gender, school location and

Aerial Photographs, the null hypothesis is hereby rejected. Figure 4.1 and 4.2 show the representation of interaction effect between gender, school location and Aerial Photographs.

Figure 4.1: Graph Showing Interaction Effects Between Gender and Aerial Photographs
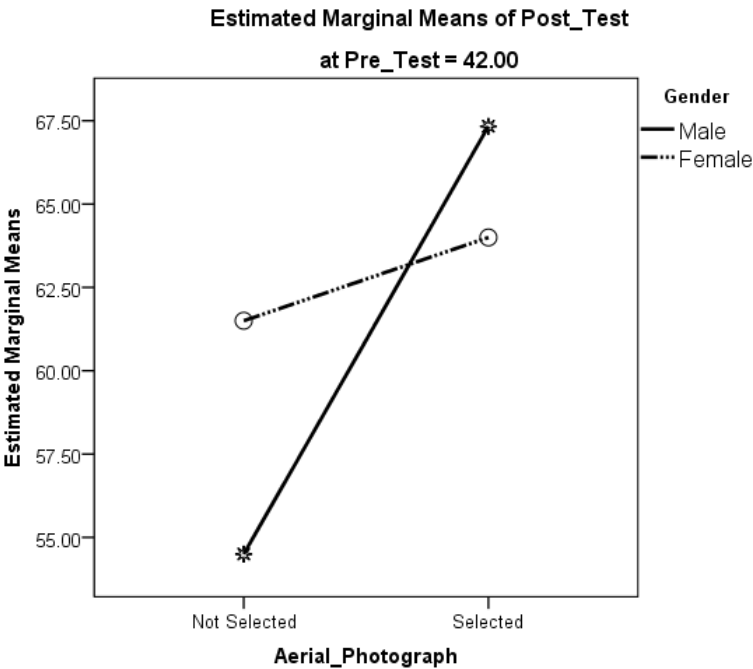
Figure 4.2: Graph Showing Interaction Effects Between School Location and Aerial Photographs

Estimated Marginal Means of Post_Test
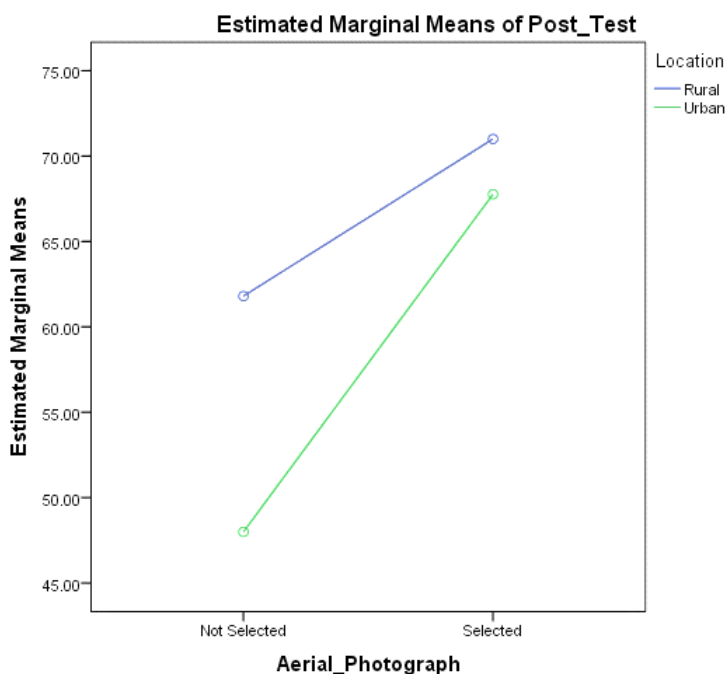
The graphs showed that interaction at post-test was 62.50 where pre-test interaction is 42.00 for the gender (male and female). There was no interaction for school location, on Aerial Photograph. This means that gender and Aerial Photographs interacted to affect Upper Basic Social Studies students' academic performance. The figure showed that the male students performed better than the female students. On the other hand, location showed no interaction effect with gender.

Hypothesis 11: There is no significant interaction effect among gender, school location and Google Earth instructional resources on academic performance of upper basic Social Studies students in Delta State.

Table 4.24: ANCOVA Summary on the Interaction Effect of Gender, School Location and Google Earth on Upper Basic Social Studies Student's Academic Performance.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	645839.590	1	645839.590	3381.904	.000
	25070.350	131.280	190.969[a]		
Google_Earth * Pre_Test * Gender * Location	25089.797	102	245.978	3.318	.000
	11637.957	157	74.127[b]		

Table 4.23 shows the interaction effect between gender, school location and Google Earth instructional resources, the table reveals significant interaction between the variables. The F (102, 157) = 3.318, p = .000 at p < 0.05. Since the obtained p-value (0.000) is lower than 0.05 level of significance. Therefore, there is significant interaction among gender, school location and Google Earth, the null hypothesis is hereby rejected. Figures 4.3 and 4.4 show the representation of the interaction effect between gender, school location and Google Earth.

Figure 4.3: Graph Showing Interaction Effects Between Gender and Google Earth
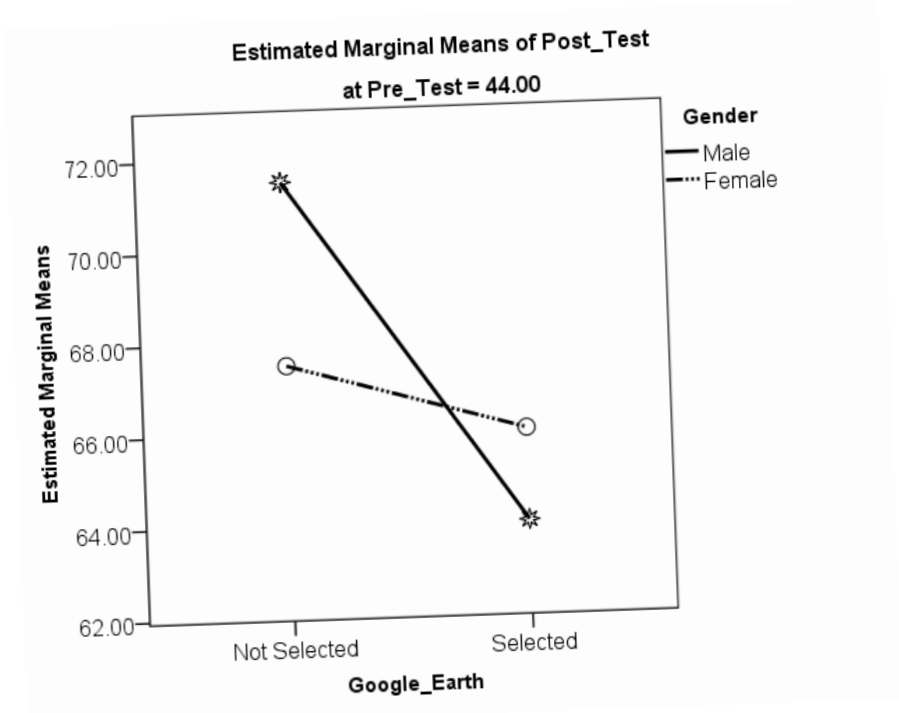
Figure 4.4: Graph Showing Interaction Effects Between Location and Google Earth

Estimated Marginal Means of Post_Test

at Pre_Test = 62.00
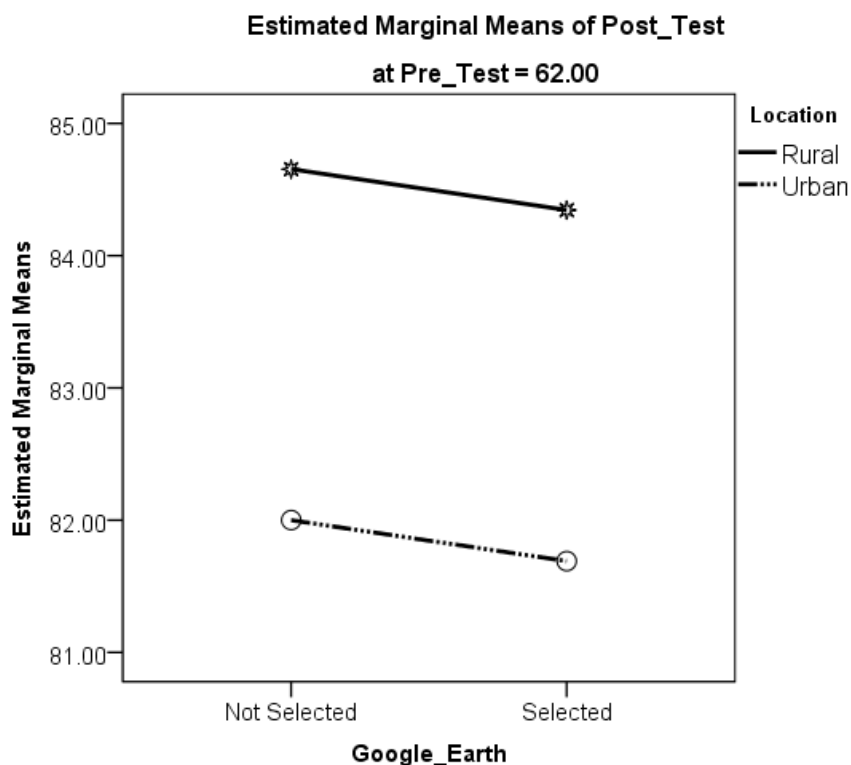
The figures indicate that interaction effect existed between gender and Google Earth to affect academic performance at a mean point of 66%, also the figure revealed that male students out performed their female counterparts. However, there was no interaction effect among gender, google Earth and school location. This is in agreement with hypothesis 8, which reported no moderating effect of school location on Google Earth and academic performance.

Hypothesis 12: There is no significant interaction effect among gender, school location and Maps instructional resources on academic performance of upper basic Social Studies students in Delta State.

**Table 4.25: ANCOVA Summary on the Interaction Effect of Gender, School Location and Maps on Upper Basic Social Studies Student's Academic Performance.**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.

|					
Intercept	645476.420	1	645476.420	3430.112	.000
	25340.900	134.664	188.179[a]		
Maps * Pre_Test * Gender * Location	25139.663	104	241.728	3.233	.000
	11588.090	155	74.762[b]		

Table 4.24 reveal the interaction effect between gender, school location and Maps instructional resources, the table reveals significant interaction between the variables. The $F_{(104, 155)} = 3.233$, $p = .000$ at $p < 0.05$. Since the obtained p-value (0.000) is lower than 0.05 level of significance. Therefore, there is significant interaction effect between gender, school location with Maps, the null hypothesis is hereby rejected. Figures 4.5 and 4.6 show the representation of interaction effect between gender, school location and Maps.

Figure 4.5: Graph Showing Interaction Effects Between Gender and Maps
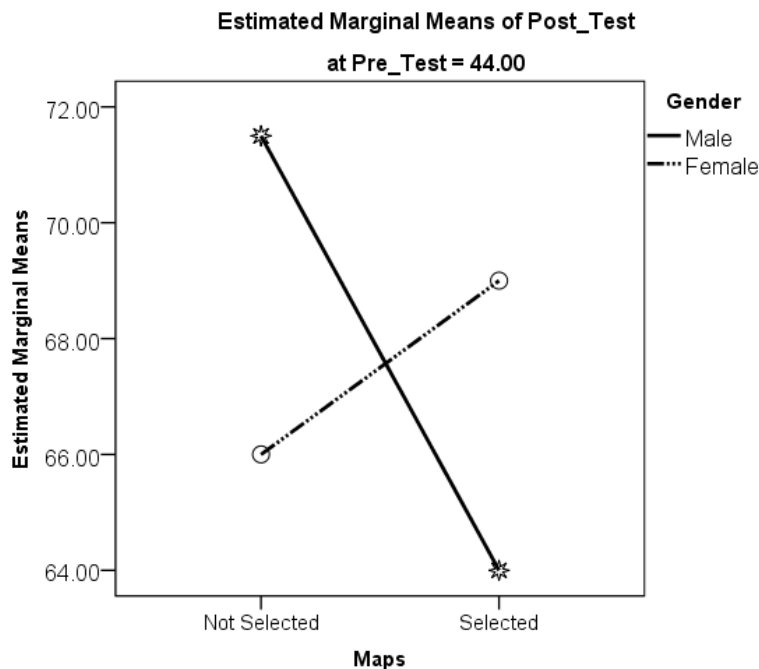
Figure 4.6: Graph Showing Interaction Effects Between School location and Maps

Estimated Marginal Means of Post_Test
at Pre_Test = 40.00
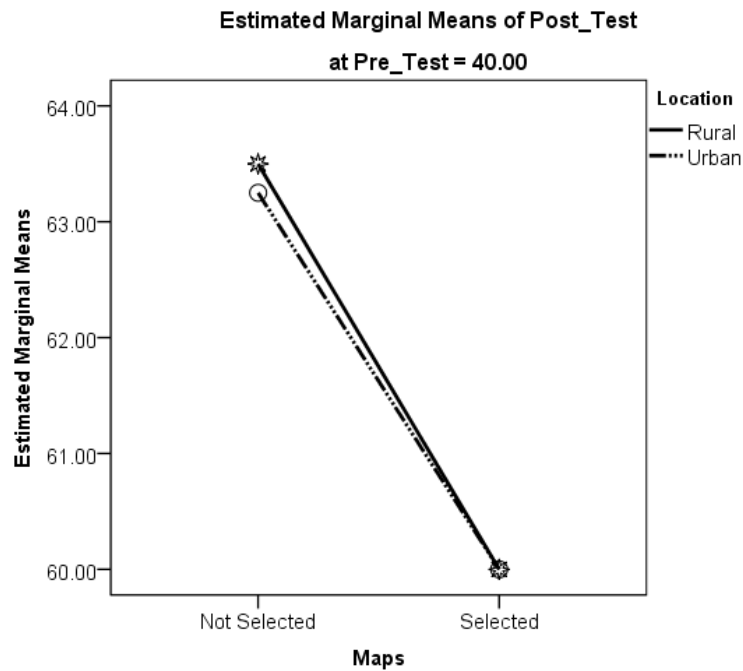
The graphs show that interaction effect occurred between gender, school location and Maps instructional resources on academic performance, this interaction between maps and gender occurred at mean point of 69.02, while that with school location occurred at 66.00. However, the male students performed far better in the Map group that their female classmates, while rural students did better than urban students.

Discussion of Findings

The main objective of this study was to investigate the effects of Aerial Photographs, Google Earth and Maps Instructional Resources on academic performance of upper basic Social Studies students. The study also investigated the extent to which gender and school location affected the academic performance of students using these resources when the moderating and interaction effects of gender and school location were tested on academic performance. The findings of the study are discussed in this section.

The results of hypothesis one showed that there is a significant effect of Aerial Photographs on academic performance of Social Studies students of upper basic schools in Delta State. The post-test mean scores of students taught with this instructional resources was far higher than their pre-test mean score showing there was improvement in their academic performance. This improvement in post-test mean can be attributed to the treatment of Aerial Photographs given to the students. This finding is an indication that Aerial Photographs are effective in boosting academic performance of upper basic social studies students. This is an indication that Aerial Photographs are effective instructional resources, because Aerial Photographs help students in gaining knowledge about physical features, hence they are visual resources which are good for educational purposes and are among the first visual resources of GIS. They excite the curiosity of students, help them to develop a sense of nature and an understanding of their world and environments which is the core theme of Social Studies. Furthermore, they promote Geographic literacy and give a sense of exploration for students. This finding is agreement with that of Todd and Delahunty (2017); which demonstrated the positive effect of Aerial Photographs for teaching Geography and posited that they are among the most useful GIS resources for teaching Geography. The finding is also in line

with Kilia, Zacharos and Rivanis (2015), the study demonstrated that the resource can be of good benefit to children as young as six years old of a public school in Greece. Findings highlighted the fact that these kids were able to use Aerial Photographs to locate places. Likewise, Nel (2017): Mitali (2020) and Mason (2021) all testified to the efficacy of using Aerial Photographs to improve the academic performance of students and by extension good for improving the academic performance of Upper Basic Social Studies students in Delta State. This results showed that Aerial Photographs resources are veritable and visual resources that can effectively promote the academic performance of students in Social Studies.

The second finding of the study reported no significant effect of Google Earth on the academic performance of upper basic Social Studies students in Delta State. Therefore, the effect of Google Earth on academic performance was not significant. Despite the major advantages of Google Earth as seen in the literature reviewed, it was surprising that the instructional resource had no effect on academic performance of the students. A possible explanation is that this instructional resources did not have any effect on the students' performance because the students had no ample time to explore and have an in-depth knowledge of the software. Similarly, lack of teacher's expertise to present the instruction well to students understanding may have affected their performance. As it is worthy to note that Google Earth can be too much workload for teachers; need's a lot of diligence; requires high expertise and time consuming. All these factors may have been too difficult for the research assistant to handle hence the effect of the experiment was not felt by students. These factors can be seen as limitations of this study. Consequently, this finding is in contrast to all the studies reviewed on Google Earth and academic performance such as Kerski (2015) who submitted that Google Earth can be used to promote a strong foundation in academic performance of students Social

Studies by using it to study cultural and physical environments. Benneth (2019) who perceived Google Earth to be the best method of applying GIS in schools; Britt and Fontaine (2009) who said Google Earth enriches Social Studies learning content; Dempsey (2012) opined that Google Earth to be the latest technology with promises of revolutionizing education; Pantazes (2008) posited that Google Earth is a great visual resource and Saah (2016) who said that Google Earth help students to learn about their culture and those of others

Hypothesis three results revealed a significant effect of maps on social studies students' academic performance, the post-test mean score was far higher than their pre-test mean score. Maps used as instructional resources appeared to have facilitated involvement in learning and by implication instructional resources of maps have positive effect on students' academic performance. This has also proven that maps are significant in enhancing students interest and scholarly performance as Maps present information in a simplified form and make difficult concepts to become easy. They boost spatial thinking by helping students to visualize places, hence they are a veritable visualization tools. Maps help students to become world class citizens, understand and solve environmental problems and can do much more than all the above. This finding is consistent with that of National Association of Geoscience Teachers (NAGT) (2013), their study submitted that maps provoke curiosity and improves the skill of inquiry. Other studies that are in line with this finding includes Yousaf et tal (2012) who used an experimental study to establish the superiority of maps in Social Studies as it increased academic achievement level of students. Ugodulunwa and Wakjissa (2015) they accessed the teaching of map with sketching portfolio and the experimental group recorded a mean gain of 33.32 against the control group mean gain of 1.65. Gokce (2015) that demonstrated that maps can be used to improve social studies students understanding and

scholarly performance. Bugdayci & Selvi (2017); Geospatial World (2018) who put that maps can help to spur up the imagination of students and inspire them to probe into the unknown. and Bolaji (2020) who conducted a study on the influence of maps on academic achievement of students in Oyo state south west Nigeria. These studies supported the effect of maps on spatial learning and reasoning as they help Social Studies learning and academic performance of students. Maps are therefore sure enhancers and predictors of academic performance in Social Studies

Several studies showed that gender is a major factor that can affect academic performance of students, while others are at variance with this assertion. Hypothesis four results showed that moderating effect of gender and Aerial Photographs on academic performance of social studies students in Delta State was significant, in other words gender has effect on the use of the resource and the students' academic outing. This finding was of utmost importance to this study as one of its major objective was to determine the role of gender in academic performance. Therefore, gender played a major role in the effect of Aerial Photographs on academic performance. Research has often been conducted on the role of gender when it concerns the academic outing of students. This finding suggest that male students performed better academically than female students that were taught with this instructional resources The possible reason could be that boys make use of phones and laptops a lot and may have been use to aerial photographs as they assess these devices, therefore it was easy for them to assimilate faster than their female counterparts. Also boys exhume more confidence and high aspiration when it comes to learning new things as oppose to girls who have low aspirations, this attributes may have affected the performance of the female students in this group. Hence this study submitted that gender moderated the effect of aerial photographs on academic performance of Social Studies students, as the male students performed higher than the

female students. This finding contradicts those of Yusuf and Adigun (2010) which reported no significance difference in the performance of male and female students, Abdu-Raheem (2012) and Obro (2018) that reported same findings. However, the finding is in agreement with Parajuli and Thapa (2017) and Yousaf et tal (2012) these studies discovered that there was significant difference in the academic performance of male and female students.

Result of hypothesis five revealed that there is no significant moderating effect of gender and Google Earth on academic performance of Social Studies students in Delta State, hence gender had no effect on the use of the resource on the students' academic performance. This implies that Google Earth is not gender sensitive as it did not determine the effect of the instructional resources on academic performance of students. This finding indicates that the use of Google Earth does not favour one respective gender against the other as p value was below 0.05 level of significance. Meaning being a boy or a girl has no effect as it concerns the usage of Google Earth resource in the Social Studies classroom. This may be because the resource is new to all students hence they all have a similar standing. This finding is important to this study which set out to determine the role of gender in Google Earth usage and academic performance. The result corresponds with Awodun and Oyeniyi (2018) that found no statistical effect of gender on the academic performance of male and female students. This finding agrees with Abaidoo (2018) studied factors that contributes to academic performance of students in Gomo Ghana, the study adopted a purposive sampling on 87 respondents. Findings revealed that gender has no positive effect on academic performance. Abdu-Raheem (2012) observed that gender has no effect on the retention and academic performance of male and female students. These studies showed that both male and female students exhibit similar

confidence and performance. On the other hand, this finding contradict the studies of Parajuli and Thapa (2017) which reported that gender has effect on academic performance of students.

It was found from the sixth hypothesis six that there is no significant moderating effect of gender on Maps and Social Studies students' academic performance. The male students did not dominate the female students neither did the female students dominate the male ones, there was a balanced performance as both gender enjoyed equal benefits. This gender equilibrium maybe because since they were not using map to teach them social studies before now. The interest of all students was stimulated to learn hence there was a balance in both male and female academic performance. As they were all given equal access, and factors like interest and peer influence may have played a major role. Therefore, an atmosphere of gender balance characterizes the use of this resources. This finding is on the same page with Yusuf and Adigun (2010) investigated influence of gender, school type and location on students' performance in Ekiti State Nigeria, forty schools were randomly sampled for the study, a questionnaire on school type, gender and location used and analysis done with percentages and t-test shows that gender has no significant effect on academic achievement. Similarly, studies of Okereke (2011); Obro (2018) and Awodun and Oyeniyi (2018) all submitted the same findings, that there is no significant or moderating effect of gender on students' academic performance. Moreover, this finding is at variance with the studies of Akpochafo (2001), Adeyemi and Ajibade (2011) and Yousaf et tal (2012), these studies demonstrated male dominance in academic performance and also recorded male students out performing their female counterparts.

The seventh hypothesis result reported a significant moderating effect of school location on social studies students' academic performance. This finding means that school location mediated student's academic performance taught with Aerial Photographs. The possible reason could be that this group was from an urban area therefore urban school location moderated the effect of Aerial Photographs on the academic performance of Upper Basic Social Studies students. This might be because they are used mainly to android phones which display mostly Aerial Photographs which the students must have interacted with at one time or the other before being exposed to them during treatment. Also urban areas have more access to educational opportunities more than rural areas. This finding corroborates studies such as Adepoju and Oluchukwu (2010); Owoeye and Yara (2011); Umar and Samuel (2012) and Mhilwa (2015). These studies reported high academic performance of urban students more than rural students. On the contrary, Essien (2017); Ntibi and Edoho (2017) and Akpomudjere (2020) recorded insignificant difference in the academic performance of urban and rural students exposed to various teaching methods. Social Studies is learnt mostly in the environment therefore school location can affect the learning experience of the students.

Hypothesis eight findings showed no significant effect of school location and Google Earth on academic performance Social Studies students. This finding implies that Google Earth and school location have no moderating effect on academic performance, in other words it did not favour rural or urban students against the other. In other words, Google Earth was not affected nor influenced by School Location. The most probable reason may be that the Google Earth group performed below expectation as hypothesis one reported no significant effect of Google Earth or this is because of the high expertise required to understand Google Earth therefore students were

passive. Moreover, this experiment took place in a school located in a rural area, it is also possible that this affected the results as urban students are more versatile in the use of gadgets and applications like Google Earth. This finding is in line with Essien (2017); Ntibi and Edoho (2017) and Obro (2018); which discovered insignificant difference in the academic accomplishments of rural and urban students. However, the results contradict studies of Owoeye and Yara (2011) and that of Bamidele and Adekola (2017) which reported significant difference between urban and rural students' academic performance.

The result of hypothesis nine indicated that school location did not moderate the effect of Maps on academic performance of Social Studies students, because the effect was not significant. School location did not affect or influence the use of Maps as instructional resources. The reason for this result can be because the students were happy with the wall maps displayed and were all excited to learn, they also interacted with the maps hence their performance was similar. By implication the effectiveness of maps resources in promoting academic performance is not dependent on the location of school, as school location has no effect on students' performance taught with maps in Social Studies. Therefore, school location should not be a barrier to the applications of maps to Social Studies content, concepts and learning. This finding is in consonance with Borisade (2011); Igwebuike and Ikponmwosa (2013); Essien (2017) and Akpomudjere (2020). These dtudies revealed that school location has no effect on academic performance of students. While the finding is at variance with Jianzhong (2009); study on school location and students' achievement and reported effect of gender on students' achievement. Mhilwa (2015) worked on two hundred (200) students from a rural location and discovered that the long walking distance made them to perform lower than their urban counterparts. Owoeye & Yara (2016) attested that

urban schools in Ekiti State Nigeria, performed better than Rural schools. These studies found out significant effect of school location on students' performance. Therefore, the study concluded that school location has no significant moderating effect on social studies students' academic performance.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter summarized, submitted the conclusion of the study and gave recommendations with the following sub-headings:

i.   Summary of the Study

ii.   Findings of the Study

iii.   Conclusion

iv.   Contribution to knowledge

v.   Suggestions for Further Studies

Summary of the Study

  This study determined the effects of instructional resources on the academic performance of Upper Basic Social Studies students in Delta State, Nigeria. The study limited itself to GIS resources of Aerial Photographs and Google Earth. Also the effect of maps as instructional resources was investigated thus the study delimited itself to three independent variables which are Aerial Photographs (GIS), Google Earth (GIS) and Maps, academic performance of Upper Basic Social Studies students was the dependent variable, while students gender and school location were the moderating variables. Twelve research questions were raised and answered, while twelve hypotheses were also formulated to give the study a guide. These hypotheses were tested on the effect and interaction effect of these variables at 0.05 level of significance. The research design was pre-test post-test control group with a 4x2x2 factorial design. The study's population consist of 80,912 Upper Basic 8 students across the 453 government owned schools in Delta State. A sample size of 260 students of these students were drawn from four Upper Basic schools across the three senatorial district of Delta State. The study took place during the third term of the 2020/2021 academic session and the treatment lasted for 6 weeks. Three schools were used for the treatment group, one each for one independent variable of the study while one school was used for control group. In each of the schools used for the study, intact classes selected through a balloting by simple sampling technique. A researcher's constructed test with items extracted from past Basic Certificate Examination questions and title Social Studies Performance Test (SSPT) was the instrument used for data collection. The instrument was duly validated by the two supervisors of the study and another expert in measurement and evaluation, also three Social Studies teachers were

given a copy of the instrument to make their input. Reliability of the instrument was also ascertained with test re-test method to establish its stability measure. A Pearson's Product Moment Correlation Coefficient reliability index of 0.81 was obtained. A pre-test administered and after treatment a post-test was administered again for all groups. The results were collated, Research questions were analysed and answered with descriptive statistics of mean and standard deviation. All hypotheses were tested with ANCOVA, two-way and three- way statistics.

Findings of the Study

The study revealed the following key findings:

1. there was significant effect of Aerial Photographs on the academic performance of students taught Social Studies with the instructional resources;

2. there was no significant effect of Google Earth on the academic performance of Upper Basic Social Studies students exposed to this instructional resources;

3. maps instructional resources improved the academic performance of students taught Social Studies with maps, therefore maps have a significant effect on academic performance;

4. moderating effect of gender and Aerial Photographs on academic performance of Upper Basic Social Studies students in Delta State was significant;

5. gender did not have any moderating effect on Google Earth and academic performance;

6. gender has no moderating effect on maps and Social Studies students' academic performance when taught with the resources;

7. school location moderated the effect of Aerial Photographs and academic performance significantly;

8. school location has no moderating effect on Google Earth and academic performance of students taught Social Studies with the instructional resources;

9. moderating effect of school location and Maps on academic performance of Upper Basic Social Studies students in Delta State was not significant;

10. Aerial Photographs interacted with gender to affect academic performance of Upper Basic Social Studies students but did not interact with school location;

11. Google Earth did not combine with school location to influence academic performance but interacted with gender;

12. there was significant interaction effect among gender, school location and Maps to improve academic performance of Upper Basic Social Studies students.

Conclusions

Upon the findings of the study, the fact remains that instructional resources contributes to academic performance. A conclusion can be reached that Aerial Photographs and Maps are effective for promoting the academic performance of Social Studies students in Upper Basic schools across Delta State and Google Earth does not promote academic performance. In comparison, Aerial Photographs proved to be more effective than maps and Google Earth. As information on Aerial Photographs are more explicit than those of Google Earth and Maps. There was significant moderating effect of gender on Aerial Photographs but gender did not moderate Google Earth and Maps. School location only moderated the effect of Aerial Photographs, but did not moderate Google Earth and Maps resources. Interaction effect proved that Aerial Photographs favoured male students more than their female opposite. As a result of this study, it can be concluded that if Aerial Photographs and maps are adopted in Social Studies classroom interactions, it will have a positive effect on academic performance of students by boosting their test scores.

Since Google Earth instructional resources has no effect on the academic performance of Social Studies students, it may not be considered for the teaching of Social Studies in Upper Basic Schools across Delta State. Therefore, for Social Studies teachers to make use of Google Earth or Maps as instructional resources, the location of school may not be a factor to consider. This study also submitted that since Aerial Photographs and Maps Improved Students cognition and these instructional resources are students centred with the Social Studies teacher as a guide. It therefore means that these resources make students to have some level of responsibility towards their own learning. Aerial Photographs and Maps in these study have good empirical ground that they promote students' academic performance in Social Studies. They are practicable resources among many others for bringing new innovations to the subject Social Studies.

This research into the effect of these selected instructional resources shows that having students learn in such an active and visual environment will help solve the problem of poor academic performance among students in Social Studies. The findings of these study have proved that empirically concepts and topics in Social Studies can be better presented with diverse instructional resources instead of the normal traditional pattern of teaching school subjects. In as much as gender and school location has no significant effect in the usage of two of the instructional resources, Social Studies educators should consider other variables aside gender and school location which can have moderating or interaction effect with academic performance of students in Social Studies.

Recommendations

Based on the findings and conclusion, the following recommendations were put forward:

i.   Social Studies teachers should make pragmatic efforts to initiate the process of adopting Aerial Photographs for Social Studies instructions to promote students' academic performance.

ii.   Social Studies educators should adopt maps in teaching to promote students' cognition and performance.

iii.   Trainings and retraining of Social Studies teachers on how to use the instructional resource in this study should be organized periodically by the Government through workshops and practical sessions on how to make use of all the instructional resources studied in this work.

iv.   The Delta State Ministry of Basic and Secondary Education should make a review of the instructional resources used in upper basic Social Studies to include Aerial Photographs and maps.

v.   Teacher trainee programs in Social Studies should include the use of innovative resources of Aerial Photos and maps, for the trainee teachers in to be acquitted with them for easy usage when they are in teaching service.

vi.   Authors of Social Studies test books should also include modern and innovative resources such as Aerial Photographs, Google Earth and maps so that teachers and students can become familiar with them.

vii.   Gender should be a major factor to consider when applying Aerial Photographs.

ix.   Curriculum planners should add Aerial Photographs and Maps to the teaching of Social Studies and other subjects.

x.   School location whether rural or urban shouldn't affect the use of instructional resources of Google Earth and Maps

Limitations of the Study

The following were the limitations of this study

Firstly, Social Studies teachers were used as research assistants to carry out the treatment on the subjects. The intelligence, ICT skills and their level of professionalism were not put into consideration, these factors could have affected the results of the study.

Secondly, the nature of the Google Earth software and the fact that making use of it requires a lot of expertise which the research assistant may not have been able to display despite the training. Also, it takes diligence to master the Google Earth program as it is time consuming, all these acted as limitation for the study.

Thirdly, the treatment for each instructional resources took place for just six weeks and only the time allotted to Social Studies in the school time table was used. This may not allow enough time for the students to get use to the resources especially Google Earth resource.

Fourthly, the topics/content taught to the students were limited to those in their scheme of work, this was to allow for smooth running of the school term. There are other topics especially Geography based topics in Social Studies that would have been better taught with these resources.

Contribution to knowledge

The study has contributed the following to knowledge, they are:

i.   The study established that instructional resources of Aerial Photographs can improve academic performance of Upper Basic Social Studies students when used for Social Studies interactions.

ii.   The study reaffirmed the effectiveness of maps as an instructional resource and how they can improve students' performance.

iii.   The study established that Aerial Photographs are more effective than Maps and Google Earth as a learning resource.

iv.   The study has demonstrated that the use of Aerial Photographs instructional resources may be affected by the gender of students.

v.   The study established that the use of Aerial Photographs instructional resources may be affected by school location, while Google Earth and Maps may not be affected by school location.

vi.   This study has provided evidence to the interaction effects of instructional resources, gender and school location on academic performance of Upper Basic Social Studies students in Delta State.

vii.   The study proved that the use instructional resources of Aerial Photographs, Google Earth and Maps can cause a positive difference in students' academic performance in Social Studies and ultimately their achievements.

Suggestion for Further Studies

The following suggestions were put forward for further studies by other researchers:

1.   This study should be replicated in other states of Nigeria.

2.   A similar study should be undertaken in other levels of Upper Basic schools across Delta State

3.   This type of study should be carried out for other subjects to investigate the effect of these instructional resources on them.

4.   This type of study should be conducted using other moderating variables such as school type, socio-economic background and academic ability of students.

5.   A similar study should be carried out in higher institutions such as Colleges of Education and universities where Social Studies is studied.

6. A comparative study on these instructional resources should be conducted.

7. After a long period e.g. 10 to 15 years this study should be repeated, to determine if these findings will still be the same or different

REFERENCES

Abba, A. (2012) GIS based analysis of facilities in public primary schools in Funtua educational zone, Katsina State, Nigeria. *(Unpublished PhD Thesis submitted to the school of postgraduate studies Ahmadu Bello University, Zaria).*

Abaidoo. A. (2018). Factors contributing to academic performance of students in a junior high school. (*Unpublished undergraduates project submitted to university of education, Winneba Ghana)*

Abdu-Raheem, B.O. (2012). Gender differences, student's academic achievement and retention in Social Studies among Upper Basic Secondary Schools in Ekiti State. *European Journal of Educational Studies*, *4*(1), 155-161.

Acheson, G. & Bednarz, S.W. (2004). Maps the Social Studies. *Review 42(2),77-84*.

Adem, O. (2007). Aerial photographs an improving tool in Social Studies education. Conference: BALKAN CONGRESS Education, *The BALKANS and Europe 2:* 461-465.

Adem, O. (2009). 6th Grade Students Interpreting of Aerial Photographs. *Ahi Evran Universitesi Kirsehin Egitim Fakultesi Dergisi, 10*(1), 103-111.

Adepoju, T.L. & Olochukwu, E.E. (2011). A study of secondary school students' academic performance at the senior school certificate examinations and implications for educational planning and policy in Nigeria. *An International Multidisciplinary Journal,* 5(6),314-333

Adeyemi, B. A. & Ajibade, Y. A. (2011). The comparative effects of Brainstorming & Games Teaching Methods. *African Journals Online,5* (3), pp.64-80.

Adigun, J.; Onihunwa, J.; Irunokhai, E.; Yusuf, S. & Adesina, O. (2015). Effect of Gender on Students' Academic Performance in Computer Studies in Secondary Schools in New Bussa, Borgu Local Government of Niger State. *Journal of Education and Practice*, *6*(33),1-7.

Aghulor, S.I. (2019). Effects of cognitive styles and 5E learning cycle on the academic performance of Upper Basic Social Studies Students in Delta State. (*An unpublished Ph.D. Thesis submitted to the Postgraduate school, Delta State University, Abraka)*.

Aina, E.H. (2019). Effects of formative feedback instructional strategy on upper basic Social Studies students' academic achievement in Edo State (*Unpublished Ph.D. Thesis submitted to postgraduate school, Delta State University, Abraka)*.

Ajayi, P.O. (2009) Effective teaching of physics. A paper presented at a seminar on effective teaching of sciences in Ekiti State organised by Ekiti state Ministry of Science and Technology, Ado-Ekiti

Akengin, H. (2012). In Gokce, N. (2015), Social Studies in improving students map skills: Teacher opinion. Educational sciences: *Theory and Practice 15 (5), 1345-1362*

Akinbolola, A.O. & Afolabi, F. (2009) Constructivist practices through guided discovery approach: The effect of students' cognitive achievements in Nigerian senior secondary school physics, *Bulgarian Journal of Science and Education Policy (BJSEP)*, 3(2),233-241.

Akinlaye, F.A. (2003). *Fundamentals of Social Studies curriculum, planning and instructions.* Pulmark Limited.

Akpochafo, W. P. (2001). Effects of expository, discovery and discussion methods on academic achievement in junior secondary Social Studies. Unpublished P.hD Thesis, Delta State University, Abraka, Nigeria.

Akpochafo, W.P. (2009). *Social Studies and Feminist Issues for Teacher Education.* Justice Jeco Press and Publishers Ltd.

Akpochafo, W.P. & Ogheneakoke, E.C. (2015). Gender differences among social studies teachers' competences in the use of the inquiry method in South-South Nigeria. *Journal of Education and Practices, 6*(23), 48-51.

Akpomudjere, O. (2020). Effects of school location and teachers' quality on students' performance in business studies examination in public secondary schools in Sapele Local Government

Area of Delta State. *Higher Education Studies, 10* (2),114-121, https://doi.org/10.5539/hes.v10n2p114.

Aladag, E. (2014). An evaluation of geographic information systems in Social Studies lessons: *Teachers views Educational Sciences*: *Theory and Practice, 14* (4), 1533-1539.

Alibrandi, M. & Palmer-Moloney, J. (2001). Making a Place for Teacher Education with Geographic Information Systems (GIS). *Contemporary Issues in Technology and Teacher Education [Online Serial], 1(4),* *https://citejournal.org/volume-1/issue-4-01/social-studies/article1-htm-18*.

Alibrandi, M & Sarnoff, H. M (2006). Using to answer the "WHYS" of "Where" in Social Studies. *Social Education 70 (3), 138-143*.

Artvinli, E. (2010). The Contribution of Geographic Information Systems (GIS) to Geography Education and Secondary School Students' Attitudes Related to GIS. *Educational sciences: Theory and Practice*. *10*(3), 1277-1292.

Atubi, O.F. (2019) Teacher utilization of community resources and effective teaching of upper basic social studies in Delta State (*An unpublished M.Sc Disertation submitted to the Postgraduate School, Delta State University, Abraka)*.

Atubi, O.F. (2021). Influence of multimedia resources on Social Studies: Exploring teachers and students' experiences in Delta State, South South Nigeria. *Library Philosophy Practice (e-journal), 5319.* https://digitalcommons.unl.edu/libphilprac/5319.

Awodun, A., O & Oyenini, A., D. (2018). Influence of school location on students' academic achievement in junior secondary school basic science in Ekiti State, Nigeria. *Journal of Emerging Technologies and Innovative Research, 5*(6), 125-128.

Aytac, A. (2014). Geographical information systems place and importance in Social Studies lessons. *International Journal on New Trends in Education and Their Implications*, *5*(1), 198-208.

Azubike, C. & Mohammed, A. (2014). *Social Studies for Junior Secondary Schools.* Spectrum books Limited

Bamidele, A.D. & Adekola, F.F. (2017) Effects of teacher's qualifications and teaching experience on students' academic achievement in Basic science in Junior secondary school. *International Journal of Education and Evaluation*, *3* (2), 1-9.

Bednarz, S. W. (2004). Geographical information systems: A tool to support Geography and environmental education. Geo Journal,60(2):191-199.

Bednarz, S.W. & Schee, J.V. (2006). Europe and the United States: The implementation of geographic information systems in secondary education in two contexts. *Technology, Pedagogy and Education*, *15*(2), 191–205.

Bednarz, S.W., Acheson, G. & Bednarz, R.S. (2006) Maps and map learning in Social Studies. *Social Education*. *70* (7), 398-404.

Bennett, C. (2019) What is GIS and how to use it in education. https://www.thought.co.com/geographic-information-systems-in-class-

Bernadétte, P.R. & Karlee, J. (2015) Gender and GIS: Guidance notes. SERVIR – Mekong. https://www.jstor.org>stable.

Berman, R. (2019). Teaching with Google Earth. Navigating History, Culture and Place. Plan book. https://blog.planbook.com/teaching-with-google-earth/

Biebrach, T. (2007). What impact has GIS had on geographical education in secondary schools? www.geography.org.uk/download/GA_PRSSBiebrach.doc.

Bolaji, A., E., (2020). Influence of students' attitude on academic achievement in Geography map reading among senior secondary students in Oyo metropolis, Oyo State, Nigeria. *International Journal of Scientific Research in Education(IJSRE), 13* (3), 404-411.

Borisade, F. T. (2011). Teacher qualities and school factors as correlates of academic performance of secondary school students in mathematics in Ekiti State, Nigeria. *Academia Arena 2*(11) http; ??www.sciencepub,net.

Britt, J. & Fontaine, G. L. (2009). Goole Earth: A virtual globe for elementary geography. National Council for Social Studies. https://www.socialstudies.org.

Brooklyn College (2020). GIS and Data Visualization Applications: Google Earth and Google Maps. Brooklyn College Library. libguides.brooklyn.cuny.edu/GIS/google_earth_maps.

Bugdayci, I. & Selvi, H. Z. (2017) Teaching Map Concepts in Social Sciences; an evaluation with undergraduate students'. *IOP Conference Series: Earth and Environmental Sciences, 95 (3),1-6. Doi:10,1088/1755-1315/95/3/032002*.

Carl, T., W. (2013). Mapping citizen engagement through GIS. GIS LOUNGE, https://www.gislounge.com/theses-gis-ebooks-videos………

Catling, S. (2005). Developing children's understanding and use of maps in primary school Social Studies: Exploring pedagogy and content. C. Lee and C.C. Hung (Ed). Singapore: Marshall Cavendish Education.

Confrep, F.P., Canovas, G., F., Fries, A., Valdvivieso, F. O., Jaramillo,V.G. & Confrep,. D.P. (2018). Fundamentals of GIS: Application with ArcGIS. *https://www.researchgate.net/publication/323945547*.

County, G. (2016). Seeing is Believing: Google Earth and Google Maps. Social Studies CENTRAL. www.socialstudiescentral.com/seeing-is-believing-google-earth-google-maps/

Dania, P.O. (2014) Effect of gender on student's academic achievement in secondary school Social Studies. *Journal of Education and Practise, 5* (21), 78-84.

Daniel, R. (2019) Effect of mastery learning peer tutoring and wait time on the academic performance of upper basic Social Studies students in Delta State. *(An unpublished Ph.D. Thesis Submitted to the Postgraduate School, Delta State University, Abraka).*

Day, M.M.; Ignash, M. & Smith, L.A. (2013). 5E learning cycle and the gas laws: constructing and experimenting with a ping pong popper. *Journal of Laboratory Chemical Education*, *1*(4), 65-69.

Dekolo S., O. & Oduwaye, L. (2005). GIS Education and training: The missing link? Doi: 10:13140/2.1.1420.73634 Conference: Africa GIS 2005 at South Africa.

Demers, M.N. (2016). Geospatial technology in geography education. *The Geography Teacher, 13 (1),23-25*

Dempsey, C. (2012) Google Earth. GIS Lounge. www.gislounge.com/google-earth/amp/

Dike, H., I. (1989). Strategies for producing instructional materials. Joewam Publishers.

Dorbecker, M. (2019). 10 Reasons why maps are important. Map shop. www.mapshop.com.

Driscolt, M. (2000). *Psychology of learning for instruction.* Allyn & Bacon.

Edinyang, S.D. & Effiom, N.V. (2017). Social Studies teaching resources in the 21st century. *International Journal of Sociology and Anthropology Research*, 3(4), 8-14.

Edinyang, S.D, Ejoh, A., O., & Adams, A., P. (2020). The role of instructional resources among Social Studies teachers in Nigeria: The quest for effectiveness in classroom pedagogy. *Journal of Educational and Social Research, 2*(2):164-176. Doi:10.36941/jesr-2020-0036

Education Testing Service (ETS). (2015). Educational-Testing-Service-Info.pdf.

Egbule, P., O., Oghogho, O., & Nkeindilim, E., R. (2015). The place of instructional resources in the teaching and learning of Social Studies education in Nigeria. *Journal of Teachers Perspective, 9*(1):1-9.

Ekpenyong, E.E., Edem, A.O. & Martin, O.I. (2015). Students interest in Social Studies and academic achievement in tertiary institutions in Cross River State Nigeria. *European Journal of Training and Development Studies*, *2* (2), 35-40.

Eller, R. (2000). Secrets of Successful Aerial Photography, Buffalo Amherst Media Inc.

Environmental Science (2009). Geographical information systems (GIS) retrieved from https://www.encyclopedia.com>geograp... July 10th 2020.

Ercan, O. (2014). Effect of 5E learning cycle and V Diagram use in general chemistry laboratories on science teacher candidates' attitudes, anxiety and achievement *International Journal of Social Science and Education*, *5*(1), 161-165.

Environmental Science Research Institute (ESRI), (2017). Introducing GIS to Colombian Social Studies Teachers. https://community.esri.com>...

Essien, E. E. (2017). Influence of school location on students' academic achievement in Social Studies in Colleges of Education in Cross River, Nigeria. 337146105_INFLUENCE_OF_SCHOOL_LOCATION_ON_ACADEMIC_ACHIEVEME NT_OF_SOCIAL_STUDIES_STUDENTS_IN_COLLEGES_OF_EDUCATION_IN_CRO SS_RIVER_STATE_NIGERIA.

Esu, A., E., O., & Inyang-Abia (2004). Social Studies technologies, methods & media. Double Diamond Publication

Ezegbe, M. O. (2012). *Foundations of Social Studies.* Danton publishers.

Federal Government of Nigeria (FGN), (2014). National Policy on Education 2014 Edition. Pinterest Ltd.

Filgona, J, Filgona, J., & Sababa, L., K., (2016). Effect of hands on learning strategy on senior secondary school students' achievement in topographical map studies in Mayo Belwa Local

Government Area, Nigeria. *International Journal of Progressive Sciences and Technologies, 4* (1),1-12.

Fleischmann, E. M. L. (2016). *A framework for Interactive-GIS-Tutor Integration within FET phases geography (Thesis submitted for the degree Doctor of Philosophy Potchefstroom Campus of the North West University, South Africa).*

Fleischmann, E. M., & Westhuizen, C. P. V. (2017). The Interactive-GIS-Tutor (IGIST): An option for GIS teaching in resource-poor South African schools. *South African Geographical Journal*, 99, 68 –85.

Forer, P. & Unwin, D. (1999) Enabling progress in GIS and education (School of Geosciences), http://www.geos'.ed.ac.uk>files.

Foresman, B. (2019). Google Earth creation tools help students to tell stories with maps. Edscoop.https://www.google.com/amp/s/edscoop.com/google-earth-new-creation-tool-students

Fox, R. (2001). Constructivism examined. *Oxford Review of Education,17* (1),23-35.

Ganyaupfu, E.M. (2013). Teaching methods and students' academic performance. *International Journal of Humanities and Social Science Invention*, *2*(9), 29-35.

Garbanzo, G. M. (2007). Factores asociados al rendimiento académico en estudiantes universitarios, una reflexión desde la calidad de la educación superior pública. *Revista educación, 31(1)*, 43-63. http://dx.doi.org/10.15517/revedu.v31i1.1252

Geospatial Co-operation (2019). Preparing the future of our workforce through GIS in education. www.geospatial cooperation.com>article.

Geospatial World (2018). Why GIS in education matters. https://www.geospatialworld.net>blogs.

Gersmehl, P. (2005). *Teaching Geography.* The Gullford

Glasser, H.M. & Smith, J.P. (2008). On the vague meaning of 'gender' in education research: The problem, its source and recommendations for practise. *American Educational Research Association, 37* (6),343-360.

Gikunda, A. (2020). Application of GPS in education. Blog. Grindgis.com/gps/application-of-gps-in-education.

Gonser, S. (2019). Preparing Social Studies students to think critically in the modern world. Edutopia. www.edutopia.org/article/preparing-social-studies-students-think-critically-modern-world

Goodchild, M.F. (2009). Social Sciences: Interest in GIS grows. Social Sciences https://www.ncbi.nlm.nih.gov>articles.

Gokce, N. (2015) Social Studies in improving students map skills: Teachers opinion. Educational sciences: *Theory and Practice*. 15(5),1345-1362.

Golam, K. (2018). What is innovative teaching? *www.researchgate.net*.

Grind, GIS & Remote Sensing (2019). GIS Application in the Social Sciences. *https://grindgis.com>blog*.

Hagget, P. (1990). *The Geographer's Art.* Mass Blackwell.

Henry, A. (2009). Using Google Earth for Internet GIS. *(Dissertation submitted to the Institute of Geography, School of Geosciences University of Edinburgh).*

Hong, J. E & Melville, A. (2018). Training Social Studies teachers to develop inquiry based GIS lessons. https://doi.org/10.1080/00221341.2017.1371205.

Igwebuike, T. B.& Ikponmwosa, L. O. (2013). Influence of school location and achievement level on integrated science students' perception of their classroom environment, 3 (1), pp. 67-83.

Industry Focus (2015) Why GIS in education matters. https://www.industryfocus.com

Irving, E.S. (2002). Educational testing service. https//www.researchgate.net>2002…

Isioye, O.A.; Moses, M. & Nzelibe, I. (2013). Spatial science education: An imperative tool for higher level training and research in Nigeria. *South African Survey and Geometrics Indaba (*SASGI) Proceedings 2013.

Iwena,O.A.(2017). *Essentials Geography for Senior Secondary Schools.* Tonad Publishers Limited.

Jarret, N. (2016). Technology integration: Engaging students through Google maps. EduTopia.www.edutopia.org/discussion/engaging-students-through-google-maps.

Jarosievitz, B. (2011). ICT, multimedia used in the national and international educational projects. *Informatika*, *38*,22

Jianzhoug, X. (2009). School location, students' achievement and homework management reported by middle school students. *The School Community Journal, 19* (2),27-43.

Kanicharaj, L. (2018). Geographic Information Systems (GIS) Defined. Arc Advisory Group. *https://www.archweb.com.*

Karabas, S. & Sahin, S. (2007). The place of new geography curriculum in developing students' word perception. Paper presented at the meeting of the changing geographies: Innovative curricula, the institute of education, London, U.K.

Kassaring, V, Mones, E. & Lehmann, S. (2018). Academic performance and behavioural patterns. EPJ Data Science,epjdatascience.springeropen.com.https://doi.org/10.1140/epjds/s/1368.

Kayer, E. (2012) in Gokce, N. (2015) Social Studies in improving students' maps skills: teaching opinions. *Educational Sciences: Theory and Practice*, *15*(5), 1345-1362.

Kerski, J.J. (2015). GIS and Social Studies education. https://www.researchgate.net/publication/280554848.

Kerski. J.J. (2004). GIS for citizenship education in J.J. Kerski. (2015) *GIS and Social Studies education*. https://www.researchgode.net/publication/280554848

Khashoggi, B., F. & Murad, A. (2020). Issues of health care planning and GIS: A review. *International Journal of Geo Information, 9,352*-361.

Killa, M., Zacharos., K. & Ravanis, K. (2015). Four to six years old children using photography using photography as sources of information about space. *European Early Childhood Education Research Journal, 23(2), 164-182*.

Kogure, K. & Takasaki, Y. (2019) GIS for empirical research design: An illustration with geo referenced point data. *Plos one 14*(3), e0212316.doi: 10.1371/journal.pone.0212316.

Kolukisa, E. A. & Aladag. (2006). The use of Aerial Photographs in Geography Education. https://www.researchgate.net>publications.

Krogman. M. (2015). GIS in Social Studies. New Hampshire Society for Technology in Education (NHSTE). www.nhste.org/NHSTE_connects/3315348?tpg=2

Kumar, S., Agarwal,M. Agarwal, N. (2021). Defining and measuring academic performance of Hei Students-A Critical Review. *Turkish Journal of Computer and Mathematics Education,12*(6):3091-3105.

Kupczynski, L., Brown, M., Holland, G & Uriegas, B. (2012). The relationship between gender and academic success, www.researchgate.net>publications

Learning & ID Information Media Project (2014). Symbol systems V. Social learning theory. im404504.wikidot.com>symbol-system….

Lehner, M., Jekel, T., & Vogler, R. (2017). Flying kites, Nazi ideology and collaborative mapping: Coping with right-wing extremism in secondary education. *Journal for Geographic Information Science*, *2,* 23 –35.

Lynch, K. and Feeley, M. (2009) Gender and education. www.nesse.fn.

Madiwalar, S.S. (2012). Factors affecting 'students' performance and practice on map reading skills: A case study of selected secondary schools in Asela town, Ethiopia. *Science, Technology and Arts Research Journal 1*(3), 97-105.

Malik, S. & Agarwal, A. (2012). Use of multimedia as a new educational technology tool – A study. *International Journal of Information and Education Technology, 2*(5), 468-471.

Martin, S.N, Rodrigo, I. G, Izquierdo, G.C. & Ajenjo, P.P (2017). Exploring academic performance looking beyond numerical grades. *Universal Journal of Education,5* (7):1105-112.

Martindale, J. (2019). Mapping and Geographic Information Systems (GIS): What is GIS? https://researchguides.library.wisc.edu>....

Mayer, R.E., & Massa, L. (2003). Three facets of visual and verbal learners: Cognitive ability cognitive style and learning preference. *Journal of Educational Psychology, 95*,833-841.

Mason, M. (2021). Principles and applications of aerial photographs. Environmental Science. Org. https://www.environmentalscience.org/principles-applications-aerial-photographs.

McLeod, S, A. (2019). Construction as a theory for teaching and learning. *Simply Psychology,40*, (6), 1-9.

McCloughlin, T. (2015). GIS in education: A research proposal submitted to Dublin City University. https://www.researchgate.net/publication/323918536

Mezieobi, D.I. & Onyeanusi, O.C. (2011). Repositioning Social Studies education in Nigerian tertiary institutions for the attainment of vision 20:20:20 in Nigeria. *African Review of Arts, Social Sciences and Education, 1*(1), 11-16.

Mhiliwa, J.A. (2015). The effect of school location on learners' academic performance. A case of community secondary schools in Makambako town council, Njombe. *(Master Degree Thesis, Open University of Tanzania)*

Mitali, R. (2019). Aerial Photography: Meaning and Interpretations. Geography Notes. Ww.geographynotes.com/photography/aerialphotography/meaning-and-interpretation-geography/5964.

Musakwa, W. (2017). Perspectives on geospatial information science education: An example of urban planners in southern Africa. *Geo-Spatial Information Science*, *20* (2), 201–208.

Mushtaq, I & Khan, S.N. (2012). Factors affecting students, academic performance. *Global Journal of Management and Business Research 12* (9), 17-22.

Mzuza, M.K. & Westhuizen, C.P.V. (2019). Review on the state of GIS application in secondary schools in the southern African region. *South African Geographical Journal.* *https://doi.org/10.1080/03736245.2019.1579110*

Narad, A., & Abdullah, B. (2016). Academic performance of senior secondary school students: Influence of parental encouragement and school environment. *Rupkatha Journal on Interdisciplinary Studies in Humanities Special Issue*, *3*(2), 12-19.

National Association of Geoscience Teachers (NAGT) (2013). Teaching with maps. serc.carleton.edu/k12/maps.html

National Board for Educational Measurement (NBEM) (2014) Educational Measurement in Nigerian Secondary Schools. www.nigeriadirectory.com.ng>national....

National Council for the Social Studies (NCSS) (2010), National curriculum standards for the Social Studies. https://www.ncss.org/standards/strands.

National Geographic Society (2011). Urban area. https://www.nationalgeographic.org>ur….

Ned, E. (2017) GIS Application in the Social Sciences. GIS Course Description in spring, 38520-01, *https;//harris. uchicagoedu>...........*

Nelson, P., M., Segali, A., Durham, B., S. (2021). Between aspirations and reality: New materialism and Social Studies education. Theory and Research in Social Education, Doi 10.1080/00933104,2021.1912679.

Ntibi, J.E. & Edoho, E.A. (2017). Influence of school location on students' attitude towards mathematics and basic science. *British Journal of Education. 5*(10),76-85.

Obro, S. (2018). Comparative effect of simulation-games and Brainstorming instructional strategies no academic performance of students in secondary school social studies. (An Unpublished PhD Thesis Submitted to the Delta State University, Abraka Nigeria).

Obro, S. (2021). The Internet and Quality Social Studies Education for Sustainable Development in Post-Covid-19: A Review. *Jurnal Penelitian dan Pengkajian Ilmu Pendidikan: e-Saintika, 5*(1), 15-26. doi:https://doi.org/10.36312/e-saintika. v5i1.425

Obro, S., Ogheneakoke, E., C., & Akpochafo, W., P. (2021). Effective Social Studies pedagogy: Effect of simulation games and Brainstorming strategies on students learning outcome. *International Journal of Learning, Teaching and Educational Research 20*(3): 1-17. https://doi.org//10.26803/ijter.20.3.1

Ogbaji, D., I. (2017). Teachers perception of the utilization of instructional materials in teaching Social Studies in Junior Secondary Schools in Calabar, municipality, Cross River, Nigeria.

Global *Journal of Educational* Research,16:95-100.Doi http://dx.doi.org/10.43141giedr.v16i2.3.www.globaljournalseries.com.

Ogheneakoke, E., O., Obro, S., & Benike, J. (2019). In search of a more effective strategy: Using simulation games instructional strategy for teaching and learning of social studies in secondary schools. Journal of International Social Studies 9 (1), 53-71.

Okereke, C. (2011). Influence of Gender, Scool Location and use of play simulation on school achievement in chemistry. *JORIND, 9* (1), PP. 381-387.

Oladotun, O, O. (2020). Cognitive styles and gender as predictors of students' achievement in summary writing in selected secondary schools in Ibadan, Nigeria. Education Research International. Article ID 8462368,9. https://doi.org/10.1155/2020/8462368.

Olatunde, F. (2006). Primary School Social Studies curriculum and methods. *National Open University of Nigeria (NOUN).*

Olokooba, I., N. (2021). Effective utilization of instructional materials for Social Studies in upper basic schools in Kwara State. *Anatolian Journal of Education,6* (1):167-174. https://doi.org/10.29333/aje.2021.6114a.

Olubadewo, O., Abdulkarim., I., & Ahmed, M., (2013). The use of Geographic Information Systems as Educational Decision Support System (EDSS) for primary schools in Fagge L.G.A. of Kano State, Nigeria.https://www.semanticscholar.org/paper/THE-USE-OF-GIS-AS-EDUCATIONAL-DECISION-SUPPORT-SYSTEM.

Oluwatosin, S., A & Bamidele, E.F. (2014). Self-concept and academic performance of secondary school students in chemistry. *International Journal of Social Sciences and Educational, 4*(4),946-952.

Osakwe, E.O. & Itedjere, P.O. (2005). *Social Studies for tertiary students in Nigeria.* Justice Jeco Press and Publishers Limited

Osiki, J. O. (2001). Effects of remedial training programme on the management of learning acquisition defectiveness and poor study habits problems of selected subjects in a community grammar school. *Nigerian journal of applied psychology*, *6*(2), 107-115.

Osman, C. (2013). The use of geographic information systems (GIS) in geography teaching. *World Applied Sciences Journal*, *25*(12), 1684-1689.

Otese, A., V., & Ndiyo., A., N., (2016). The need for incorporating Geographic Information Systems in the National Commission for Colleges of Education (NCCE) curriculum. A paper presented at the first National Conference of the Cross River State College of Education, Akamkpa.

Owan, V., J., Nwannunu, B., I. & Madukwe, E., C. (2018). Problems of school management and students' academic performance in secondary schools in Calabar education zone, Cross River State, Nigeria. *International Journal of Research and Innovation in Social Science (IJRISS), 2*(10).:120-127.

Owoeye, J.S. & Yara, P.O. (2011). School location and academic achievement of secondary school in Ekiti State, Nigeria. *Asian Social Science*, *7*(5), 170-175.

Pantazes, T. (2008). Google Earth in the Social Studies Classroom. Openstax CNX. https://cnx.org>contents/GGNCPK4@1/Google-Earth-in-the-social-studies-classroom.

Parajuli, M & Thapa, A. (2017). Gender differences in the Academic performance of students, Journal of Development and Social Engineering, 3(1), 39-47.

Razak, W. M. W, Bahorom, S.A.S, Abdullahi, Z, Hamdam, H, Azin, N. U.A & Anuar, A.I.M. (2019). Academic performance of university students; A case studt in a higher learning institution. ResearchGate. Doi:10.1314012.1.3949.3136.

Reed, R., E & Bodzin, A., M. (2016). Using web GIS for public health education. International *Journal of Environmental and Science Education,11*(114), 6314-6333.

Rocketbooks (2017) 10 Reasons why we need educational technology in the classroom. https://www.customrocketbooks.com>1....

Saah, D. (2016). Goole Earth for Beginners to Gurus. Education. https://www.google.com/earth/education/resources/

Salomon, G. (1979). *Interaction of media, cognition and learning*. Jossey-Bass.

Salomon, G. (1981). *Communication and education.* Sage.

Salomon, G. (2018). Symbol systems theory. http://www.instructionaldesign.org/theories/symbol-systems.html.

Salomon, G.; Perkins, D. & Globerson, T. (1991). Partners in cognition: extending human intelligence with intelligent techniques. *Educational Researcher, 20*(4), 2-9.

Sherrouse, B. C. (2010). Social values for ecosystem services (SOLVES): Using GIS to include social values information in ecosystem services assessment. https://pubs.er.usgs.gov/publications/fs20103118.

Simpson, J.A & Weiner, E.S.C. (1989). The Oxford English Dictionary (2nd ed). Vol.1. Oxford Clarendon Press.

Simsek, N. (2012). As an Instructional Technology, the contribution of Geographic Information Systems (GIS) to Social Studies Education and Teachers Attitudes Related to GIS. *Journal of Social Studies Education Research 4(1), 49-72.*

Singh, S. S. B., Rathakrishnan, B., Sharif, S., Tania, R. & Eboy, V. (2016). The Effects of Geographic Information Systems (GIS) Based Teaching on Understanding Students Mastery Goal and Achievement. *The Turkish Online Journal of Educational Technology 15 (4), 119-134.*

Sharm (2012). Meaning of academic performance. Available from: 66 Int. J. Sci. Technol. Educ. Res. http://www.studymode.com/essays/Meaning-Of-AcademicPerformance-1107119.html. Accessed 09 2014.

Sofadekan, A.O. (2012). Social Studies education in Nigeria: The challenge of building a national. (A Ph.D. Thesis submitted to department of Sport and Education, Brunel University, London).

Sousa, L.D.; Richter, B. & Nel, C. (2017). The effect of multimedia use on the teaching and learning of social sciences at tertiary level: A case study faculty of education sciences

North-West University, Potchefstroom campus. http://dx.doi.org/10.17159/2223-0386/2017/n17a

Sprague, L. M. (2000). Social Studies for future teachers in N. Nager and E. Shapiro (eds) *Revisiting a Progressive Pedagogy: The Developmental Interaction Approach.* SUNY.

Sufiyanu, H.J. & Julius, E. (2018). The effects of teacher's academic qualification and experience on students' achievement and interest in mathematics in Kebbi State. *International Journal of Advanced Academic Research (Arts, Humanities and Education). 4*(6), 15-29

Tas, H.I. (2006) In Gokce, N. (2015) Social Studies in improving students' maps skills: Teachers opinion. Educational Sciences: *Theory and Practice, 15(5), 1345-1362.*

Tecim, V. (2008). *Cografi bilgi siistemleri.* Ankara: Renk Form Matbaacilik.

Thankman, B. & Franklin, T. (2013). Impact of Google Earth on student's learning. *International Journal of Humanities and Social Science, 3* (21), 11-16.

The University of Edinburgh (2016). What use is GIS for the humanities and social sciences? https://www.blogs.hss.ed.ac.uk/tools-of-the-trade/use-gis-humanities-socialsciences/

Todd, R. H. & Delahunty, T. (2017). A is for Aerial Photographs and Art: The technology of satellite imagery. *Social Studies and the Young Learner, 20 (2), 10-14.*

Ughamadu, K. A. (2012) *Educational Technology and Micro-teaching for Teaching.* Lincel Publishers.

Udodulunwa, C., & Wakjissa, S. (2015). Use of portfolio assessment technique in teaching map sketching and location in secondary school Geography in Jos, Nigeria. *Journal of Education and Practice, 6* (17), 23-30.

Umar, U. S & Samuel, R, I. (2018). School Location as correlate of students' achievement in Basic Science. *International Journal of Innovative Education Research, 6* (3), 14-17.

Umudi, B.A. (2012) Content implementation in junior secondary school Social Studies in Nigeria. *Nigeria Journal of curriculum and instruction*, *20*(1) www.globalacademicgroups.com

Unal F. (2012). In Gokce, N. (2015) Social Studies in improving students map skills: Teachers opinions. Educational Sciences. *Theory and Practice, 15*(5), 1345-1362.

United Nations Educational, Scientific and Cultural Organization (UNESCO), (2010). *Education for all global monitoring report.* A paper presented at a conference held at University of Uyo.

US Geological Survey (2010). Social values for ecosystem services (SOLVES)- Using GIS to include social values information in the ecosystem services assessment. htttps://pubs.usgu.gov/of/2010/12/9/pdf/of10.1219.pdf.

Vander Schee, J. (2003) Geographical education and citizenship education. *International Research in Geographical and Environmental Education*, *12*(1), 49-53.

Wayne, E.R. (2018). *The challenges of teaching Social Studies: What teachers? What citizenship? What future?* (XV international conference on the research of teaching Social Sciences, University of Barcelona, Catalonia, Spain).

Yahaya, H., W., & Ubayo, M., K., (2014). Introduction of Geographic Information Systems and Remote Sensing (RS) in secondary schools' curriculum: Its implication for National Security Challenges. A paper presented at the first National Annual Conference of the School of Education, College of Education, Azare, Bauchi State, 22nd-24th April, 2014.

Yomrahogu, T. (2009) In Aladag E. (2014). An evaluation of GIS in Social studies lessons: Teachers views educational sciences: *Theory and Practice, 14(*4), 1533-1539.

York, T. T., Gibson, C., & Rankin, S. (2015). Defining and measuring academic success. *Practical assessment, research, and evaluation*, *20*(1), 5.

Yousaf, S. Aziz, S. & Hassan, H. (2012). Effectiveness of Maps and globes in Social Studies teaching. *International Journal of Social Sciences and Education*, *3*(1),183-187.

Yuan, M. (2017). 30 years of IJGIS: The changing landscape of geographical information science and the road ahead. *International Journal of Geographical Information Science*, *31* (3), 425–434.

Yusuf, M. A. & Adigun, J.T. (2010). The influence of school gender, location and type on students' academic performance: *International Journal of Education Science*, *2*(2), 81-85.

APPENDIX I
RESEARCH INSTRUMENT

Title: Social Studies Performance Test (SSPT)

Instruction: The instrument is an achievement test in Social Studies at the Upper Basic secondary school and it is divided into two sections. Section "A" will obtain socio-demographic data of participants, while section "B" will measure the academic achievement of students with a fifty (50) objective questions from selected topics in Social Studies.

Section A: Socio-Demographic Data

Instruction: Please, give the following information as appropriate

1.   Name of school …………………………………………………….
2.   Location: Urban [   ] Rural [   ]
3.   Gender: Male [   ] Female [   ]

Section B: Academic Performance Measurement

Instruction: Choose the correct options from letter A – D, the one that answers the following questions. Answer all questions

1.   The study of human trafficking in Social Studies helps students to be-------.

   (a) Stupid of human trafficking

   (b) Enlightened about human trafficking

   (c) Ignorant of human trafficking

   (d) Victims of human trafficking

2.   ------------ is one of the ways to prevent women and children from being trafficked.

   (a) Enlightenment

   (b) Disagreement

   (c) Conflict

   (d)Distraction

3.   Human trafficking is similar to _____ in Africa?
   (a) Home trade

   (b) Foreign trade

   (c) Slave trade

   (d) Plants trade

4. The people that are the most victims of human trafficking are --------?

(a) Women

(b) Men

(c) Doctors

(d) Artists

5. The consequences of human trafficking include all except one of the following.

(a) Investors are attracted

(b) Drug abuse

(c) STDs and STIs

(d) Death of victims

6. Human trafficking began in _____?

(a) Britain

(b) Australia

(c) America

(d) Italy

7. Which of the following is not a social consequence of human trafficking?

(a) Genderual abuse

(b) Prostitution

(c) Drug abuse

(d) Attainment of educational goals

8. The ------- make the laws used in prosecuting traffickers   (a) judiciaries

(b) Executives

(c) Legislators

(d) Governors

9. The term used to describe persons involved in trans border illegal crossing of banned goods is called _____

(a) Contrabands

(b) Smugglers

(c) Carriers

(d) Migrants

10.   The women and children trafficked in the united states are mainly for------
        (a) Forced labour
        (b) Debt bondage
        (c) Peonage
        (d) Gender slave

11.   Which of the following agencies is not involved in fighting human trafficking in Nigeria?   (a)NAPTIP
        (b) Nigerian customs
        (c) NAFDAC
        (d) Nigerian Immigration

12.   The activity of smuggling a person into a country ends ------
        (a) After the border
        (b) Expiration of service time
        (c) When the person reaches their destination
        (d) In the middle of the Mediterranean Sea

13.   Africans are trafficked mostly from the -------- part of the continent?
        (a) Eastern
        (b) Western
        (c) Eastern
        (d) Northern

14.   The major route used in trafficking Africans to Europe is through the------   (a)Suez canal
        (b) Red sea
        (c) Mediterranean Sea
        (d) River Jordan

15.   The number of women and children trafficked into the US annually is about ----
        (a) 10,000

(b) 25,000

(c) 50,000

(d) 100,000

16.   All except one of the following are causes of human trafficking

(a) Better standard of living

(b) Poverty

(c) Unemployment

(d) Greed

17.   The taking away of people especially women and children from their homes for domestic or genderual labour is called ----------

(a) Human trafficking

(b) Domestic slavery

(c) Foreign trade

(d) Stock market.

18.   Drug trafficking is ---------

(a) Hawking medicine in traffic

(b) Buying and selling hard drugs

(c) Prescription of drugs

(d) Taking drugs in traffic

19.   ………. Is an example of illicit drug?

(a) PANADOL

(b) VITAMIN C

(c) CHLOROQUINE

(d) COCAINE

20.   The agency responsible for the safety of drug and food consumption in Nigeria is --------

(a) NAFDAC

(b) NECO

(c) NDLEA

(d) NPA

21. Drugs that have stayed longer than their consumable period are called ………. goods.

(a) Good

(b) Expired

(c) Harmless

(d) Fit

22. Which country is the centre of drug trafficking in the world?

(a) Nigeria

(b) Britain

(c) Mexico

(d) Japan

23. The full meaning of NDLEA is

(a) Nigerian Drugs Lender Environmental Agency

(b) Nigerian Drugs Low Entertainment Agency

(c) Nigerian Drugs Law Enforcement Agency

(d) Nigerian Drugs Let's Enjoy Agency

24. In countries like Saudi Arabia and Singapore, drug traffickers if caught are -----

(a) Given a job

(b) Killed

(c) Arrested

(d) Praised

25. ………. Is not a negative impact of drug trafficking?

(a) Abnormal behaviour

(b) Mental illness

(c) Responsible behaviour

(d) Increase in crime rate

26. The illegal transportation of hard drugs from one place to another is known as drug-----------

    (a) Transport

    (b) Trafficking

    (c) Prescription

    (d) Piracy

27. People engage in trafficking of hard drugs for the following reasons except

    (a) Contentment

    (b) Greed

    (c) Ignorance

    (d) Peer influence

28. A drug commonly trafficked and abused by youths mostly in Nigeria today is---

    (a) Tetracycline

    (b) Tramadol

    (c) Vitamin b complex

    (d) Paracetamol

29. Drug trafficking can be prevented by all the following ways except------

    (a) Education

    (b) Provision of employment

    (c) Promoting the use and sales of hard drugs

    (d) Good legislature against offenders

30. ………. Is not a consequence of drug trafficking (a)Imprisonment?

    (b) Death

    (c) Bad image for the country

    (d) A responsible life

31. A person who deals on hard drugs is called a drug------   (a)Human

    (b) Trafficker

    (c) Doctor

    (d)Abuser

32. The following are problems of eradicating drug trafficking except ……….

(a) Poor funding of agencies

(b) Poor intelligence report

(c) Adequate enlightenment

(d) Corruption in agencies

33.   Drug trafficking is made worst in Nigeria because of porous --------?

(a) Borders

(b) Climate

(c) Network

(d) Churches

34.   Which of the following drugs is not trafficked in and out of Nigeria?

(a) Cocaine

(b) Marijuana

(c) Heroine

(d) Calcium

35.   Culture is the way of ------- of a group of people.

(a) Animal

(b) Water

(c) Humour

(d) Life

36.   In every society, the culture consists of ------- components

(a) Three

(b) Two

(c) Six

(d) Ten

37.   The immediate surrounding of man is known as the ……….?

(a) Caravan

(b) Global

(c)Hide out

(d) Environment

38.   The growing of crops and rearing of animals are part of cultural ……….?

(a) Practices

(b) Aberration

(c) Communication

(d) Transportation

39.   Grain crops are mostly grown by the Hausas in the ………. part of Nigeria?

(a) Southern

(b) Eastern

(c) Western

(d) Northern

40.   The cultural aspect of culture that can be seen, feel and touched is called ------ culture

(a) Education

(b) Transportation

(c) Material

(d) Hospitals

41.   The importance of culture includes all except one of the following (a) Identity

(b) Provision a way of life

(c) Language preservation

(d) Misbehaviour

42.   Which of the following is a non- material aspect of culture?

(a) Music

(b) Farming implements

(c) Buildings

(d) Dressing

43.   The practice of ………. Agriculture is common among all the cultural groups in Nigeria?

(a) Group

(b) Subsistence

(c) Commercial

(d) Mixed

44. Which among the following is not a way of preserving culture in Nigeria?

(a) Local construction of houses

(b) Talking in proverbs

(c) Learning from television

(d) Cooking our local delicacies

45. The embodiments of traditions, customs and belief of a people is known as -----

(a) Planning

(b) Culture

(c) Entertainment

(d) Achievement

46. Culture can be passed from one generation to another……….?

(a) Community

(b) State

(c) Society

(d) Generation

47. Which among the following is not an area of a non- material culture?

(a) Songs

(b) Language

(c) Food

(d) Folktales

48. Culture is ----------

(a) Dynamic

(b) Conflict

©   Static

(d) Single

49. There are between 250 to ……… ethnic and cultural groups in Nigeria.?

(a) 500
(b) 400
(c) 1000
(d) 700

50. One major problem that is causing cultural disharmony in Nigeria today is its huge cultural ……….?
   (a) Unity
   (b) Change
   (c) Diversity
   (d) Poverty

Suggested Answers

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

Social Studies Performance Test (SSPT)

Answer Sheet

1	21	41
2	22	42
3	23	43
4	24	44
5	25	45
6	26	46
7	27	47
8	28	48

9	29	49
10	30	50
11	31	51
12	32	52
13	33	53
14	34	54
15	35	55
16	36	56
17	37	57
18	38	58
19	39	59
20	40	60

APPENDIX II
DISTRIBUTION OF UPPER BASIC SCHOOLS IN DELTA STATE

Senatorial District	S/N	Local Government Areas	No. of Public Secondary Schools	Enrolment Figure for upper basic II.
Delta North	1	Aniocha North	19	3295
	2	Aniocha South	21	4020
	3	Ika North East	20	3155
	4	Ika South	19	3707
	5	Ndokwa East	26	5020
	6	Ndokwa West	20	4076
	7	Oshimili North	14	2565
	8	Oshimili South	12	1676
	9	Ukwuani	15	2178
		Total	**166**	**29,692**
Delta Central	1	Ethiope East	25	3112
	2	Ethiope West	21	3651
	3	Okpe	16	2890
	4	Sapele	17	2887
	5	Udu	14	1286
	6	Ughelli North	42	6853
	7	Ughelli South	24	2989
	8	Uvwie	19	2115

		Total	**178**	**25,783**
Delta South	1	Bomadi	9	2650
	2	Burutu	19	3957
	3	Isoko North	17	3120
	4	Isoko South	19	4658
	5	Patani	9	1512
	6	Warri North	10	3135
	7	Warri South	18	3970
	8	Warri South-West	8	2435
		Total	**111**	**25,437**
		GRAND TOTAL	**453**	**80,912**

Source: Delta State Universal Basic Education Board, Asaba (2020)

Date:

Class: Upper Basic 8

Duration: 1 Hour

Mental Ability: Mixed

Age: 12+

Gender: Mixed

Topic: HUMAN TRAFFICKING

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

    i.   Explain the meaning of human trafficking

    ii.   State factors responsible for human trafficking

    iii.   Understand the consequences of human trafficking

    iv.   Identity human trafficking preventive measures

Instructional material: Aerial Photographs, projector and computer.

Procedure:

Step 1:   The teacher introduces the day's lesson and tries to gain the attention of the students if they have ever heard the word "Human Trafficking'. After trying to access the previous knowledge of students on the topic, the teacher will then tell the class the meaning of the topic. There after the teacher goes further to explain how trafficking in persons occur. The factors responsible, consequences and preventive measures of human trafficking will also be succinctly explained with examples. The teacher will also show the class the continent and countries where people are mostly trafficked to and why. Also the teacher shows students the major countries in the world where people are trafficked to in the name of having greener pastures.

Step 2:   Aerial photos will be opened and projected on the wall.

Step 3:   The teacher will then make use of the aerial photos displayed by the projector to show the students the different continents of the world and their locations, showing the countries of the world, tracing the major routes that traffickers use for human

trafficking from Nigeria to Africa and Europe, the teacher will ask the students identify the trafficking routes by themselves one after the other. The teacher will also discuss the predominant continent and countries that are business hubs of traffickers. Their major routes will be displayed with the teaching tools for students to travel through visually. Then he/she will finalize this segment of the lesson.

Step 4: Evaluation: The teacher evaluates the students' level of achievement by asking them the following questions.

    i.   What is human trafficking?

    ii.   How are people trafficked?

    iii.   Mention the continent that is mostly the destination of victims?

    iv.   Mention some causes of human trafficking?

    v.   Mention ways through which human trafficking can be avoided?

Step 6: Assignment – Draw a map of the world, showing the seven

      Continents and show the continent that people are mostly trafficked to

       with a circle

EXAMPLES OF AERIAL PHOTOGRAPH

AERIAL PHOTOS OF TRAFFICKED PERSONS FROM NIGERIA.

AERIAL PHOTOGRAPHS LESSON PLAN II

WEEK 3& 4

Date:

Class: Upper Basic 8

Duration: 1 Hour

Mental Ability: Mixed

Age: 12+

Topic: **DRUG TRAFFICKING**

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

      i.   Define drug trafficking

      ii.   Identify reasons why people deal drugs

      iii.   Consequences of Drug Trafficking

      iv.   Prevention of drug trafficking

Instructional material: Aerial photographs, projector and computer.

AERIAL PHOTO OF A DRUG FARM IN COLUMBIA

Procedure:

Step 1: The teacher will test for previous knowledge of the students by asking the following questions

      i. What is human trafficking?

      ii. What are the reasons for trafficking humans?

      iii. What are the negative effects of human trafficking?

      iv. Mention ways HT can be prevented?

Step 2: Collect and mark assignment

Step 3: Introduce the day's lesson "Drug Trafficking". Give the meaning of drug trafficking as the illegal transfer of hard drugs from one country to another. This can also take place within a country. Give examples of hard drugs such as cocaine, marijuana and heroin. Also the various reasons behind trafficking in drugs will also be explained. Major hotspot of drug trafficking such as Mexico, the US and others will also be identified. Furthermore, the negative effect of drug trafficking on our youths will be

elaborated upon as well as what the Government and individuals can do to prevent the drug on hard drugs will be explained

Step IV: Aerial photographs are opened on the projected screen. The mouse is used to identify areas of drug trafficking around the world and Nigeria; the files are clicked when the window open, maps and aerial photos are displayed. (Figure 2)

Step V: The teacher uses the Aerial photographs displayed by the projector and give a step by step explanation about drug trafficking, its distribution and patterns of migration. The students will also be allowed to do a self-observation of the GIS and make their own analysis. The teacher will then round up the lesson of the day.

Step VI: Evaluation – Teacher now asks questions and also entertains questions from the student e.g.

 i. What are drugs?

 ii. What are the reasons people buy and sell hard drugs?

 iii. What are the negative effects of trade in hard drugs?

 iv. Mention examples of hard drugs?

 v. Give suggestions on ways of preventing trafficking in drugs.

Step VII: Assignment – Explain what the Nigerian Government can do prevent drug from being trafficked in and out of the country.

AERIAL PHOTOGRAPHS LESSON PLAN III

WEEK 5& 6.

Date:

Class: Upper Basic 8

Duration: 1 Hour

Mental Ability: Mixed

Topic: **CULTURE**

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

 i. Define culture

 ii. Identify the two components of culture

iii.   Identify the different cultural groups in Nigeria

iv.   Outline the major examples of material and non-material aspects of culture

v.   Understand the concepts of cultural dynamism and preservation

vi.   The advantages and disadvantages of each form of communication

Instructional material: Aerial Photographs, projector and computer.

Procedure:

Step 1:   The teacher will test the previous knowledge of the students by asking

i.   What is drug trafficking?

ii.   Given reasons for it?

iii.   What the patterns are of drug trafficking?

iv.   What is the full meaning of NDLEA?

v.   How do we stop drug trafficking?

Step II: Collect assignments

Step III: Introduce the new topic "CULTURE' the teacher will start by asking the students "what culture are you from"? Define culture "as the total way of life of a group of people' it is the embodiment of tradition, custom and belief of a people. Components of culture which are material and non-material aspects will be explained with examples. The students will also explain the diversities of Nigerian cultural groups and its disadvantages. The dynamism, preservation and transfer of culture from one generation to another will all be discussed.

Step IV: Aerial photos and images of cultural values will be opened and used to explain the topic image by image and the students will also be allowed to observe and analyse these images critically by the teacher. Then for the map group cultural wall maps showing major cultures.

Step V: Evaluation – teacher now evaluates student's achievement through questioning such as:

i.   What is culture?

ii.   Mention the main components of culture

iii.   Mention three examples of material culture

iv.   Mention three examples of non-material culture

v.   What cultural dynamism?

Step VI: Draw a map of Nigeria showing different groups in the country e.g. the Yoruba's, Hausas, Igbos, Urhobos, Ijaws and others.

A FARMHOUSE IN BENUE

AERIAL PHOTO OF A RESIDENTIAL SETTLEMENT

AN AREIAL PHOTO OF LAGOS SHOWING THE LIFE OF THE PEOPLE

A TYPICAL RURAL CULTURAL SETTLEMENT

AERIAL VIEW OF ABUJA METROPOLIS SHOWING CULTURAL FEATURES

IBADAN
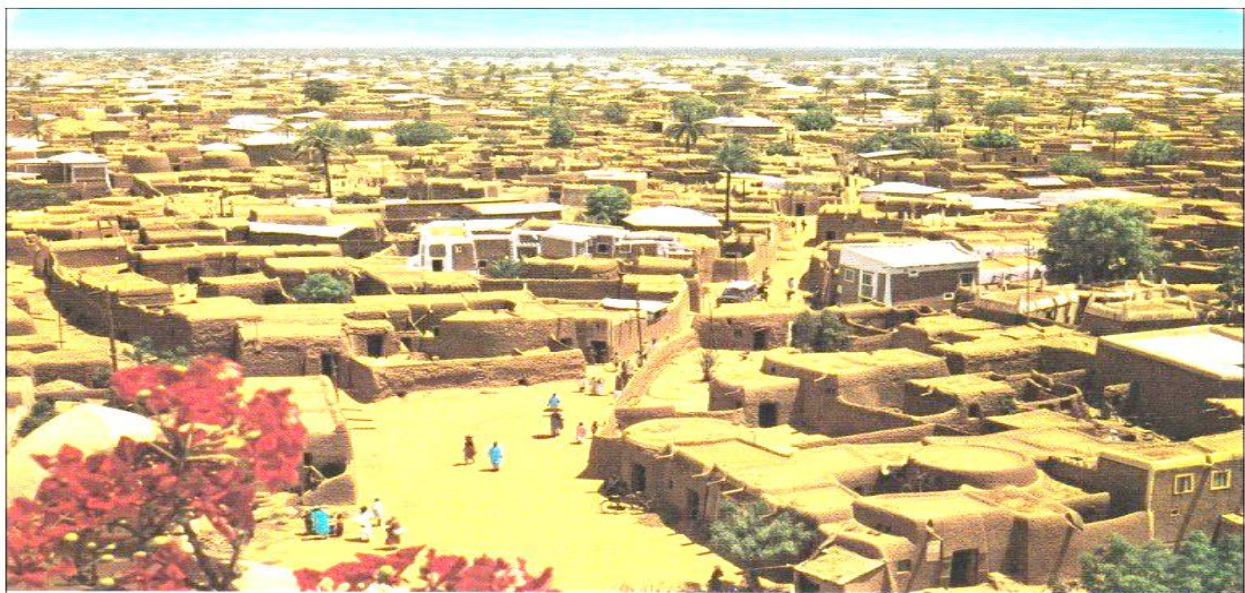
Historic Kano City, Northern Nigeria.

Kano Mosque, Nigeria.

GOOGLE EARTH LESSON PLAN I

WEEK 1&2

Date:

Class: Upper Basic 8

Duration: 1 Hour

Mental Ability: Mixed

Age: 12+

Gender: Mixed

Topic: HUMAN TRAFFICKING

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

v. Explain the meaning of human trafficking

vi. State factors responsible for human trafficking

vii. Understand the consequences of human trafficking

viii. Identity human trafficking preventive measures

Instructional material: Google Earth, a projector and computer.

Procedure:

Step 1:   The teacher introduces the day's lesson and tries to gain the attention of the students if they have ever heard the word "Human Trafficking'. After trying to access the previous knowledge of students on the topic, the teacher will then tell the class the meaning of the topic.

Step 2:   The teacher will open the Google Earth then identify trafficking routes by clicking on the search button also show the class the continent and countries where and how people are mostly trafficked to and why. Also the teacher shows students the major countries in the world where people are trafficked to in the name of having greener pastures.

Step 3:   The teacher will then make use of the location displayed by the projector to show the students the different trafficking routes in the world and their locations. The teacher will ask the students identify the trafficking routes by themselves one after the other. The teacher will also discuss the predominant continent and countries that are business hubs of traffickers. Their major routes will be displayed with the teaching tools for students to travel through visually. Then he/she will finalize this segment of the lesson.

Step 4:   Evaluation: The teacher evaluates the students' level of achievement by asking them the following questions.

       vi.   What is human trafficking?

       vii.   How are people trafficked?

       viii.   Mention the continent that is mostly the destination of victims?

       ix.   Mention some causes of human trafficking?

       x.   Mention ways through which human trafficking can be avoided?

Step 6:   Assignment – Draw a map of the world, showing the seven

       Continents and show the continent that people are mostly trafficked to

        with a circle

GOOGLE EARTH LESSON PLAN 2

WEEK 3&4

Date:

clxxxix

Class: Upper Basic 8

Duration: 1 Hour

Mental Ability: Mixed

Age: 12+

Gender: Mixed

Topic: DRUG TRAFFICKING

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

    ix.   Explain the meaning of drug trafficking

    x.   State factors responsible for drug trafficking

    xi.   Understand the consequences of drug trafficking

    xii.   Identity drug trafficking preventive measures

Instructional material: Google Earth, a projector and computer.
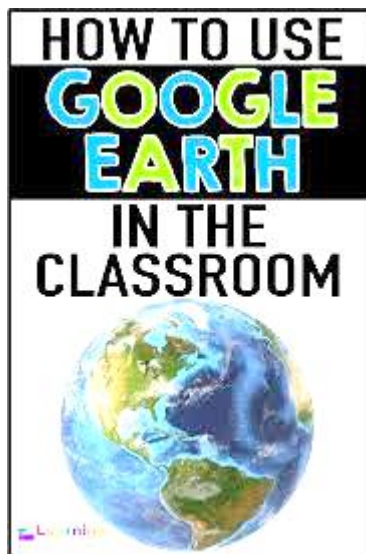
Procedure:

Step 1:   The teacher introduces the day's lesson and tries to gain the attention of the students if they have ever heard the word "Drug Trafficking'. After trying to access the previous knowledge of students on the topic, the teacher will then tell the class the meaning of the topic.

Step 2:   The teacher will open the Google Earth then drug trafficking locations by clicking on the search button also show the class the continent and countries where and how drugs are trafficked to and why.

Step 3:   The teacher will then make use of the location displayed by the projector to show the students the different drug trafficking flashpoints in the world and their locations. The teacher will ask the students identify the trafficking areas by themselves one after the other. The teacher will also discuss the predominant continent and countries that are business hubs of drug traffickers. Their major routes will be displayed with the teaching tools for students to travel through visually. Then he/she will finalize this segment of the lesson.

Step 4:   Evaluation: The teacher evaluates the students' level of achievement by asking them the following questions.

        xi.   What is drug trafficking?

cxc

xii.   How are drugs trafficked?

xiii.   Mention the country that is the headquarters of drug trafficking in the world?

xiv.   Mention some causes of drug trafficking?

xv.   Mention ways through which drug trafficking can be avoided?

Step 6:   Assignment – Draw a map of the world, showing the major flashpoints of drug

 trafficking.

GOOGLE EARTH LESSON PLAN III
WEEK 5& 6.

Date:

Class: Upper Basic 8

Duration: 1 Hour

Mental Ability: Mixed

Topic: **CULTURE**

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

vii.   Define culture

viii.   Identify the two components of culture

ix.   Identify the different cultural groups in Nigeria

x.   Outline the major examples of material and non-material aspects of culture

xi.   Understand the concepts of cultural dynamism and preservation

xii.   The advantages and disadvantages of each form of communication

Instructional material: Google Earth software, projector and computer.

Procedure:

Step 1:   The teacher will test the previous knowledge of the students by asking

vi.   What is drug trafficking?

vii.   Given reasons for it?

viii.   What the patterns are of drug trafficking?

ix.   What is the full meaning of NDLEA?

x.   How do we stop drug trafficking?

Step II: Collect assignments

Step III: Introduce the new topic "CULTURE' the teacher will start by asking the students "what culture are you from"? Define culture "as the total way of life of a group of people' it is the embodiment of tradition, custom and belief of a people. Components of culture which are material and non-material aspects will be explained with examples. The students will also explain the diversities of Nigerian cultural groups and its disadvantages. The dynamism, preservation and transfer of culture from one generation to another will all be discussed.

Step IV: Google Earth of locations depicting cultural values will be opened and used to explain the topic image by image and the students will also be allowed to observe and analyse these images critically by the teacher.

Step V: Evaluation – teacher now evaluates student's achievement through questioning such as:

vi.   What is culture?

vii.   Mention the main components of culture

viii.   Mention three examples of material culture

ix.   Mention three examples of non-material culture

x.   What cultural dynamism?

Step VI: Draw a map of Nigeria showing different groups in the country e.g. the Yoruba's, Hausas, Igbos, Urhobos, Ijaws and others.

MAP GROUP LESSON PLAN I

WEEK 1&2

Date:

Class: Upper Basic 8

Duration: 1 Hour

Mental Ability: Mixed

Age: 12+

Gender: Mixed

Topic: HUMAN TRAFFICKING

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

xiii.   Explain the meaning of human trafficking

xiv.   State factors responsible for human trafficking

xv.   Understand the consequences of human trafficking

xvi.   Identity human trafficking preventive measures

Instructional material: Wall Maps

Procedure:

Step 1:   The teacher introduces the day's lesson and tries to gain the attention of the students if they have ever heard the word "Human Trafficking'. After trying to access the previous knowledge of students on the topic, the teacher will then tell the class the meaning of the topic. There after the teacher goes further to explain how trafficking in persons occur. The factors responsible, consequences and preventive measures of human trafficking will also be succinctly explained with examples. The teacher will also show the class the continent and countries where people are mostly trafficked to in the name of having greener pastures.

Step 2:   Maps will be displayed on the wall.

Step 3:   Maps showing the continents of the world, tracing the major routes that traffickers use for human trafficking from Nigeria to Africa and Europe. The teacher will ask

the students identify the trafficking routes by themselves one after the other. The teacher will also discuss the predominant continent and countries that are business hubs of traffickers. Their major routes will be displayed with the teaching tools for students to travel through visually. Then he/she will finalize this segment of the lesson.

Step 4:   Evaluation: The teacher evaluates the students' level of achievement by asking them the following questions.

xvi.   What is human trafficking?

xvii.   How are people trafficked?

xviii.   Mention the continent that is mostly the destination of victims?

xix.   Mention some causes of human trafficking?

xx.   Mention ways through which human trafficking can be avoided?

Step 6:   Assignment – Draw a map of the world, showing the countries and continent that people are mostly trafficked to with a circle

Nigerian map insert inside Africa and Europe.

Main overland trafficking routes: Nigeria to Europe
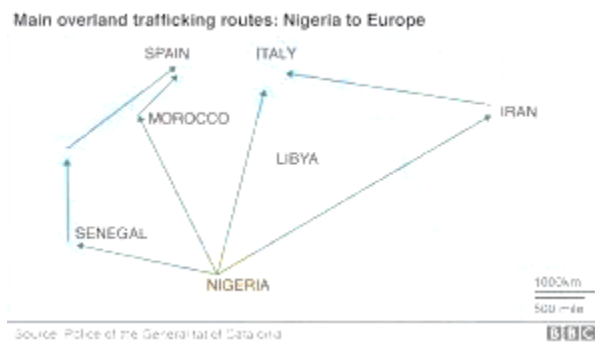
MAP GROUP LESSON PLAN 2

WEEK 3&4

Date:

Class: Upper Basic 8

Duration: 1 Hour

Mental Ability: Mixed

Age: 12+

Gender: Mixed

Topic: DRUG TRAFFICKING

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

xvii.   Explain the meaning of drug trafficking

xviii.   State factors responsible for drug trafficking

xix.   Understand the consequences of drug trafficking

xx.   Identity drug trafficking preventive measures

Instructional material: Maps.

Procedure:

Step 1:   The teacher introduces the day's lesson and tries to gain the attention of the students if they have ever heard the word "Drug Trafficking'. After trying to access the previous knowledge of students on the topic, the teacher will then tell the class the meaning of the topic.

Step 2:   The teacher will hang maps then identify drug trafficking countries such as Mexico and Columbia on the maps, also show the class the continent and countries where and how drugs are trafficked to and why.

Step 3:   The teacher will ask the students identify the trafficking areas by themselves one after the other. The teacher will also discuss the predominant continent and countries that are business hubs of drug traffickers. Their major routes will be traced with the teaching tools for students to travel through visually. Then he/she will finalize this segment of the lesson.

Step 4:   Evaluation: The teacher evaluates the students' level of achievement by asking them the following questions.

xxi.   What is drug trafficking?

xxii.   How are drugs trafficked?

xxiii.   Mention the country that is the headquarters of drug trafficking in the world?

xxiv.	Mention some causes of drug trafficking?

xxv.	Mention ways through which drug trafficking can be avoided?

WORLD MAP SHOWING CONTINENTS
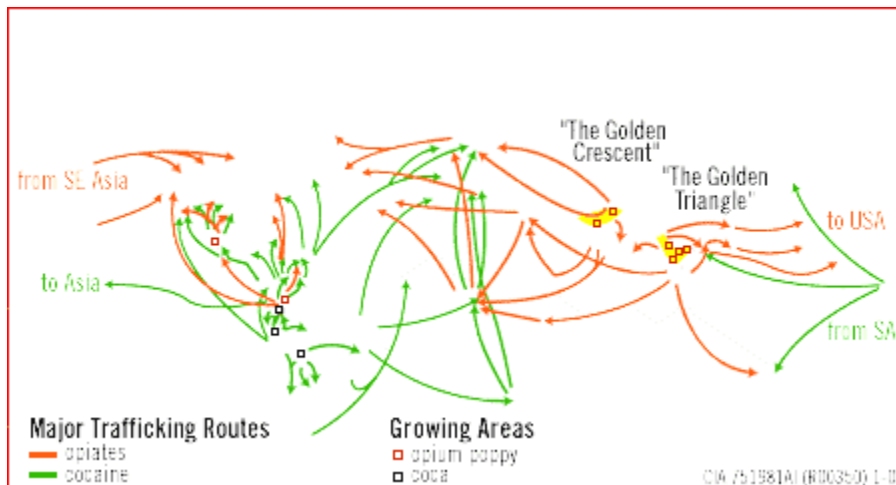
MAJOR DRUG TRAFFICKING ROUTES AROUND THE WORLD
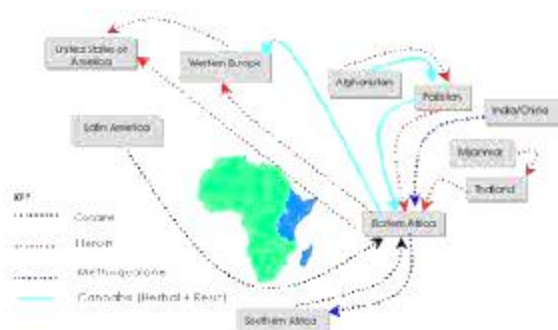
DRUG TRAFFICKING PATTERNS AROUND THE WORLD

MAP GROUP LESSON PLAN III

WEEK 5& 6.

Date:

Class: Upper Basic 8

Duration: 1 Hour

Mental Ability: Mixed

Topic: **CULTURE**

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

xiii. Define culture

xiv. Identify the two components of culture

xv. Identify the different cultural groups in Nigeria

xvi. Outline the major examples of material and non-material aspects of culture

xvii. Understand the concepts of cultural dynamism and preservation

xviii. The advantages and disadvantages of each form of communication

Instructional material: Maps

Procedure:

Step 1: The teacher will test the previous knowledge of the students by asking

xi. What is drug trafficking?

xii. Given reasons for it?

xiii. What the patterns are of drug trafficking?

xiv. What is the full meaning of NDLEA?

cxcviii

xv.	How do we stop drug trafficking?

Step II: Collect assignments

Step III: Introduce the new topic "CULTURE' the teacher will start by asking the students "what culture are you from"? Define culture "as the total way of life of a group of people' it is the embodiment of tradition, custom and belief of a people. Components of culture which are material and non-material aspects will be explained with examples. The students will also explain the diversities of Nigerian cultural groups and its disadvantages. The dynamism, preservation and transfer of culture from one generation to another will all be discussed.

Step IV: Map of Nigeria showing the different ethnic groups in Nigeria will be displayed and used to explain the topic the students will also be allowed to observe and analyse the maps critically.

Step V: Evaluation – teacher now evaluates student's achievement through questioning such as:

xi. What is culture?

xii. Mention the main components of culture

xiii. Mention three examples of material culture

xiv. Mention three examples of non-material culture

xv. What cultural dynamism?

Step VI: Draw a map of Nigeria showing different groups in the country e.g. the Yoruba's, Hausas, Igbos, Urhobos, Ijaws and others.
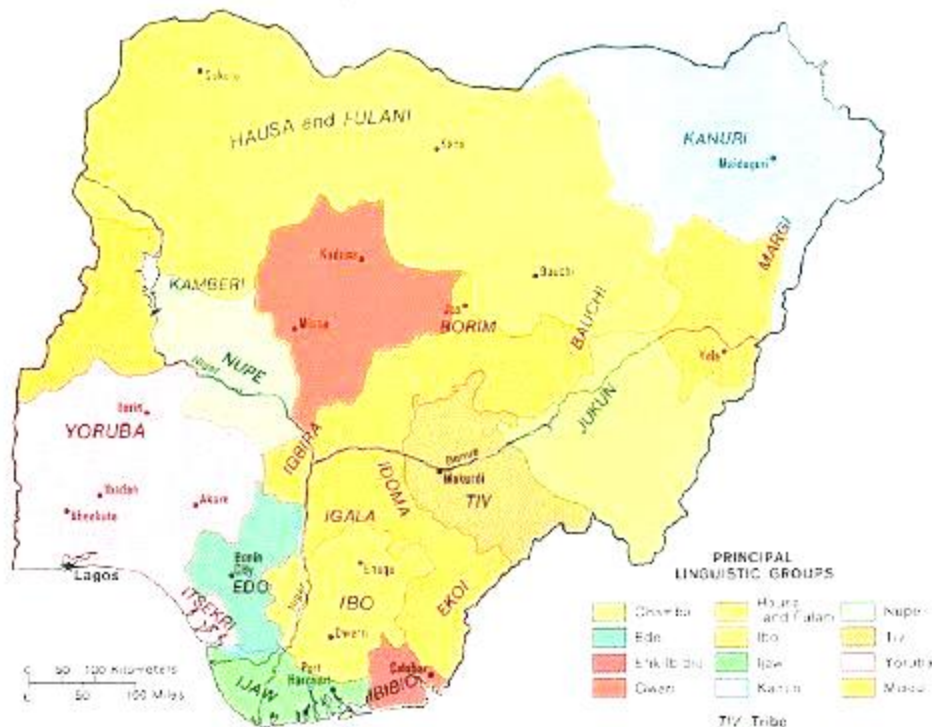
Period II: Chalkboard Summary- HUMAN TRAFFICKING

The study of Human Trafficking in Social Studies helps to enlighten about the activities of traffickers and how to avoid becoming a victim. Human Trafficking is the illegal movement of mostly women and children from their homes and taken to other places within or outside their country of origin. The major reasons are to provide domestic labor or genderual services (prostitution) to other people.

It is generally believed that trafficking in women and children began in Italy. The main route from Africa is Northern Africa through the Mediterranean Sea. Human Trafficking in Africa and Asia is like another form of slave trade. It is an illegal trade just like smuggling which involves the illegal importation of

cc

banned goods into a country which <u>smugglers</u> normally smuggle into a country. Smuggling activities of a person into another country <u>ends when the person has reached the intended destination.</u> In the United States, as many as one hundred <u>(100,000)</u> persons are trafficked into the country for prostitution and domestic labor, 69% are women and children. The women trafficked into the United States are used mainly for <u>gender labor</u>. In Nigeria, the <u>legislative</u> arm of Government is responsible for making laws against human trafficking and traffickers, the following agencies are involved in fighting against trafficking in humans.

(1). National Agency for the Prohibition of Trafficking in Persons (NAPTIP).

(2). Nigerian Immigration Services

(3). Nigerian customs etc

REASONS RESPONSIBLE FOR HUMAN TRAFFICKING

Poverty

Unemployment

Bad economy

Greed

Peer influence

Quest for material things

CONSEQUENCES OF HUMAN TRAFFICKING

Prostitution

Genderually transmitted diseases and infections e.g. HIV/AIDS

Physical consequences e.g. torture, battery and death.

Psychological/ social consequences

Bad image for the traffickers' country

PREVENTIVE MEASURES

Education through Social Studies

Public enlightenment

Economic improvement

Promoting good morals and values

Alleviation of poverty

Parents, women and children should reject being trafficked

Stiff legislature against offenders

Period II: Chalkboard summary- DRUG TRAFFICKING.

Drug trafficking refers to the illegal trade and transfer of drugs especially hard drugs like cocaine, heroin, marijuana and their likes from one place to another. <u>Tramadol</u> is a common drug trafficked and abused by the youths of today. A person involved in drug trafficking is called a <u>drug trafficker</u>. Today <u>Mexico</u> is seen as the center stage of drug trafficking in the world. In countries like Saudi Arabia and Singapore, drug traffickers are <u>killed</u> once they are caught. Here in Nigeria, the problem of drug trafficking is really a major concern, the porous <u>borders</u> is a major factor too. The agency responsible for fighting against drug trafficking is the <u>National Drugs Law Enforcement Agency (NDLEA).</u> It is pathetic to note that <u>poor funding, corruption and poor intelligence gathering are problems of eradicating this illicit trade in Nigeria.</u> The agency is found in every state and all entry points into the country.

REASONS WHY PEOPLE INVOLVE IN DRUG TRAFFICKING

Ignorance

Lack of contentment

High demand for hard drugs

Poverty

Unemployment

CONSEQUENCES OF DRUG TRAFFICKING

Imprisonment and death penalty

Bad image for the country of traffickers

Drug abuse

High crime rate

Poor mental health

Sickness and death

PREVENTION OF DRUG TRAFFICKING

Education

Stiff legislature

International cooperation

Provision of employment

Public enlightenment

Punishment of offenders

Period II: **Chalkboard summary- CULTURE**

The Culture of a people is the sum total of their way of life and living. It is the embodiment of tradition, custom and belief of a people, it includes their various

ideas, objects, art, music, activities, food, dressing, agricultural practices. For instance, the Hausa cultural group is known for the growing of grains. Every society have their various cultural group, in Nigeria there are around 250-400 different cultural groups. This huge diversity in cultural composition has caused ethnic disharmony in the country. Culture changes from time to time therefore we say culture is dynamic; it can be passed from one generation to another generation. Culture relates to the environment in which a people live hence environment is the immediate surrounding of man. For example, the ijaw people found in riverine environment are known culturally as fishermen

COMPONENTS OF CULTURE

There are two main components of culture they are

1. Material culture- this consist of those aspects of culture that we can see, feel touch and produce, it is also called tangible culture. Examples of material aspects of culture include houses, food, dressing, dancing greeting, arts, ceremonies etc

2. Non- material culture- this consist of those aspects of culture that we cannot see, touch, feel or produce, it is also called intangible culture. Examples are music, language, belief, religion, proverbs etc.

FEATURES OF CULTURE

1. Culture is dynamic and flexible
2. Culture is continuous, it is passed from one generation to another
3. Culture is different from place to place
4. Culture is universal and not peculiar to a group of people.
5. Culture is learnt over a period of time
6. Culture can be preserved with local construction of houses, proverbs, food delicacies etc.

APPENDIX IV
Reliability Test

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded^a	0	.0
	Total	30	100.0

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.809	.813	2

Item Statistics

	Mean	Std. Deviation	N
TEST 1	23.4000	5.75715	30
RETEST	25.6000	6.59467	30

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance
Item Means	24.5	23.40	25.60	2.20	1.094	2.42

	00	0	0	0		0
Item Variances	38.3 17	33.14 5	43.49 0	10.3 45	1.312	53.5 08
Inter-Item Covariances	26.0 28	26.02 8	26.02 8	.000	1.000	.000
Inter-Item Correlations	.686	.686	.686	.000	1.000	.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlatio n	Squared Multiple Correlatio n	Cronbach' s Alpha if Item Deleted
TEST 1	25.6000	43.490	.686	.470	.
RETE ST	23.4000	33.145	.686	.470	.

APPENDIX V
DATA ANALYSIS

Demographic Characteristics.

Gender

		Frequenc y	Percent	Valid Percent	Cumulative Percent
Valid	Male	137	52.7	52.7	52.7
	Female	123	47.3	47.3	100.0
	Total	260	100.0	100.0	

GIS

		Frequenc y	Percent	Valid Percent	Cumulative Percent
Valid	Control	63	24.2	24.2	24.2
	Map	75	28.8	28.8	53.1
	Google Eath	57	21.9	21.9	75.0
	Aerial Photograph	65	25.0	25.0	100.0
	Total	260	100.0	100.0	

Location

	Frequenc y	Percent	Valid Percent	Cumulative Percent

	Rural	132	50.8	50.8	50.8
Valid	Urban	128	49.2	49.2	100.0
	Total	260	100.0	100.0	

RESEARCH QUESTIONS 1

Descriptive Statistics

	Aerial_Photograph	Mean	Std. Deviation	N
Post_Test	Not Selected	56.9333	11.16191	195
	Selected	67.4769	10.56099	65
	Total	59.5692	11.90823	260
Pre_Test	Not Selected	32.9641	9.52120	195
	Selected	41.4923	9.66327	65
	Total	35.0962	10.23066	260

RESEARCH QUESTIONS 2

Descriptive Statistics

	Google_Earth	Mean	Std. Deviation	N
Post_Test	Not Selected	58.9951	12.84388	203
	Selected	61.6140	7.43965	57
	Total	59.5692	11.90823	260
Pre_Test	Not Selected	34.9113	10.83001	203
	Selected	35.7544	7.77423	57
	Total	35.0962	10.23066	260

RESEARCH QUESTIONS 3

Descriptive Statistics

	Maps	Mean	Std. Deviation	N

Post_Test	Not Selected	58.4432	12.58701	185
	Selected	62.3467	9.55990	75
	Total	59.5692	11.90823	260
Pre_Test	Not Selected	34.4703	10.65468	185
	Selected	36.6400	8.98142	75
	Total	35.0962	10.23066	260

RESEARCH QUESTIONS 4

Estimated Marginal Means

1. Grand Mean

Dependent Variable	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Post_Test	62.254[a]	.784	60.711	63.797
Pre_Test	37.215[a]	.685	35.865	38.565

a. Covariates appearing in the model are evaluated at the following values: Gender = 1.4731.

RESEARCH QUESTIONS 5

1. Grand Mean

Dependent Variable	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Post_Test	60.305[a]	.888	58.557	62.053
Pre_Test	35.333[a]	.768	33.820	36.845

a. Covariates appearing in the model are evaluated at the following values: Gender = 1.4731.

RESEARCH QUESTIONS 6

Estimated Marginal Means

1. Grand Mean

Dependent Variable	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Post_Test	60.373[a]	.806	58.787	61.959
Pre_Test	35.568[a]	.698	34.193	36.943

a. Covariates appearing in the model are evaluated at the following values: Gender = 1.4731.

RESEARCH QUESTIONS 7

1. Grand Mean

Dependent Variable	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Post_Test	64.564[a]	.687	63.211	65.917
Pre_Test	38.727[a]	.658	37.432	40.021

a. Covariates appearing in the model are evaluated at the following values: Location = 1.4923.

RESEARCH QUESTIONS 8

1. Grand Mean

Dependent Variable	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Post_Test	59.289[a]	.923	57.471	61.106
Pre_Test	34.814[a]	.807	33.224	36.404

a. Covariates appearing in the model are evaluated at the following values: Location = 1.4923.

RESEARCH QUESTIONS 9

1. Grand Mean

Dependent Variable	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Post_Test	59.710[a]	.835	58.065	61.354

| Pre_Test | 35.271[a] | .730 | 33.832 | 36.709 |

a. Covariates appearing in the model are evaluated at the following values: Location = 1.4923.

RESEARCH QUESTIONS 10

1. Grand Mean

Dependent Variable	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Post_Test	61.483[a]	.639	60.223	62.742
Pre_Test	36.562[a]	.590	35.400	37.724

RESEARCH QUESTIONS 11

1. Grand Mean

Dependent Variable	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Post_Test	59.760[a]	1.142	57.511	62.010
Pre_Test	35.313[a]	1.008	33.329	37.298

a. Covariates appearing in the model are evaluated at the following values: Location = 1.4923, Gender = 1.4731.

RESEARCH QUESTIONS 12

1. Grand Mean

Dependent Variable	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Post_Test	60.317[a]	.990	58.368	62.266
Pre_Test	36.088[a]	.870	34.374	37.802

a. Covariates appearing in the model are evaluated at the following values: Location = 1.4923, Gender = 1.4731.

HYPOTHESIS 1

Dependent Variable: Post_Test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	20657.350[a]	25	826.294	12.032	.000
Intercept	384419.342	1	384419.342	5597.503	.000
Aerial_Photograph	923.315	1	923.315	13.444	.000
Pre_Test	15237.945	24	634.914	9.245	.000
Error	16070.404	234	68.677		
Total	959336.000	260			
Corrected Total	36727.754	259			

a. R Squared = .562 (Adjusted R Squared = .516)

HYPOTHESIS 2

Tests of Between-Subjects Effects

Dependent Variable: Post_Test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	19799.966[a]	25	791.999	10.948	.000
Intercept	312273.945	1	312273.945	4316.695	.000
Google_Earth	65.931	1	65.931	.911	.341
Pre_Test	19494.716	24	812.280	11.228	.000
Error	16927.788	234	72.341		
Total	959336.000	260			
Corrected Total	36727.754	259			

a. R Squared = .539 (Adjusted R Squared = .490)

HYPOTHESIS 3

Tests of Between-Subjects Effects

Dependent Variable: Post_Test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	19876.723[a]	25	795.069	11.041	.000
Intercept	347397.891	1	347397.891	4824.103	.000
Maps	142.688	1	142.688	1.981	.161
Pre_Test	19063.610	24	794.317	11.030	.000
Error	16851.031	234	72.013		
Total	959336.000	260			
orrected Total	36727.754	259			

a. R Squared = .541 (Adjusted R Squared = .492)

HYPOTHESIS 4

Tests of Between-Subjects Effects

Dependent Variable: Post_Test

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	31365.275[b]	25	1254.611	13.791	.000
Intercept	623347.712	1	623347.712	6852.111	.000
Aerial_Photograph	623.043	1	623.043	6.849	.009
Pre_Test	24406.841	24	1016.952	11.179	.000
Error	21287.362	234	90.972		
Total	1393320.000	260			
Corrected Total	52652.637	259			

a. Weighted Least Squares Regression - Weighted by Gender

HYPOTHESIS 5

Tests of Between-Subjects Effects

Dependent Variable: Post_Test

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	30835.058[b]	25	1233.402	13.229	.000
Intercept	498150.345	1	498150.345	5342.810	.000
Google_Earth	92.827	1	92.827	.996	.319
Pre_Test	30361.716	24	1265.072	13.568	.000
Error	21817.579	234	93.238		
Total	1393320.000	260			
Corrected Total	52652.637	259			

a. Weighted Least Squares Regression - Weighted by Gender
b. R Squared = .586 (Adjusted R Squared = .541)

HYPOTHESIS 6

Tests of Between-Subjects

Effects

Dependent Variable: Post_Test

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	31005.120[b]	25	1240.205	13.406	.000
Intercept	555884.281	1	555884.281	6008.861	.032
Maps	262.888	1	262.888	2.842	.093
Pre_Test	29649.425	24	1235.393	13.354	.000
Error	21647.517	234	92.511		

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Total	1393320.000	260			
Corrected Total	52652.637	259			

a. Weighted Least Squares Regression - Weighted by Gender
b. R Squared = .589 (Adjusted R Squared = .545)

HYPOTHESIS 7

Test of Between-Subjects Effects

Dependent Variable: Post_Test

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	36208.642[b]	25	1448.346	13.041	.000
Intercept	604331.362	1	604331.362	5441.550	.000
Aerial_Photograph	2879.170	1	2879.170	25.925	.000
Pre_Test	21612.551	24	900.523	8.109	.000
Error	25987.729	234	111.059		
Total	1398232.000	260			
Corrected Total	62196.371	259			

a. Weighted Least Squares Regression - Weighted by Location
b. R Squared = .582 (Adjusted R Squared = .538)

HYPOTHESIS 8

Tests of Between-Subjects Effects

Dependent Variable: Post_Test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	33399.448[b]	25	1335.978	10.856	.000
Intercept	400182.147	1	400182.147	3251.827	.000
Google_Earth	69.976	1	69.976	.569	.452
Pre_Test	32824.423	24	1367.684	11.114	.000

	Type III Sum of Squares	df	Mean Square	F	Sig.
	28796.923	234	123.064		
Error					
Total	1398232.000	260			
Corrected Total	62196.371	259			

a. Weighted Least Squares Regression - Weighted by Location
b. R Squared = .537 (Adjusted R Squared = .488)

HYPOTHESIS 9

Tests of Between-Subjects Effects

Dependent Variable: Post_Test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	33508.371[b]	25	1340.335	10.933	.000
Intercept	461365.596	1	461365.596	3763.230	.000
Maps	178.898	1	178.898	1.459	.228
Pre_Test	32241.651	24	1343.402	10.958	.000
Error	28688.000	234	122.598		
Total	1398232.000	260			
Corrected Total	62196.371	259			

a. Weighted Least Squares Regression - Weighted by Location
b. R Squared = .539 (Adjusted R Squared = .489)
Tests of Between-Subjects Effects

HYPOTHESIS 10

Dependent Variable: Post_Test

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	Hypothesis	624556.233	1	624556.233	2859.718	.000

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
	Error	24123.084	110.455	218.398[a]		
Aerial_Photograph * Pre_Test * Gender * Location	Hypothesis	29393.960	96	306.187	6.805	.000
	Error	7333.794	163	44.993[b]		

a. .664 MS(Aerial_Photograph * Pre_Test * Gender * Location) + .336 MS(Error)
b. MS(Error)

HYPOTHESIS 11

Tests of Between-Subjects Effects

Dependent Variable: Post_Test

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	Hypothesis	645839.590	1	645839.590	3381.904	.000
	Error	25070.350	131.280	190.969[a]		
Google_Earth * Pre_Test * Gender * Location	Hypothesis	25089.797	102	245.978	3.318	.000
	Error	11637.957	157	74.127[b]		

a. .680 MS(Google_Earth * Pre_Test * Gender * Location) + .320 MS(Error)
b. MS(Error)

HYPOTHESIS 12

Tests of Between-Subjects Effects

Dependent Variable: Post_Test

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	Hypothesis	645476.420	1	645476.420	3430.112	.000
	Error	25340.900	134.664	188.179[a]		
Maps * Pre_Test * Gender * Location	Hypothesis	25139.663	104	241.728	3.233	.000
	Error	11588.090	155	74.762[b]		

a. .679 MS(Maps * Pre_Test * Gender * Location) + .321 MS(Error)
b. MS(Error)