IMPACT OF INSTRUCTIONAL GRAPHICS ON SECONDARY SCHOOL STUDENTS' INTEREST AND PERFORMANCE IN CHRISTIAN RELIGIOUS STUDIES IN ONITSHA, NIGERIA

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA NIGERIA, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTERS DEGREE IN EDUCATION (INSTRUCTIONAL TECHNOLOGY) IN THE DEPARTMENT OF EDUCATIONAL FOUNDATION AND CURRICULUM, FACULTY OF EDUCATION, AHMADU BELLO UNIVERSITY, ZARIA

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FEBRUARY, 2017.

DECLARATION

I hereby declare that this dissertation entitled "Impact of Instructional Graphics on Secondary School Students' Interest and Performance in Christian Religious Studies in Onitsha Nigeria" has been perform by me in the Department of Educational Foundation and Curriculum, section instructional technology. No part of this thesis was previously presented elsewhere, the information derived from the literature has been duly acknowledged.

Aghadiuno, Ijeoma Gloria _____ _____

Signature Date

CERTIFICATION

This dissertation entitled "Impact of Instructional Graphics on Secondary School Students Interest and Performance in Christian Religious Studies in Onitsha Nigeria" meets the regulation governing the award of a Master of Education (M.Ed) in Instructional Technology at Ahmadu Bello University, Zaria Nigeria and is approved for its contribution to knowledge.

Prof. A. T. Tukur **Chairman, Supervisory Committee**	_____ **Signature**	_____ **Date**
Dr. S. A. Zubairu **Member, Supervisory Committee**	_____ **Signature**	_____ **Date**
Pro. B. Maina **Head, Department**	_____ **Signature**	_____ **Date**
Prof. K. Bala **Dean, Postgraduate School**	_____ **Signature**	_____ **Date**

DEDICATION

This work is dedicated to my parents Mr. and Mrs. Joseph Aghadiuno.

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Without any contradiction, I thank God Almighty for with His help this work was a success. I wish to give special recognition, appreciation and gratitude to my able and hardworking supervisor, Prof. A. K. Tukur, who patiently went through every aspect of this work despite his tight schedules and official commitments. I am also grateful to Dr. S. A. Zubairu for his uncountable efforts.

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ABSTRACT

The study investigated the impact of instructional graphics on secondary school student's interest and performance in Christian religious studies in Onitsha Nigeria. This research work grew out of the complaints of teachers and students on the alarming rate at which CRS subject has dwindled because of the way its being taught and this led to poor performance and lack of interest in CRS. The population of the study comprised all the Junior secondary schools in Onitsha metropolis. Stratified sampling was used to select one school each from Onitsha South and Onitsha North constituency which served as the experimental group intact class was used. The experimental group was taught using the instructional graphics package while the conventional method was taught with chalkboard and textbook. The experimental and control groups were taught for six weeks. Two instruments was used for data collection namely: students' Christian Religious Knowledge Achievement Test which comprised of 20 items and the Extent of interests in learning with instructional graphic package questionnaire. The instruments was validated by experts in relevant field, the pilot study was conducted in two schools which are not among the sample schools. Pearson Product Moment Correlation Coefficient and Cronbach reliability method was used and the instruments were found reliable at 0.84 and 0.89 respectively. The two groups were given the SCRKAT typed in white paper as a pretest and it lasted for 60 minutes, the experimental group was exposed to treatment that is learning with instructional graphics package. After the treatment, the same instrument that was used for pre-test was retyped in yellow-coloured paper as post-test and it lasted for 60 minutes. Mean and standard deviation was used to answer the research questions while Mann Whitney and independent t-test was used to test the hypotheses at 0.05 alpha level. Result showed that students taught with instructional graphics package performed significantly higher (83.45) than those taught with the conventional method of chalkboard and textbooks (51.42). The use of instructional graphics package significantly improved the academic performance of students in Christian Religious Studies and should be encouraged in place of the conventional method of teaching for improvement in performances among students in junior secondary schools by teachers.

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OPERATIONAL DEFINITION OF TERMS

The technical terms used in this study are hereby operationally defined thus:

Instructional Graphics: Are computer-based pictorial expressions of content designed to teach Christian Religious Studies concept in Onitsha, Anambra State Nigeria.

Interest: The attention and concern from the students taught Christian Religious Studies with the instructional graphics package.

Performance: refers to the pre-test post-test scores of students taught Christian Religious Studies using instructional graphics package or conventional instruction.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Instructional graphics are great training aids and can make the difference between a so-so course and a great course. Graphics from Greek graphikos which means 'something written' are visual images or designs meant to inform, illustrate or entertain. In contemporary usage it includes: pictorial representation of data, as in computer-aided design and manufacture in typesetting and the graphicarts, and in educational and recreational software (Markham, 2012). Clark (2004), sees graphics as iconic expressions of content that are designed to optimize learning. She further stressed that forms of graphics include; drawings, lineart, graphs, diagram, typography, numbers, symbols, geometric designs, photography, maps, engineering drawings or other images. Graphic art or design often combine text, illustration and colors to convey a message.

Instruction was derived etymologically from the Greek word "instruo" which means to construct, build, prepare, draw up; fit out; instruct, teach (Whitaker, 2007). Instructional according to Abimbade (2002), is a specified technique or a means of controlling or managing sequence of events to produce a change or to modify certain behaviours through learning. Instructional graphics is defined as pictorial expressions of content designed to promote learning and improve performance. Clark (2004) opined that the learning value of any visual will depend on three interactive factors which are: the features of the visual; the content and goal of the lesson; characteristics of the learners.

The purpose of most instructional graphics is to help explain something to the viewer in a manner that hopefully increases retention of the subject matter. Instructional

graphics have many functions among which are: descriptive: to show what an object looks like; Expressive: to make an impact on the learner and constructional: to show how the parts fits together into the whole. (Bixler, 2006). A classroom teacher's, professional responsibilities include being very resourceful and innovative. As a resourceful person a teacher develops and implements a variety of instructional materials and is required to continuously look for interesting things that will challenge and enrich the daily learning experiences of children in order to avoid drudgery.

Christian Religious Studies is a life long subject and as such needs dedication and efficiency in the teaching or delivery of Christian Religious Studies lesson or moral instruction. It has become increasingly necessary that a new approach to teaching and learning of Christian Religious Knowledge need to be introduced for result teaching/learning process with the advent of computer technology which enhances the study of all subjects through the computer. It is generally accepted that students appreciate and remember things they see and do than things taught them orally. Much of the concepts of topics taught in Christian Religious Knowledge Curriculum have related chapters and verses from the Bible though the Bible have less pictorial illustrations (Edikpa, 2010). As such students find it uninteresting and difficult to comprehend. This is what motivated the researcher to embark on this study.

Conventional method of teaching and learning has been proved to be defective. In many classroom situations, Christian Religious Knowledge teachers use mostly conventional chalkboard and textbooks to teach and this could be attributed to the absence of instructional graphics simulation strategy which handles Christian Religious Knowledge topics in an interesting and relevant manner (Nwora, 2003; Ifeakor, 2003). There is no

doubt that most topics pose problems while teaching with conventional chalkboard sources and textbooks and this discourages the students and apparently the achievement of the topics objectives would be seriously undermined. To address this deteriorating situation, research is constantly providing new methods for educators to use and technology has developed so many kinds of tools for instructional needs. One of such tools is the instructional graphic package where related pictures of the concepts being taught are programmed into a computer software called CD ROM. Picture presentation that relates to topics in any lesson, makes the lesson more interesting, vivid and attractive (Nwoji 2005). That is why education planners (Educational Administrators in the Ministry of Education, Staffs of Nigerian Educational Research and Development Council (NERDC) and Staffs of Educational Resource Centres (ERC) Curriculum Planners) insist on the use of concrete evidence of materials while teaching because it helps to enhance teaching and makes learning more meaningful to children. Picture presentation is for the purpose of eliciting desired behaviour in the learner (Cheta, 2002).

Picture presentation for instruction supplies an immediacy of understanding, not achievable by words alone (Ofoegbu, 2005). This research work grew out of complaints of teachers and students on the alarming rate at which CRS subject is dwindling by the day because of the way its being taught and this led to poor performance and lack of interest in CRS concepts. The teachers demonstrated lack of interest in preparing instructional materials to suit the topics they are handling due to insufficient instructional materials in their schools, poor knowledge of improvisation, lack of innovation and inability of the government to provide funds for the development of instructional materials. This is in line with Chief Examiners Report (WAEC, 2013) which enumerated that the problems that led

to poor performance in Christian Religious Studies are poor method of teaching, nature of some concepts, insufficient instructional materials, lack of innovation among others. This has made the Christian Religious Studies teachers tell more stories in class and to depend most of the time on chalk and talk method of instruction.

The traditional method comprises the strict use of the Holy Bible and this results to a bore class, obsolescent of the material and method in use, more teacher centered than student centered, inefficiency and ineffectiveness in meeting the religious needs of the students thereby making the subject to be of less interest or uninteresting to them. Njoku (1994) posits that some factors have been identified to account for differences in male and female achievement, prominent among them are sex-role stereotyping, masculine image of science, and female socialization process. Sex role stereotyping seems to be the origin of the differences between male and female. These stereotypes tend to place female students at a disadvantage relative to male students in school activities. Consequently, males tend to perform better than females (Okeke, 1990). This trend of differences in male and female achievements has shown that teaching methods and other factors apart from sex stereotyping can influence student's achievement by gender (Ifeakor, 2005).

The preponderance of teachers talk in class instruction involves only the learner's sense of learning which in practice could be boring after a while. The more the number of senses involved in the instructional process the more ensured it becomes (Abdulrahim, 2012). Also, insufficient instructional materials may significantly affect the quality of learning experience on the part of the students. A lesson taught without instructional materials results in knowledge that is a mere word and such knowledge stands the risk of being forgotten easily. It is in the light of the above situation that this study investigated

impact of instructional graphics on secondary school students interest and performance in Christian Religious Studies in Onitsha Nigeria.

1.2 Statement of Problem

Religious studies is the academic field of multi-disciplinary, secular study of religious beliefs, behaviours and institutions. It describes, compares, interprets and explains religion, emphasizing systematic, historically based and cross cultural perspectives (Ofoegbu, 2005). This research work grew out of observations made by the researcher and interview with junior secondary schools students in Onitsha metropolis who are taught Christian Religious Studies without the use of without the use of adequate instructional materials. The teachers in Onitsha metropolis demonstrated lack of interest in preparing instructional materials to suit the topics they are handling due to insufficient instructional materials in their schools, poor knowledge of improvisation, lack of instructional facilities and school heads attitude of hiding instructional materials in their stores. This is in line with Chief Examinee's Report (WAEC, 2011) which enumerated that the problems that led to poor performance in Christian Religious Studies are poor method of teaching, nature of some concepts, insufficient instructional materials among others. Grant (1978:28) posits that "unfortunately, even when the teacher knows that learning takes place in a variety of ways they still cling to verbal symbolism (chalk and talk process as the only medium "to of imparting knowledge". This has made the Christian Religious Studies teachers in Onitsha metropolis to depend on chalk and talk method of instruction. The preponderance of teachers talk in class instruction involves only the learner's sense of learning which in practice could be boring after a while. The more the number of senses involved in the instructional process the more enduring it becomes (Abdulrahim, 2012). Also, insufficient

instructional materials may significantly affect the quality of learning experience on the part of the students. A lesson taught without the use of pictures results in a knowledge that is mere word, the knowledge stands the risk of being forgotten easily. Hence there is need for the use of audio-visual materials or devices that can expose students to experience beyond the classroom and they can disseminate instruction across large areas, making education accessible to more people (Yakubu, 2011). This work therefore explored the impact of instructional graphics on secondary school students and performance in Christian Religious Studies in Onitsha, Nigeria.

1.3 Objectives of the Study

The aim of this research is to explore the impact of instructional graphics on secondary school student's interest and performance in Christian Religious studies; the objectives of the study are:

1. Examine the mean scores of students exposed to instructional graphics package in learning CRS concepts and those exposed to conventional method in Junior Secondary Schools Onitsha Metropolis.
2. Compare the different in the level of interest between male and female students taught CRS concepts using instructional graphics package.
3. Compare the difference between the performance of male and female students exposed to the instructional graphic package in learning Christian Religious Studies concepts.

1.4 Research Questions

This study was guided by three research questions:

i. What is the difference between the mean scores of students exposed to instructional graphics package in learning Christian Religious Studies concepts and those exposed to conventional method in Junior Secondary School in Onitsha metropolis?

ii What is the difference between the level of interest of male and female students taught Christian Religious Studies concepts using instructional graphics package?

iii. What is the difference between the academic performance of male and female students exposed to instructional graphic package in learning Christian Religious Studies concepts?

1.5 Null Hypotheses

The following null hypotheses were postulated to guide the study:

i. There is no significant difference between the mean performance scores of students exposed to instructional graphics package in learning Christian Religious Studies concepts and those exposed to conventional method among Junior Secondary Schools in Onitsha Metropolis.

ii. There is no significant difference between the mean interest scores of male and female students taught CRS concepts using instructional graphics package.

iii. There is no significant difference between the mean academic performance scores of male and female students exposed to instructional graphic package in learning CRS concepts.

1.6 Significance the Study

Educational resources are panacea tools in the teaching and learning process most especially at the secondary school level. That is why the present study acknowledges its importance to teachers, students and educational administrators/planners. Teachers have often been accused of preferring the use of chalkboard and talk method of instruction in their teaching. This study could enable them to see why they need to extensively use instructional materials for teaching and learning. The teacher's will also find teaching of some concepts in CRS easy with the availability of the CR ROM.

The research work may also help the students to concretize their learning process and increase their academic performance because what you hear and see is hard for you to forget. Students will also find Christian Religious Studies interesting and they will be motivated to attending classes. More importantly, this study will provide information to educational administrators and curriculum planners who are responsible for providing instructional materials, this might enable them to know the impact of the use of picture representation (instructional graphic package) in teaching and learning, hence efficient and effective performance of students. This research will also help curriculum planners to develop Christian Religious Studies relevant teaching and learning methods and the materials that would help enhance the field of Christian Religious Knowledge. Moreover, the research is hoped to be a motivator in encouraging teachers to apply the result in actual classroom teaching of the subject.

Finally, the study might stimulate further researches on Christian Religious Studies teaching as well as making the teaching and learning of Christian Religious Studies more

interesting and meaningful. This study may not be useful to Anambra State alone but to the Nigerian Society at large.

1.7 Scope of the Study

This study explored the impact of instructional graphics on secondary school student's interest and performance in Christian Religious Studies in Onitsha Nigeria. The study was confined to some selected co-education public sector secondary students of Onitsha metropolis that are offering Christian Religious Studies The study was delimited to areas where there is availability of computers with regards to learning Christian Religious Knowledge subjects at Junior secondary school level and the strategy used was instructional graphic package which was programmed into a CD Rom. The concept analysed was the early life of Jesus Christ which was picked as a topic from JSS 2 scheme of work and it was divided into 3 sub-themes which are as follows: preparation for the coming of Jesus, the birth of Jesus and the childhood of Jesus which was computer-based.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This study looked at the Impact of Instructional Graphics on Secondary School Students Interest and Performance in Christian Religious Studies in Onitsha Nigeria. The chapter, therefore deals with the works of other people on instructional graphics and discussed under the following sub-heading: Theoretical framework, Brief History of Instructional Graphics, Definition of instructional Graphics, forms of Instructional graphics, purpose of instructional Graphics, importance of instructional graphics, advantages and disadvantages of instructional graphics, instructional graphics and Christian Religious Studies, empirical studies.

2.2 Theoretical Framework

This study involved learning with an instructional graphic material. The theoretical basis of the study derives from the dual coding theory and common coding theory by Paivio and Wolfgang Prinz as described by (Kadle, 2010) in his study. The dual coding theory, a theory of cognition, was hypothesized by Allan Paivio of the University of Western Ontario in 1971. In developing this theory, Paivio used the idea that the formation of mental images aids in learning (Reed, 2010). According to Paivio, there are two ways a person could expand on learned material: verbal associations and visual imagery. Dual-coding theory postulates that both visual and verbal information is used to represent information (Stenberg, 2003). Visual and verbal information are processed differently and along distinct channels in the human mind, creating separate representations for information processed in each channel. The mental codes corresponding to these

representations are used to organize incoming information that can be acted upon, stored and retrieved for subsequent use (Sternberg, 2003).

For Kadle (2010), the two systems (verbal and visual systems) have different functions; the verbal subsystem processes and stores linguistic information whereas the visual subsystem processes and stores images and pictorial information. While the two subsystems can be activated dependency, the interrelations and connections of the two systems allow the dual coding of information. Many researchers have agreed that only words and images are used in mental representation (Pylyshyn, 2012). Visual information can often be enhanced when paired with relevant verbal information, whether real-world or imagined (Anderson, 2005). This theory has been applied to the use of multimedia presentations. Because multimedia presentations require both spatial and verbal working memory, individuals dually code information presented and are more likely to recall the information when tested at a later date (Brunye, Taylor & Rapp, 2008).

The common coding theory has also been proposed as an alternative to dual coding theory. Prinz (2005), said that the common coding theory looks at how things we see and hear the connected to our motor actions. He went further to claim that there is a common code that is shared between perceiving something and respective motor action. Common coding theory is a cognitive psychology theory describing how perpetual representations (e.g. of things we can see and hear) and motor representations (e.g. of hand actions) are linked. The theory claims that there is a shared representations (a common code) for both perception and action (Morsella, Bargh, & Gollwitzer, 2009). The further stressed that seeing an event activates the action associated with that event and performing an action activates the associated perceptual event. Sperry (2009), argued that the perception action

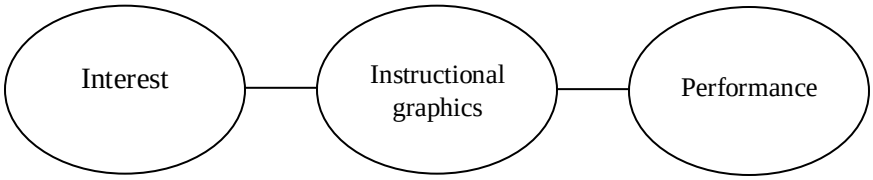
processes are functionally intertwined: perception is a means to action and action is a means to perception. Indeed, the vertebrate brain has evolved for governing motor activity with the basic function to transform sensory patterns into patterns of motor coordination.

Edger Dale (April 27, 1900 in Benson, Minnesota, - March 8, 1985 in Colombus, Ohio) was an American educationist who developed the cone of experience. He made several contribution to audio and visual instruction, including a methodology for analyzing the contest of motion pictures (Dale, E. 1946, 1954, 1969). According to Heinich, Molenda & Russel (2004), the cone of experience (1945) was the most important contribution of Edgar Dale in the field of instructional technology. In the cone, he explained inter-relations of the several audio-visual materials and their positions in learning processes. He expressed the divisions based on extreme two points between direct experience and pure abstraction. The divisions proposed in the cone were not accepted as exact demarcations. One audio-visual can be used with other audio-visual materials with respect to situation or purposes.

According to Ely and Plomp (2012), Dale's cone is one of the most important theoretical foundations of instructional technology. Hence, the cone makes connection between concrete and abstract ideas which is one of the main principles of teaching and learning. They further stressed that the cone of experience helps the professionals to select media on the basis of the experiences aimed to transfer students. It seems a job aid and moreover, it is an effective tool to support communication process because it makes communication depending on not only just words but also visual and experimental ways. Dale (1953) also emphasized the other components and diversity of sensory experiences. Hence, our experiences are not completely relied on visual or verbal symbols. Other concerns of our perception systems must be considered, such as direct experience,

touching, sensing. The cone also fosters diversity in learning environment. (Heinich et al 2004).

The theory of interest is defined as an educationally relevant motivational concept (Renninger, et al 1998). The theory proposes a person-object approach to interest and differs from most other motivational concepts by its content specifically (Krapp, 2002). The concept of interest can be interpreted theoretically and investigated empirically either at the level of current engagements (e.g. interest-triggered action) or at the level of dispositional structures (e.g. students relatively stable subject matter interest).



The instructional graphics model above was adopted by the researcher for use in the study.

2.2 Conceptual Framework

In an attempt to define the term instructional Graphics, one strategy is to explore the roots of the terms "instruction" and "graphics".

The term instruction was gotten from the Latin word "instruo" which means to "construct, build; prepare, draw up; fit out, instruct, teach" (Whitaker, 2007). Huitt (2005) defined instruction as the purposeful guidance of the learning process.

Ofeofuna (2008) said instruction is the imparting of knowledge, developing of skills and attitudes, and meeting of special needs in various ways ranging from structured to individualized activities, including instructional support activities which aid and enrich the teaching-learning process. Instruction according to Gagne (2012) is the means employed by

teachers, designers of materials, curriculum specialists and others whose purpose is to develop an organized plan to promote learning.

Graphics (from Greek graphikos, 'something written' e.g. autograph) are visual images or designs meant to inform, illustrate or entertain (Heller & Chwast, 2011). Clark (2004) defined graphics as iconic expressions of content that are designed to optimize learning. Oxford Advanced Learner's Dictionary (sixth edition) sees graphics as designs, drawings or pictures that are used especially in the production of books. Ofoefuna (2008) observes that when we talk about graphics, we are talking about writing, drawing and painting. He further defined graphics as material which communicates facts and ideas clearly and succinctly through a combination of drawings, words and pictures.

Graphics are pictorial representation of data, as in computer-aided design and manufacture, in typesetting and the graphic arts, and in educational and recreational software (Ask.com Encyclopedia). Therefore, instructional Graphics can be defined as pictorial expressions of content designed to promote learning and improve performance (Clark, 2004). Powell (2012) stated that instructional graphics focus on the concept being taught, using principles of visual design to make the concept clear and interesting. The learning value of any visual will depend on three interactive factors: 1. The features of the visual 2. The content and the goal of the lesson, and (3) Characteristics of the learners (Clark, 2004). She further explained that the three views of graphics are introduced based on their surface features, their communication functions, their interactions with psychological learning process. To get the most learning value from visuals, we recommend that you design and select instructional graphics based on their communication and psychological functions rather than on their surface features.

2.3 Brief History of Instructional Graphics

Much of the foundations of the field of instructional design was laid in world war II, when the military faced the need to rapidly train large number of people to perform complex technical tasks. Influenced by behavioural learning theories particularly programmed instruction (Braine, 2012) and armed with knowledge and the experience of creating standardized methods of instructional delivery using "teaching machines", military researchers developed on array of training films and other mediated materials for instructional purposes. Tests for assessing a learner's abilities were used to screen candidates for the training programs. After the success of military training, psychologists began to view training as a system, and developed various analysis, design and evaluation procedures.

The ability to widely distribute training proved to be quite attractive to military agencies since a great deal of training was needed. Instructional media was developed using still photographs, audio recordings, transparencies, slides and films to support the training effort (Clark, 2009). In addition to developing training films and other audiovisual instructional materials, military researchers focused on identifying principles of learning that could be used in the design of audiovisual materials (Markham, 2012). The focus on using learning and instructional theories for design and development of audiovisual materials continued after World War II. The post World War era saw psychologists and communication engineers working together to solve training problems (Hokanson & Miller, 2009). Aided by a number of federal grants and the creation of the DAVI (Division of Audio and Visual Instruction the years of the 1950's and 60's were marked with the design of programmed instruction and the establishment of instructional systems that

emphasized heavily the use of instructional media (AECT, 2008). The use of graphics in education has long history. The use of illustrations in books written in English, especially those intended for children, was common place by about 1840 (Slyeth, 2006).

After that time, the use of illustrations in children's books has been especially extensive, elaborate and artistic (Feaver, 2005). A wide variety of graphics - from photographs, pictures and cartoons to charts, maps, diagrams, and outlines is common today in most teaching strategies. The use of graphics in instruction seems to make sense because it holds a certain degree of face validity. The cliche that a picture is worth a thousand words seems consistent with educational practice (Samuels, 1970).

2.3.1 Forms of Instructional Graphics

Forms of graphics include; drawings, lineart, graphs, diagrams, charts, illustrations, typography, photography, symbols, geometric designs, engineering drawings or other images (ask.comencyclopedia).

Drawing: Drawing generally involves making marks on a surface by applying pressure from a tool or moving a tool across a surface. In which a tool is always used as if there were no tools it would be art. Graphical drawing is an instrumental guided drawing (webopedia.com).

Charts: Ofoefuna (2008) sees charts as combinations of pictorial, graphic numerical or verbal materials which together are most likely to present clear visual summaries of important processes or relationships. The term chart can be applied to several different types; they may be classified according to use, function or similarity of construction. He further stressed that charts shows relationships by means of pictures, symbols, facts, figures or statistics and they present abstract ideas in visual form.

Graphs: Graphs according to Ofoefuna (2008:63) are visual representations of numerical data.

Typical of abstract representation, the graphs tend to show relationships between one set of data and the other as in the case of line graph, for example, where such may be used to show the school enrolment and the years. Types of graphs are bar graph, pie graph or chart, pictorial graph.

Diagrams: Schematic diagrams are used to illustrate the mechanism of some objects. For instance it could be used to illustrate or to show the circulatory system in man. It could also be used to represent the circuit drawing of radio or television. Schematic diagrams calls for a higher intellectual development for their understanding than in the case of pictorial symbols.

For the students to benefit from them, schematic diagrams must possess the background knowledge of the concepts involved (Ofoefuna, 2008:66).

Photograph: The word photography was derived from two Greek words "photos" meaning light and "graphos" meaning writing or drawing with light (Webopedia.com). Abimbade (2002) defined photography as an act of writing with light. He further defined it as the production of permanent images by means of the action of light on sensitized surfaces given rise to the new form of visual arts, historical documents and scientific tools. Photography is therefore is a visual communication that is to say a form of language that is visible, a medium of communication, a method of recording events and conveying messages (Suleiman, 2013).

Maps: Maps are very important in teaching subjects such as geography, history, social studies, agriculture, religion and even science. Maps are representations of a part of the

whole of the surface of earth or a celestial body delineated on a plane surface, each point in the drawing intended to correspond to a geographical or celestial position (Ofoefuna 2008:68). Maps have the educational value of being able to bring the whole earth or the whole country into the classroom for the study of a particular feature. They enable the teacher and the students to undertake a comparatives study of some features in the whole country such as population density or export potentials of some nations (Ughamadu, 2007).

Symbols: Symbols, in its basic sense, is a representation of a concept or quantity; i.e. an idea, object, concept, quality etc. In more psychological and philosophical terms, all concepts are symbolic in nature, and representation from these concepts are simply token artifacts that are allegorical to (but do not directly codify) a symbolic meaning (Ask.com Encyclopedia).

2.3.2 Purpose of Instructional Graphics

Graphics are visual elements often used to point readers and viewers to particular information. They are also used to supplement text in an effort to aid readers in their understanding of a particular concept or make the concept more clear or interesting (Ask.com encyclopedia). Graphics are one of the five key elements of multimedia technology (Heller & Chwast, 2011). The instructional function of any graphic must match the particular needs of the lesson.

Bixler (2006), pointed out that the purpose of most instructional graphics is to help explain something to the viewers in a manner that hopefully increases retention of the subject matter. He went further to outline seven possible functions of instructional graphics which are as follows: descriptive - To show what an object looks like, expressive - to make an impact on the learner, constructional - to show how the parts fit together into the whole,

Functional -to show a process or the organization of a system in a simplified manner, logico-Mathematical - To display a mathematical concept such as a curve graph. Some line graphs and charts with a scaled X and Y axis fall into this category, algorithmic - to show a holistic picture of the range of possibilities. Flow charts fall into this category, data display -illustrating textual data visually. Bar charts, pie charts and histograms fall this category.

Reiser (2012), opined that the purpose of instructional graphics is to enhance the effective appeal of a lesson. Affective applications are designed to improve a student's attitude towards learning or to increase the incentive of a student to participate in the lesson. He went further to say that graphics are often used for purely cosmetic reasons. In a sense, it is a misnomer to call this an instructional function, because, by definition, no direct learning benefits are expected from cosmetic graphics but they merely add to the polish or decoration of a package to make a program more attractive or aesthetically pleasing.

Graphics are often incorporated into instruction to raise the general motivational level of a lesson. Much of the motivating appeal of graphics is due to novelty. Unfortunately, novelty effects are temporary, gradually disappearing over time (Clark, 2009). Graphics are also used to arouse general curiosity and interest and this is a superficial way to increase motivation (Bixler. 2006). Words and graphics are two basic tools to help learners build new knowledge and skills (Clark, 2004).

2.4 Importance of Instructional Graphics

The success of any learning process depends largely on the instructional procedures. For a given instructional procedure to achieve desired objectives it must be properly harnessed through adequate and proper use of instructional facilities (Obasi,

2013). Lewis (1994) believed in "heat and forget, see and remember, do and understand. Onyejernezi (1996) noted that instructional graphics in teaching when properly used perform the following functions: Reinforce verbal message; Get hold of the learner's attention; Provide for direct interaction of studies with the reality of the social and physical environments; Promote greater acquisition of skills and longer retention of facts; Provide opportunities for independence and focus attention on key points; create impact.

Facilitates the understanding of abstract explanations, provide a common framework of experience to a large number of learners and stimulates reality. Individualized learning and focus attention on highlight of key points. Similarly, Wilkings (2003) supported the view that effective teaching and learning cannot take place without essential resources such as library and audio visual aids - in a related development, Uyota (2005) postulated that the advancement in technology has made a great demand on the types of resources available for teachers. He also noted that technology in education has made it possible for man}' audio- visual and electronic media to be used a great deal.

Also Agun (2004) while writing on the place of instructional materials in teaching in curriculum development, noted that suitable instructional material in teaching are facilitators of teaching and learning when they are in good supply, rich in variety and range. In his conclusion. Uyoata (2005) noted that the availability of learning resources in schools are very important in executing a successful educational programme.

2.5 Advantages of Using Instructional Graphics in teaching Christian Religious Studies

Instructional graphics are great training aid and can make a different between a so-so course and a great course (Shawn, 2015). Advantages of instructional graphics according to Shawn (2015) are as follows:

Prepares students for the future: It is without question that students will need to know how to use technology to communicate and collaborate in their future careers. Increases student engagement and motivation: Technology allows teachers to engage and motivate students in new ways, like taking students on a virtual field trip to other parts of the world.

Provides current information and wider access: Instructional graphics gives students the most current information available.

Supports collaboration skills: Students can practice collaboration skills by working in terms of projects using shared documents on conferencing technologies. Improve Instructional Delivery: Teachers can design student- centered lessons by allowing students to take an active part in the lesson. Classroom time can be spent with students asking critical question and engaging in creative problem-solving.

Supports differentiated instruction: Teacher can use technology to meet the individual needs of students. Specific programs, apps, or website give teachers the options to offer content to student at different levels, allowing students to access materials at their own pace. Supports universal design for learning practices: This means that teachers need to make sure all students can access the material being presented.

Wilkings (2003) said that when presenting vital information, graphics presentations act as a great visual guide to the information being delivered. Many people find it easier to

read a chart rather than listening to a set of numbers and trying to make sense out of it. Using visual information along with the spoken word is a great way to reach some of the audience who would otherwise be unexcited about what they are hearing.

Heller & Chwast (2011) said the advantages of graphics are: keep an audience interested: Prudent use of graphics in a newsletter presented to an audience can keep people interested in what you write or what you say. During public discussions and presentations, a graphic can draw the eye and supplement the topic about which you are talking. In a publication, smart graphics that are relevant to a story can keep a reader's eyes moving down the rage.

Enhance your points: Graphics can also be a great way to convey information in less space than text. The old adage that "a picture is worth a thousand words" is true for many. Graphics, such as graph and charts, can give audiences a visual representation of data. Instead of rattling off a long list of numbers, visual representation of those numbers can actually help audiences learn better and retain more of the information you present to them.

Credibility; Graphics that represent a product or service can enhance a company or business mar/s credibility beyond a text description of what a product or service does. Using graphics to Actually show an audience what you are offering can generate interest and convince an audience that your product is what you say it is.

Also Laster (2010) is of the view that the use of visuals is very fast as far as conveying a message is concerned. He further stated that the advantages of instructional graphics are as follows: A picture is retained in our memory longer than words or quotes. Research shows that people remember visuals the best, followed by speech, accompanied

by reading. Impactful - A graphic of any kind can elicit a stronger reaction from the reader. The image will move people emotionally and be more effective.

It is a much more efficient way of communicating - not just in time required for relaying information, the effort is much less too. A visual, on the other hand makes everything very clear. But with a picture, everyone would instantly know how it actually looks.

When visuals are used instead of a simple speech, it makes a person more involved and connected, as visuals are able to pull down most barriers of communication and open up people.

Disadvantages of Instructional Graphics

Laster (2010) opined that the major disadvantages of instructional graphics are as follows: The major drawback for using instructional graphics is their higher cost. High quality images, pictures and graphics, require additional resources to procure and make, driving up the cost. Besides, using lower quality visuals has been proven to reduce credibility, having the opposite effect of that intended. Requires more time and effort as it involves selecting, compiling and presenting a large amount of information in a visually - pleasing manner. Only a small amount of information can be conveyed via a graphic. A very detailed visual will look cluttered, overwhelm the reader and reduce its impact. Visuals can be detracting, shifting the focus from the presentation itself. This is especially true if it is poorly designed. Over simplification can also make the issue being discussed seem petty and inconsequential.

2.6 Christian Religious Knowledge and Instructional Graphics

Christian Religious Knowledge is an important subject in the lives of Christian students and it starts from cradle to grave (Edikpa, 2010). Religious studies in elementary

and secondary level education mean Bible, Church history, doctrine, personal and social ethics. (Hocekstra, 2012). It has become increasingly necessary that a new approach to teaching and learning process with the advent of computer technology which enhances the study of all subjects through the use of multimedia (Edikpa, 2010)

Edikpa (2006), said that Christian Religious Education in the secondary school is characterized into six dimensions: JS 1 teaches Relationship with God, the Bible as the record of God's revelation of himself, the creation story, sin and its consequences, the need for reconciliation, responding faithfully to God's call, responding faithfully to the needs of others, God wants his people to be free, living in a community under God's law and sustaining relationships with God. JS 2 teaches the early life of Jesus Christ, Jesus Christ prepares for his life's ministry. Jesus Christ welcomes all people, Jesus Christ cares for people, Jesus Christ, Jesus Christ the Messiah accepts sufferings and death for us and the resurrection of Jesus Christ. JSS 3 teaches the Holy Spirit, the early life and conversion of Paul, the spread of the gospel out Palestine, controversies among the early Christian believers, further spread of the church, Paul and the civil authorities and the Christian church today. Thus, these are geared towards the achievement of the objectives of the National Policy on Education (FRN, 2008) which indicates the inculcation of the right type of values and attitudes for the survival of the individual and the Nigerian society. Christian Religious Knowledge seeks to develop a positive attitude in the learner, towards God, the self, others and the environment in which he/she lives. Attitudes are naturally subjective and therefore difficult to measure reliably and to validate using a paper and pencil test. However, the classroom teacher through observation and through a period of time can assess attitudes with a considerable degree of reliability (Kenya Secondary School

Curriculum) and to It is generally accepted that students appreciate and remember things they see and do than things taught them orally. Picture representation that relates to topics in any lesson, makes the lesson more interesting, vivid and attractive (Cheta, 2002). Picture presentation (instructional Graphics) is for the purpose of eliciting desired behaviour in the learner (Edikpa, 2010). Ofoegbu (2005) stated that the importance of picture presentation, supplies an immediacy of understanding not achievable by words alone. CRK teaching and learning has to be improved through computer exposure of picture presentation for the student learning competence and they need to be properly taught.

2.7 9 Year Basic Education Curriculum and Christian Religious Studies

Following the decision of the Federal Government of Nigeria to introduce the Universal Basic Education (UBE) programme in 1988, the Nigerian Educational Research and Development Council (NERDC) re-structured and re-aligned all extant primary and junior secondary school (JSS) curricula into a 9-year Basic Education Curriculum for implementation in Nigerian Schools with effect from September, 2008. The 9-year BEC emphasizes value reorientation, poverty eradication and employment generation capabilities in learners. The National Christian Religious Curriculum was developed by the Nigerian Educational Research and Development Council (NERDC). In keeping with a holistic approach that seeks to realign primary and secondary school curriculum, the JSS curriculum for Christian Religious Studies takes off where the primary schools curriculum ends. Through specific examples taken from the Bible, the curriculum's broad objective of developing morally, socially, spiritually sound children remains unchanged. Dike (2014) remarked that it is not enough to produce curriculum, it is more important to put in place machinery that will ensure that its ideals are realizable through effective classroom

practices. However, it is known that the structures and appropriate activities that foster effective implementation of the curriculum are either inadequate or lacking in Nigerian schools. Foremost among the myriad of challenges of Basic Education in Nigeria are the issues of teacher quality and development, lack of enough specialist teachers: dearth of relevant support materials for teachers and inadequate supervision and mentoring of teachers (Abakpa, 2013; Akpan, 2012; Okpala 2011).

Thus, to realize the ideals of 9-year EEC, relevant support materials that will aid the effective delivery of the curricula content in schools are being provided.

2.8 Empirical Studies

The success of any learning process depends largely on the instructional procedures. Some works have been carried out on how instructional graphics package have impacted the teaching and learning process amongst the numerous researches are:

Edikpa (2012) conducted a research on improvement of Christian Religious Knowledge Teaching through the use of Compact Assisted Picture Presentation in senior Secondary School. The sample consisted of two hundred students drawn from two secondary schools in Onitsha Educational Zone of Anambra State. The instrument for data collection was Christian Religious Knowledge Achievement Test and data was analyzed using t-test. The study adopted non-equivalent pre-test and post-test quasi experimental design. The result of the analysis indicate the use of Compact Assisted Picture Presentation" found out that picture presentation improved student's achievement in CRS more than the conventional method of Teaching. The findings revealed that Compact Assisted Picture Presentation had an overall positive achievement more than the conventional method. He went further to say that the result of his experiment has shown

that persistent poor performance of our CRS students at the certificate level will continue indefinitely if nothing is done about providing enough computers and CD ROMS containing CRS subject for the teaching and learning in secondary schools. The analysis of responses to the research question reveals that students taught CRS with CACRK achieved more scores than the conventional chalkboard and textbook students in the posttest than they did in the pretest. The study indicated that although no significant difference existed in the mean achievement scores of the groups at the pretest level, a significant difference existed in the mean achievement scores of CACRK and CCT group after the experiment in favour of the CACRK. Based on these result some recommendations were made that is the Federal, State and Local Government should endeavour to provide enough computer in secondary schools to enhance teaching and learning.

Ofoegbu (2005) carried out a research with the aim of assessing the effect of different modes of picture presentation on students' achievement in Biology within Nsukka metropolis. The sample covers a total of eighty students from two secondary schools from Nsukka Educational Zone. The data used for the study was Biology Achievement Test. The students in the experimental group had a higher mean academic achievement than their control counterpart. This shows that the use of different modes of picture presentation was effective in improving the academic achievement in Biology of Senior secondary students. Data was analyzed using t-test statistical tool.

Similarly, Ifeakor (2006) looked at evaluating students' achievement patterns, effect of commercially produced computer Assisted Instruction Packaged and gender on secondary school chemistry students. One hundred and fourty SS1 Chemistry Students drawn from two private schools out of thirty-one private schools in Onitsha urban. Two

schools were selected based on availability of enough computers. Data was collected using chemical bonding in chemistry Test. An internal consistency estimate was computed and data was analyzed using ANCOVA. Results of the restudy showed that students taught using commercially produced Computer Assisted Instruction performed significantly better than the students taught using the conventional method. She went further to say that the significant effect maybe as a result of self-evaluation and remedial activities provided by CPCAIP which helped the students to master the chemistry concepts without much difficulty than the CTM group. She said that by implication, the results of the study has provided empirical evidence in respect of efficacy of CPCAIP on achievement in chemistry concepts. As revealed by the study, male students tended to out perform their female counterpart in cognitive and hence there is need to equalize learning environment for both sexes.

Ezeugo and Agwagah (2000) carried out a study to determine the effect of picture presentation on Business Studies using three hundred and eighty seven Senior Secondary School students drawn from schools in Onitsha Education Zone. Data was collected using Business Studies Achievement Test, the data was analyzed using t-test statistical tool. The result of the study showed that the use of picture presentation can improve reading and academic performance of Business Studies Students.

Meze (2013) looked at the effect of instructional materials on the learning and teaching of Economics in secondary schools in Nigeria. Twenty teachers and eighty students were selected using a stratified sampling technique. The researcher adopted the survey research design. Both primary and secondary data was used for the study. The result of the study showed that there was a significant positive difference in the performance of

secondary school students in Economics when they are taught the subject with instructional materials. The use of instructional materials in the teaching and learning of Economics obviously improves the performance of students and that schools should provide enough instructional materials to enable teachers clarify their lesson.

Ghanney (2008) carried out a research on the use of instructional materials in the teaching and learning of environmental studies in primary schools: A case study of Winneba. The researcher made use of purposive sampling method and the sample size consists of sixty environmental studies teachers and twenty pupils drawn from six public schools in Winneba. The findings revealed that about eighty three percent of teachers in the primary schools rely heavily on the use of chalkboard and textbooks for lesson delivery on environmental studies as opposed to the use of atlases, globe, resources, persons, objects or artifacts, radio, television and computers. Again the study revealed that inability of teachers to use instructional materials leads to: pupils becoming passive listeners in class, boredom, poor participation in lesson, lack of interest in the subject, absenteeism and finally poor performance in the subject matter. Suggestions were made to enhance the effective use of instructional materials.

Nwike (2013) looked at the effects of the use of instructional materials on students cognitive achievement in Agricultural Science. The researcher adopted quasi-experimental design and the sample comprise of two hundred and fifty six SS2 students randomly sampled from five schools drawn from five towns in the local government Area. Data was analyzed using mean, standard deviation and t-test statistic. The findings revealed that students with instructional materials performed better than those taught without

instructional materials. Instructional materials should be used in teaching and learning in secondary schools.

Oji and Igiri (2015) analyzed the impact of instructional materials in teaching and learning of Biology in Senior Secondary Schools in Yakun LGA. Descriptive statistical method was employed so as to determine the impact of teacher's effectiveness, five comparable secondary schools were selected to represent the population of the study. The data collected were analyzed using simple percentage method to verify the research questions formulated for this study. The result of the findings revealed there is a positive achievement in students taught by highly qualified Biology teachers and those exposed to instructional materials during lessons. It was recommended that government should make available to schools the basic instructional materials as this will enhance an effective teaching and learning process.

Adebule and Ayoola (2015) carried out a research on impact of instructional materials on Students' Academic Performance in Mathematics in Secondary Schools in Ekiti State, Nigeria. The study was a quasi-experimental research design that employed pretest, post-test non-randomized control group design. The population of the study comprised all the students in junior secondary schools in Ekiti State. The sample consisted of ninety students selected from nine secondary schools in Ekiti State through the multistage sampling technique. The study revealed that significance difference exists between the performance of students taught with instructional materials and those taught without instructional materials. It was recommended that principals and officials of Ministry of Education should ensure regular supervision to enhance effective use of instructional materials and resources in the teaching of mathematics in schools.

Aloraini (2012) conducted a research on the impact of using multimedia on students' academic achievement in the College of Education at King said University. The study population was the female students whose curriculum is computer and its uses, in the Faculty of Education, King Saud University, in the first semester for the academic year 2010-2011 and they were four hundred female students. The result of the study showed that there are statistically significant differences between the pre and post achievement test at the significance level 0.05 for both the control and experimental group. It was observed that the development of the academic achievement for the experimental group is greater than that of control group. This stresses the effective use of multimedia in presenting computer lessons. Onasanya and Omosewo (2011) conducted a research on the effect of improvised and standard instructional materials on secondary school students' academic performance in Physics in Ilorin, Nigeria. Three schools were randomly sampled from 237 secondary schools in Ilorin, Kwara State. The study revealed that there is no significant difference in the performance of students taught with standard instructional materials and those taught improvised instructional materials, assists the teacher economically and also allows student interaction. It has been discovered that the use of standard instructional material have the same importance in the teaching and learning of physics in Ilorin metropolis.

Gambari, Yusuf and Balogun (2012) carried out a research on the effectiveness of PowerPoint presentation on students' cognitive achievement in technical drawing. The design employed for the study was quasi-experimental design using a pretest - posttest, non-equivalent, non-randomized experimental group design. A 2 x 2 x 3 factorial design was employed, one hundred JSS 1 students (fifty three males and fourty seven females)

categorized into 29 high, 54 medium and 17 low achievers from two secondary schools in Abuja metropolis formed the sample. The study revealed that the students taught with PowerPoint presentation performed better than their counterparts taught with conventional chalkboard. Also, high achievers performed better than medium and low achievers respectfully. The PowerPoint was found also to be gender friendly. Based on the findings, it was recommended that the use of PowerPoint presentation should be encouraged in Nigerian schools. This work therefore explored the impact of instructional graphics on secondary school students interest and performance in Christian Religious Studies in Onitsha, Nigeria.

2.9 Summary

This chapter identified the needs to shift from traditional chalk and talk method of teaching to instructional graphics package based on its benefit to teachers and students. The innovative technology of using instructional graphics via the use of pictures seems to be the answer to the numerous problems encountered by mostly teachers and students of Christian Religious Studies. The review also talks about the advantages of instructional graphics. The review has focused on the importance of the instructional graphics package in teaching and learning CRS concepts. This work therefore looked at the impact of instructional graphic on junior secondary schools students performance and interest in CRS concepts in Onitsha metropolis. From the literatures reviewed, it can be deduced that most of the researches dealt tactfully on the achievement of Christian religious studies through the use of pictures, the effectiveness of the different modes of picture presentation on students achievement, the impact of using multimedia on students academic achievement but this study explored

the impact of instructional graphics on secondary school students' interest and performance in Christian religious studies in Onitsha, Nigeria.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the description of the methodology employed for the study, presented under the following sub-headings: research design, population, sample and sampling techniques, pilot testing, data collection procedure, data presentation and analysis procedure.

3.2 Research Design

The design used for this study was quasi-experimental design specifically pretest posttest non-equivalent, control group involving two intact classes-one experimental and the other control. The design made use of pretest and post test control group which was used to assess the impact of the instructional graphic simulation strategy on the performance and interest of students in CRS concepts.

Obeka (2011), opined that the main thrust of experimental designs is to establish cause and effect relationships. It is the most powerful and valid design which can be used to identify confidently the cause of any given effect. He further explained that in an experimental study, one or more independent variable(s) is/are manipulated by the researcher under controlled conditions and its/their effect(s) observed. An experiment must therefore involve experimental or treatment group(s) and control group(s).

$$EG \longrightarrow O_1 \longrightarrow X_1 \longrightarrow O_2$$

$$CG \longrightarrow O_1 \longrightarrow X_0 \longrightarrow O_2$$

Figure 1: Research Design Illustration

Where;

O_1 = Pre-test for experimental and control group
O_2 = Post-test for experimental and control group
$X_{1,0}$ = Treatment conditions

3.3 Population

The population of the study composed of all secondary school students but the target population is 1,533 JSS II students from 32 schools in Onitsha Educational Zone Anambra State. The distribution of the population is presented in Table 3.1 (Appendix H)

3.4 Sample and Sampling Technique

Stratified sampling technique was employed by the researcher to select two schools in Onitsha education zone. School A was selected in Onitsha North while school B `was selected from Onitsha South. The researcher made use of intact classes, to eliminate interaction effects the schools chosen as experimental and control group are as far away from each other as possible within the metropolis.

The distribution of the sample size is presented in Table 3.2.

Table 3.2: Name of Sample Schools and their population in Onitsha Educational Zone

Schools	**Male**	**Female**
SCHOOL A	30	20
SCHOOL B	25	15
Total	**90**	

3.5 Instrumentation

Two instruments were developed by the researcher for the study and was discussed as follows:

3.5.1 Christian Students' Religious Knowledge Performance Test (CSRKPT)

Christian Students' Religious Knowledge Performance Test (CSRKPT) was an objective test which comprised of 20 items, 4 option multiple choice objective test designed by the researcher in order to measure the effects of instruction that was given during the experiment. The objective test was based on the early life of Jesus Christ, a topic in JSS 2 syllabus.

Table of Specification of CSRKPT

	Knowledge	**Understanding**	**Application**	**Total**
Preparation for the coming of Jesus	2	2	2	6
Birth of Jesus	2	2	2	6
Childhood of Jesus	2	2	4	8
Total	**6**	**6**	**8**	**20**

Here the researcher measured the cognitive perspective of the test.

3.5.2 Interest in Learning Christian Religious Studies Concepts Questionnaire (ILCRSCQ)

Interest in learning Christian Religious Studies concepts questionnaire was an instrument designed to ascertain the extent of the students interest in learning Christian Religious Studies with the new method. It comprised of 16 items, four options of strongly agreed, agree, disagree and strongly disagree.

Table of specification for ILCRSCQ

	Affective	Behaviour	Cognitive	Total
Interest	6	5	5	16
Total	**6**	**6**	**5**	**16**

The researcher measured the affective, behaviour and cognitive perspective of the questionnaire.

3.5.3 Lesson Plan

Sequential lesson plan was developed by the researcher for the experimental group showing the use of new method which is the instructional graphics package; it is a compact disc containing pictures only of CRS concepts that was used for the study. The researcher also developed another lesson plan with the old method of teaching that was used for conventional class.

3.5.4 Teaching Module

Teaching modules are usually conceptualized as self-contained “units” of content or technique. One teaching module was developed by the researcher for both the experimental and control groups.

3.5.5 Validation of Instruments

Content validity of the instrument was done. Christian Student's Religious Knowledge Performance Test (CSRKPT), marking scheme, instructional graphics package and Extent of Interest questionnaire was validated by two professors in the Department of Christian Religious Studies Educational Psychology and Industrial Design , Ahmadu Bello University Zaria and Christian Religious Studies examiners from Anambra State Ministry of Education and Christian Religious Studies Secondary School teachers with at least four

years working experience. They were requested to critically examine and assess all the items of the instrument, paying attention to the following: whether the test conformed to the subject specification; whether the questions were clear, precise and free from ambiguity; whether the questions matched the ability of the students; whether the language of expression was simple and unambiguous

The experts made constructive criticisms in the areas of language level and content area of the (CSRKPT) and extent of interest questionnaire. The corrections were made leading to the final selection of 16 items only, out of 25 items. Corrections on instructional graphics package was done by an expert in the field of industrial design and adjustment were made to the pictures, size, colour and the mode of presentation.

3.5.6 Pilot Testing

The pilot test was carried out to determine the reliability effectiveness of the instruments Christian Students Religious Studies Performance Test and Interest in Learning Christian Religious Studies concept questionnaire. To establish reliability for this instrument, test re-test reliability method of an interval of two weeks was administered. Twenty JSS 2 students from two of the population schools were used purposively.

3.5.7 Reliability of the Instrument

To establish reliability for this instrument, test re-test reliability methods of an interval of two weeks were administered. A reliability coefficient of r=0.84 for CSRKPT was obtained. Cronbach alpha reliability method was used to test the interest in learning Christian religious studies concepts questionnaire (ILCRSCQ) and the reliability index was 0.89 and this was a confirmation of test of reliability by Spiegel (1992), Stevens (1986), and Olayiwola (2010). According to them an instrument is considered reliable. If it lies

between 0 and 1, and that the closer the calculated reliability coefficient, is to zero, the less reliable is the instrument. This therefore confirms the reliability of the data collection instrument used as fit for the main work. (See Appendix I).

3.6 Procedure for Data Collection

The procedure involved in this experiment are as follows:

Stage One: Permission was sought from authorities of the schools involved for the use of their students and time. Secondly, permission was sought to use a lesson period which is 40 minute twice a week for a period of six weeks in the experimental school. The researcher familiarized with the career masters/counselors of the schools for their support and assistance in the research.

Stage Two: The two groups of the respondent that is the experimental and the control groups were given the students' Christian Religious Knowledge Achievement test typed in white coloured paper as a pretest and the test lasted for 60 minutes.

Stage Three: The experimental group was exposed to treatment in group, that is learning with instructional graphics package while the control group received their lesson with conventional method (chalkboard and textbooks). The researcher with the help of the subject teachers conducted the teaching and they made use of the instructional graphics package and the developed lesson plan. The experimental group was taught with a projector and a laptop and the treatment period lasted for six weeks.

Sequential lesson plan was developed by the researcher which was used for the conventional class. The topic was broken into achievable behaviour objectives, the lesson plan was given to Christian Religious Studies head teacher for validation.

Stage Four: At the end of the treatment, the same instrument that was used for pre-test was retyped in a yellow - coloured paper and numbering re-arranged and re-administered to the subjects to sustain post-test scores. In administering the instrument, the researcher distributed the student's Christian Religious Studies Achievement test to the students and instruct them to read the written instructions thoroughly before attempting to answer the questions. At the expiration of the time allocated for the test the paper was collected, marked and scored using the marking scheme which was designed by the researcher and validated by the validation panels mentioned in 3.0.1. The students scores of the two groups (experimental and control) were recorded separately which was used for the analysis of the study.

Lastly, the extent of interest in learning Christian Religious Studies with instructional graphics package was distributed to the students in order to ascertain their level of interest in the use of the package or the new method. The conventional class was taught with a prepared lesson plan, chalkboard and textbooks. Data was collated and given to an analyst who made use of SPSS (Statistical Package for Social Sciences) to analyze the data. The scores obtained were analyed based on the stated hypotheses using independent t-test and Mann-Whitney test.

3.8 Procedure for Data Analysis

The data for the study were analyzed using the Statistical Package for the Social Sciences (SPSS version 23) and the data were generated using Christian Students Religious Studies Performance Test (CSRKPT) and Interest in learning CRS concepts with instructional graphic package questionnaire (ILCRSCQ). The data collected from both groups were analyzed by comparing the mean scores of both the experimental and control

group using mean and standard deviations to answer the research questions. While hypotheses one and three were tested using independent t-test, hypothesis two was tested using Mann-Whitney U-Test. All the hypothesis were tested at $P \leq 0.05$ level of significance.

CHAPTER FOUR

DATA ANALYSIS AND RESULT

4.1 Introduction

This chapter contains the description of data analysis, result, summary of findings and discussions. The results present answers to research question and the hypotheseis.

4.2 Description of Variable

The study was designed to access the impact of instructional graphics on secondary school student's interest and performance in Christian Religious Studies in Onitsha Nigeria. To achieve the main objectives, three research questions was answered and they are:

Research Question 1: What is the difference between the mean scores of students exposed to instructional graphics package in learning Christian Religious Studies concepts and those exposed to the conventional method in Junior Secondary School in Onitsha Metropolis?

Table 4.1: Mean Scores of Students Exposed to the Instructional Graphic Package and those exposed to Conventional Method

Groups	N	Mean	Std.dev	Std.Err
Experimental	50	83.45	5.101	0.09
Control	40	51.42	1.502	0.11

Table 4.1 shows the mean scores of students of the two groups those exposed to the instructional graphics package and those exposed to the conventional method. The exposure of the experimental group to the instructional graphics package tended to have increased their performances. Those exposed to the instructional graphics package had a mean score of 83.45 where as that of the conventional method was 51.42. Going by the improvement made as a result of the use of instructional graphics package, the

conventional method of teaching did not record such improvement after the experiment. It could therefore be said that those taught with the instructional graphics package had a highest mean score than those taught with the conventional method.

Research Question 2: What is the difference between the level of interest of male and female students taught Christian Religious Studies concepts using Instructional graphics package?

Table 4.2: Level of Interest between Male and Female Students taught Christian Religious Studies Concepts Using Instructional Graphic Package

Sex	**N**	**Mean**	**Sum of Ranks**	**Mann Whitney**
Male	30	32.50	650.00	160.00
Female	20	20.83	625.00	00
Total	50			

Details of Table 4.3 above shows the mean scores of both sexes (male and female taught Christian Religious Studies concepts with instructional graphics package. It showed that differences exist between the level of interest of male and female students taught Christian Religious Studies concepts with the instructional graphics package. Their calculated mean rank were 32.50 (males) and 20.83 (females) and this implies that the male students showed more interest in the new method than the females.

Research Question 3: What are the differences between the academic performance of male and female students exposed to the instructional graphics package?

Table 4.3: Academic performance of male ad female students exposed to instructional graphics package

Groups	N	Mean	Std.dev	Std.Err
Male	30	80.20	17.12	2.101
Female	20	70.00	16.00	1.980

From the above table there is difference in the academic performances of male and female students exposed to the instructional graphics package. The males performed higher than the females, we can see that the males had a mean score of 87.22 while the females recorded a mean score of 71.67. It can be concluded that the males performed better academically than the females.

4.5 Test of Null Hypotheses

The hypotheses stated in chapter one are tested as follows:

Hypothesis 1: There is no significant difference between the mean scores of students exposed to the instructional graphics package and those exposed to the conventional method.

The mean performance scores of the students in the experimental group who were exposed to the instructional graphics package and those taught CRS using the conventional method were used for the test. All the scores were obtained before and after the experiment in which the groups were exposed to a treatment and the normal teaching method of chalkboard and textbooks. A summary of the t-test statistic is presented in Table 4.6.

Table 4.4: Independent t-test on mean scores of students exposed to the instructional graphics package and those exposed to the conventional method at a=0.05

Groups	N	Mean	Std.dev.	t-cal	df	Pvalue
Experimental	50	83.45	5.101	9.55	88	.003
Control	40	59.88	13.761			

Calculated P<0.05, calculated t > 1.96t df 88

Table 4.6 revealed that 90 students were sampled. The observed t-cal is 9.55 while the t-critical is 1.96 at the degree of freedom of 88 and the probability level of significance observed in the test is .003. The results of the tests revealed that the mean scores of students exposed to the instructional graphic package differed significantly from the scores of the students that are not exposed to the method. The p value which is (.003) is less than 0.05, with these observations there is enough evidence to reject the null hypothesis that there is no significant difference in the mean scores of students exposed to the instructional graphic package and those that are exposed to the conventional method. In other words the mean scores of student taught CRS with instructional graphics package is package is higher. The hypothesis was hereby rejected.

Hypothesis II: There is no significant difference between the level of interest of male and female students taught CRS concept with the Instructional Graphics Package

The extent of interest questionnaire administered to the students exposed to the instructional graphics Package was the independent variable for the test. The hypothesis was tested with Mann Whitney Test. Table 4 shows the summary of the test result for the method used in experiment.

Table 4.5: Summary of Mann Whitney Test on the Level of interest between male and female students taught CRS Concepts using Instructional graphics package at a=0.05

Sex	N	Mean Rank	Sum of Ranks	Mann Whitney	Z value	P
Male	30	32.50	650.00	160.00	-3.012	0.003
Female	20	20.83	625.00			
Total	**50**					

Details of the Non parametric test of Mann-Whitney statistics revealed that there is significant difference between the level of interest of male and female students taught CRS concept with the Instructional graphics package. Reasons being that the calculated p value of 0.003 was found to be lower than the 0.05 alpha level of significance. Their calculated level of interest were 32.50 and 20.83 by male and female students taught CRS with instructional graphics package respectively. This implies that the male students showed more interest in the use of instructional graphic package than the female students. Consequently the null hypothesis which states that there is no significant difference between the level of Interest of male and female students taught CRS concept with the instructional graphics package, is hereby rejected.

Hypothesis III: There is no significant difference between the academic performance of male and female students exposed to the instructional graphics package.

The scores of students exposed to the instructional graphics package was subjected to a test using independent t-test statistical tool. The summary of the result is presented in Table 4.6.

Table 4.6: Independent t-test on the academic performance of male and female students exposed to the instructional graphics package at a=0.05

Groups	N	Mean	Std.dev.	Std.er.	Df	t-cal	P.value
Male	30	80.20	17.121	2.101			
					48	2.505	0.004
Female	20	70.00	16.000	1.980			

Calculated P<0.05, calculated t > 1.96 at df 48

Result of the independent t-test statistic in table 4.6 showed that significant differences exist between academic performance of male and female students exposed to the instructional graphics package. Reasons being that the instructional pvalue of 0.004 was found to be lower than the 0.05 alpha level of significance and calculated t-value of 2.505 was found to be higher than the critical value of 1 .96 at df 48. Therefore the null hypothesis that there is no significant difference between the academic performance of male and female students exposed to instructional graphics package is hereby rejected.

4.6 Summary of Findings

1. The use of instructional graphics package was generally better in improving academic performances of students than the conventional method of instruction in Christian Religious Studies in junior secondary schools in Onitsha Nigeria. Those taught Christian Religious Studies with instructional graphics package performed more higher than students taught Christian Religious Studies with the conventional method.
2. The male students showed more interest in learning Christian Religious Studies concept with instructional graphics package than the female student. Instructional

graphics package ignited students' interest in learning Christian Religious Studies than the conventional method.

3. There was significant difference between the male and female students in their academic performance when exposed to the use of instructional graphics package.

4.7 Discussion of Findings

From the analysis of the data from this experiment, the use of instructional graphics package was found to have better advantages over the conventional method of teaching Christian Religious Studies in the Junior Secondary Schools. Three null hypotheses were tested in the study.

The findings of the study revealed the differences between mean scores of students exposed to the instructional graphics package and those exposed to the conventional method were investigated. The result revealed significant difference in the mean scores of students exposed to the instructional graphics package and those exposed to the conventional method. T-test statistical tool was used for the analysis and it was observed that the mean scores of students exposed to instructional graphics package was higher. The null hypothesis was therefore rejected. This finding is consistent with (Edikpa 2012) who contended that picture presentation should be used at all stages of learning at any unit to clarify and verify the mental images result from the visual impression gained from learning a subject using picture representation. The finding here agrees with Cheta (2002) that picture presentation is for the purpose of eliciting desired behaviour in the learner. This finding also agrees with Gambari, Yusuf and Balogun (2012) that the use of PowerPoint presentation should be encouraged in Nigerian schools and the students taught with PowerPoint presentation performed better than their counter parts taught with

conventional chalkboard. This finding concurs with Ezeugo and Agwagha (2000) who stressed that picture presentation can improve reading and academic performance of Business Studies students. Also the finding agrees with Ofoegbu (2005) that the use of different modes of picture presentation was effective in improving the academic achievement in Biology in Senior Secondary School students. This study disagrees with Onasanya and Omosewo (2011) that there is no significant difference in the performance of students taught with standard instructional materials and those taught with improvised instructional materials. It was also discovered that the use of standard instructional materials have the same importance with the improvised materials in the teaching and learning of physics in Ilorin metropolis.

The findings of the study also showed the level of interest between male and female students taught CRS concept with instructional graphics package was tested. Results indicated that there is difference in the level of interest between the male and female students. The null hypothesis was therefore rejected. The finding here is consistent with Nwoji (2012) who observe that picture presentation makes the lesson more interesting, vivid and attractive. This finding agrees with Meze (2013) that the use of instructional materials in the teaching and learning of Economics obviously improves the performance of students and that schools should provide enough instructional materials to enable teachers clarify their lesson. He further said that the use of new instructional methods makes a lesson more interesting. The finding is consistent with Nwike (2013) that effective use of instructional materials and or equipments makes the lesson less boring thereby motivating the students to be active participants in the lesson. Also, the finding of Oji and Igiri (2015) agrees with this in the sense that they are of the view that effective use of

instructional materials goes along way in making the lesson interesting and also motivates the students to learn effectively.

Lastly, the finding revealed the significant difference in the academic performances of male and female students exposed to the instructional graphics package. The finding agrees with Ifeakor (2006) that the male students tended to out perform their female counterpart in cognitive domain and there is need to equalize learning environment for both sexes. She also said that by implication, the results of the study has provided empirical evidence in respect of efficacy of commercially produced computer Assisted Instruction Package on achievement in Chemistry concepts. Also the finding is consistent with Adebule and Ayoola (2015) that significant difference exists between the performance of students taught with instructional materials and those taught without instructional materials. Their study also revealed that the male students performed better than the female students.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes, concludes and offers recommendations based on the outcome of the data collected and statistically analyzed for the study. It is a well provided suggestion for further studies on the subject. The chapter is organized under the following sub-headings; summary, conclusion, implication, recommendations and suggestion for further studies.

5.2 Summary

Contemporary Christian Religious Studies teachers teaching in secondary schools are faced with a number of classroom challenges in relation to the best method of instruction to be used. The outcome of these challenges amongst others is poor performance among students in the subject, insufficient instructional materials, poor knowledge of computer etc have led to the use of inappropriate method in teaching Christian Religious Studies. Many teachers have demonstrated lack of interest in preparing instructional materials to suit the topic they are handling. Materials like instructional graphics package are not readily available. In essence, majority of teachers teaching Christian Religious Studies in our secondary schools teach without the use of relevant teaching aids thereby making learning of CRS ineffective. It is in the light of the above situation that this study investigated the impact of instructional graphics strategy on secondary school students interest and performance in CRS concepts in Onitsha, Nigeria.

To carry out the investigation, one school each was selected from Onitsha North and Onitsha South constituency, one for the experimental group and the other for the control

group. Two groups were involved in the investigation. One of the groups was exposed to the instructional graphics package and the other was exposed to the conventional method. At the beginning of the experiment pre-test was conducted before the treatment and after the treatment. Data was collected from the two groups. The study was structured into five chapters, chapter one introduced the main theme of the study including a general background of the study, the statement of the problem, objectives of the study, research questions and hypotheses. Also in chapter one are scope of the study, and its significance.

Chapter two was a review of related literature while chapter three concentrated on the research methodologies which included the research design, study population, sample and sampling techniques instrumentation its validity and reliability. The chapter also included report of pilot study, how the test was conducted and statistical procedure used for the data collected. In chapter four, the statistical analysis of the data from the experiment were presented along the research questions and hypotheses; three null hypotheses were tested.

5.3 Conclusion

From the observations and findings from the questions and hypotheses tested in this study it can be concluded as follows:

The use instructional graphic package was generally better in improving academic performance of students than the conventional method of instruction in Christian Religion Studies in junior secondary schools.

Gender has no effect on the efficacy of instructional graphic package in improving the academic performance of students.

Instructional graphic package stimulated the interest of students to learning Christian Religious Studies effectively

5.4 Recommendations

The following recommendations were made on the basis of the outcome of this study:

1. The use of instructional graphics package should be encouraged in place of the conventional method of teaching for improvement in performances among students in junior secondary schools by teachers.
2. The federal, state and local government should endeavour to provide enough computers and projectors in our secondary schools to enhance learning and teaching.
3. It would be in line if funding of the teaching and learning of the subject is increased since this instructional graphic package require acquisition of materials and equipment.

5.6 Suggestions for Further Studies

1. A similar study should be conducted using other educational zones of the state.
2. The study should also be replicated in other states of the federation.
3. Another investigation should be conducted to determine the impact of instructional graphics package on the performance and interest of students in other subject areas.

5.7 Limitations of the Study

This study like the human endeavour has its limitations, schools used in this study were state schools federal and private schools were not part of the study. The study was limited to only two schools in Onitsha metropolis, the study was limited to Onitsha Educational Zone, the study was also limited to the use of pictures in teaching and learning CRS concepts. Other topics may also have their peculiarities which may limit the

generalization of the present findings on other topics. This short coming can affect the generalization made from the findings of the research.

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APPENDIX A

QUESTIONNAIRE ON IMPACT OF INSTRUCTIONAL GRAPHICS PACKAGE

Dear Respondent,

This questionnaire is designed to assist in a research on the "Impact of Instructional Graphics on Secondary School Students Interest and Performance in Christian Religious Studies in Onitsha Nigeria". The information required in this questionnaire is for research purpose only and will be treated with confidentiality. Therefore, kindly answer the questions as fully and truthfully as possible.

Name of School:

Class:

Gender: Male ( ) Female ( )

Here is a chance for you to express how you feel about learning Christian Religious Studies with Instructional Graphic Simulation Strategy by ticking (V) one option from this lists: Strongly Agree =SA Agree =A Disagree =D and Strongly Disagree SD

INSTRUCTIONAL GRAPHICS PACKAGE HAS HELPED ME TO:

S/N	ITEM	SA	A	D	SD
1	It has helped me to be more active in class				
2	My approach towards learning Christian Religious studies is greatly enhanced				
3	The topics covered in Christian Religious studies are interesting by the use of instructional Graphic simulation strategy.				
4.	Would you prefer another approach to learning Christian Religious Studies Concepts than the one we have used.				
5	Instructional Graphic simulation strategy has made me score more marks in Christian Religious studies than I used to.				
6.	Does the new learning experience improve your performance in Christian Religious Studies				
7	It has improved the frequency and quality of interaction in the class during lesson.				
8.	It has helped me to see the concepts of Christian Religious studies not as difficult as I thought they are to understand.				

9.	It increases my interest in Christian Religious studies				
10.	It has made Christian Religious Studies lesson more clearer and vivid through the use of pictures.				
11.	Instructional Graphic simulation strategy always made the lessons boring.				
12.	Instructional Graphic simulation strategy was more practical than the conventional method.				
13.	I always complete and submit my assignments on time if it involved learning with the Instructional Graphic Simulation Strategy.				
14.	I spend less time studying and understanding Christian Religious Studies after class.				
15.	Instructional Graphic Simulation Strategy has motivated me to read the Bible more				
16	With instructional Graphic simulation strategy Christian Religious Studies subject is now my best subject				

Strongly Agree= 5, Agreed=4, Disagreed =2, Strongly Disagreed=l

Thank you for completing this questionnaire.

APPENDIX B

Students' Christian Religious Knowledge Achievement Test (SCRKAT) items

1. Jesus was born in the town of
   (a) Bethlehem (b) Jordan (c) Jerusalem (d) Egypt

2. _____and_____are the parents of Jesus.
   (a)Joseph and Mary (b) John and Martha (c) Solomon and Phoebe
   (d) David and Penninah

3. _____was sent to Mary in a dream.
   (a) Angel Gabriel (b) Zachariah (c) John (d) Mathew

4. _____decided to take the census of the whole world.
   (a) Emperor Nero (b) Caesar Augustus (c) Emperor Constantine
   (d) Bill Clinton

5. _____visited Jesus when he was born.
   (a) Herod the Great (b) Emperor Nero (c) Three wise men (d) Caesar

6. Jesus grew up in a town called_____
   (a) Nazareth (b) Jordan (c) Nile (d) Egypt (e) Babylon

7. Jesus traveled to Jerusalem at age_____to celebrate the feast of_____(8)
   (a) 12 yrs and Passover (b) 4 yrs and feast of tabernacle (c) 10 yrs and Sabbath
   (d) 3 yrs and communion

9. _____is the forerunner of Jesus.
   (a) John (b) David (c) Peter (d) Paul

10. Jesus was baptized in river_____
    (a) Nile (b) Euphrates (c) Jordan (d) Bethlehem

11. _____baptised Jesus.
    (a) John the Baptist (b) God (c) Joseph (d) David

12. When Jesus was baptized the heaven opened and _____ descended from heaven.
    (a) first (b) water (c) bird (d) dove

13. This is my beloved son with whom I am well pleased" was said by whom
    (a) God (b)John (c) David (d) Joseph

14. Jesus fasted for
    (a) 100 days (b) 80 days (c) 200 days (d) 40 days and 40 nights

15. Man shall not live by_____alone.
(a) garri (b) rice (c) break (d) meat

16. Satan in Hebrew means
(a) enemy or devil (b) friend (c) neighbour (d) Alobam

17. Bethlehem was known as a city of_____
(a) Solomon (b) David (c) Abraham (d) Noah

18. Jesus was circumcised on the day.
(a) 2^{nd} day (b) 9^{th} day (c) 8^{th} day (d) 12^{th} day

19. The prophetess_____gave thanks to the Lord.
(a) Anna (b) Deborah (c) Ruth (d) Esther

20. Jesus began his ministry at age_____
(a) 50 (b)40 (c)30 (d) 35

APPENDIX C
STUDENTS' CHRISTIAN

Marking Scheme for Religious Knowledge Achievement Test (SCRKAT)

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

5 marks to each questions = 100%

APPENDIX D

Raw scores of the two sets of tests for determining the coefficient of reliability of the test instrument

S/NO	X	Y	X^2	Y^2	XY
1	95	92	9025	8464	8740
2	90	90	8100	8100	8100
3	95	95	9025	9025	9025
4	100	97	10000	9409	9700
5	95	97	9025	9409	9215
6	98	93	9604	8649	9114
7	90	86	8100	7396	7740
8	85	85	7225	7225	7225
9	70	71	4900	5041	4970
10	90	92	8100	8464	8280
11	80	76	6400	5776	6080
12	95	82	9025	6724	7790
13	100	97	10000	9409	9700
14	100	89	10000	7921	8900
15	95	93	9025	8649	8835
16	100	89	10000	7921	8900
17	95	89	9025	7921	8455
18	100	99	10000	9801	9900
19	85	82	7225	6724	6970
20	80	79	6400	6241	6320
N=20	∑X=1838	∑Y=1773	∑X2=1 70204	∑Y2=1 58269	∑XY =163959

Note: x and y are first and second tests scores for early child hood education pupils

(Statistics for finding reliability)

Pearson Product Moment Correlation computed for the Reliability index for the instrument used in the pilot study of the research.

The formula for Pearson Product Moment Correlation is given below:

$$R = \frac{N(\sum T.xy) - (x)\sum Y}{(CN(X^2)}$$

$$(NY^2)-(Y)^2)$$

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N=Number of respondents

X is test scores at first administration

Y is test scores at second administration

£x is scores at first administration is summed

is scores at second administration is summed

is scores at first administration is squared and summed

is scores at second administration is squared and summed

$(£x)^2$ is scores at first administration is summed and squared

$QT Y)^2$ is scores at second administration is summed and squared

Where

EX=1838 I £Y=1773 I £X2=170204 I £¥2=158269 I £XY -163959

N=20

Pearson Product Moment Correlation formula is:

$$r = \frac{Nf7xv) \quad T(x)\,T.Y}{£(N(ZX^2) \quad - \quad (}$$

$$= \frac{20*163959 - 1838*1773}{20*(179204)^2 - 20*158269 - (1773)^2} = 849 \; r = .84$$

64

APPENDIX E

Table 3.2: Determining the size of a random sample

N	S	N	S	N	S
10	10	220	140	1,200	291
15	14	230	144	1,300	297
20	19	240	148	1,400	302
25	24	250	152	1,500	306
30	28	260	155	1,600	310
35	32	270	159	1,700	313
40	36	280	162	1,800	317
45	40	290	165	1,900	320
50	44	300	169	2,000	322
55	48	320	175	2,200	327
60	52	340	181	2,400	331
65	56	360	186	2,600	335
70	59	380	191	2,800	338
75	63	400	196	3,000	341
80	66	420	201	3,500	346
85	70	440	205	4,000	351
90	73	460	210	4,500	354
95	76	480	214	5,000	357
100	80	500	217	6,000	361
110	86	550	226	7,000	364
120	92	600	234	8,000	367
130	97	650	242	9,000	368
140	103	700	248	10,000	370
150	108	750	254	15,000	375
160	113	800	260	20,000	377
170	118	850	265	30,000	379
180	123	900	269	40,000	380
190	127	950	274	50,000	381
200	132	1,000	278	75,000	382
210	136	1,100	285	100,000	384

Notes

N = Population size S = Sample size

Source: Krecjie and Morgan, 1070. In: Cohen, L. Education (5th Edition) London: Rouledge Manion, A.L. and Marrison, K. (2000) Research Methods in Palmer. Chapter 4 Page 95.

APPENDIX F
Statistical Output

S/No	Name of Student		
1	OFORKANSI CHIDIMMA	F	70
2	MMADUB	M	70
3	ODEDO CHINWE CHARITY	F	50
4	ANI CHINONSO	M	90
5	CHRISTIAN CHIGBATA IKEMEFUNA	M	90
6	OZIOMA OGBUYYI	F	80
7	PRISCA C. IWUNZE	F	70
8	MADUKASI UCHE ANASTESIA	F	90
9		M	50
10		M	40
11		M	40
12		F	50
13		M	50
14		F	50
15		M	50
16		M	55
17		F	50
18	CHISOM NNOLUM	F	50
19	IKENNA YENDU	M	90
20	MIRACLE ESIWOKE	M	70
21	OSSAI CHUKWUDI JOSEPH	M	90
22	NWACHI CHINEMLUM HARMONY	M	90
23	OKOYE STELLA	F	95
24	UGWU MARY ANN	F	95
25	OKAFOR FAITH	F	100
26	NWANNEAMA NGOZIKA	F	100
27	ONUORAHNGOZI	F	95
28	OKPALANWA MARTIN	M	95
29	ELECHI DANIEL KOSISO	M	100
30	OZIOKO FRANSCIS C.	M	95
31	EROYA VICTORIA OWOMACHI	F	100
32	AKWUAOBI STEPHEN	M	90
33	OFOEDU NZUBECHUKWU	M	95
34	EKEOCHA PROSPER C.	M	100
35	EDEH CHINENYE	F	100
36	NWANKPA CHINECHEREM	M	90

37	NNALUE EMEKA STEPHEN	M	50
38	EDWIN OKAFOR	M	60
39	UGWUANYI EBUKA EMMANUEL	M	70
40	OGOCHUKWU UDEMEZUE	F	60
41	OKECHUKWU IFEYINWA	F	60
42	OKOYE CHIAMEIKA	F	70
43	OBAREZI CHIADIKAOBI	M	70
44	ORIAKU CHIDERA	F	80
45	NWONU DANIEL	M	70
46	CHUKWUEMEKA FAITH	M	80
47	PASCAL ARIGOR	M	50
48	NNABUIFE OBINWE	M	60
49	ANIAKOR JOHN	M	50
50	AJAGBO MOLEOLY	M	60
51	OKOYE EBELE	F	70
52	SAMUEL CHINWEOKWU O.	M	80
53	MMADUKWE EBUKA	M	80
54	UCHE NICHOLAS	M	90
55	NWACHUKWU CHIGOZIE	M	70
56	NWEKE CHISOM	F	70
57	ANYAGBUO CHIOMA MILIAN	F	70
58	ANIAGBAOSO CHIEMEZIE CHRISTOGONUS	M	60
59	OSONDU CHINASA	F	80
60	ONGIBOR THERESA	F	70
61	NWABUNWANNE ESTHER	F	80
62	OKOYE MARY CYNTHIA	F	70
63	NUZA UGOCHUKWU	M	40
64	OGBONNA DIVINE	M	80
65	EKWENZE ONYINYECHI	F	50
66	CHINEDU UDEJI	M	60
67	IKEGBINAM SUNDAY CHUKWUDI	M	60
68	OBIDIGWE KOSISO	M	70
69	KOSISO OKAFOR	M	60
70	CHIZOBA C. NWANKWO	F	50
71	OGBONNA GOODNESS	M	80
72	ODILI IJEOMA	F	50
73	EZEH MERCY	F	70
74	ORUTA PRECIOUS	F	70
75	EKWEONU OLUCHUKWU	F	80

76	UKAMAKA EGBOM	F	60
77	OKOWIKE OLUEBUBE	F	90
78	ECHEMA GABRIEL	M	80
79	ODILE IFECHUKWU	M	70
80	ABAA NKIRUKA GOODNESS	F	80
81	BLESSING PETER	F	50
82	OFUONU CHINEDU	M	50
83	NWAELE CELESTINE	M	70
84	CHUKWUMA ESTHER	F	80
85	IFEAFU BLESSING ADAOBI	F	40
86	OKONKWO FELICIA	F	30
87	ALOZIE VICTOR	M	50
88	CHINYERE OBELUO	F	80
89	UCHEMA UWAKWE PROMISE	F	80
90	ALAZOR C. HOPE	F	70
91	IGWE CHIAMAKA	F	60
92	ERONDU PROMISE	M	60
93	OGOCHUKWU OBISI P.	F	90
94	OZOLGBONDU CHINWEOKWU	M	80
95	AKABUEZE CHIAMALA W.	F	90
96	OLUCHUKWU NCHEKWUBE	F	80
97	EZEH EMMANUEL OBINNA	M	90
98	UGWU EMMAUEL	M	60
99	ANYANWU DANIEL	M	80
100	AGU CHIAMALA MARY	F	70
101	IHENATUOHA UJUNWA	F	90
102	ABONYI FEARGOD	M	80
103	USULOR OBUMNEME	M	90
104	ILOCHI JOHN IKECHUKWU	M	90
105	NWACHUKWU CHIBUIKE JOHNPAUL	M	80
106	MARY CYNTHIA AGWU CHINAZA	F	70
107	ISAAC ADAUGO VIVIAN	F	60
108	OGEDI UKEONU	F	70
109	MMADUKA FRANCISCA	F	80
110	OKUEFUNA NKECHI MARYAM	F	50
111	ANINAGOR T. CHUKWUEBUKA	M	80
112	UDOM ONYINYECHI	F	80

113	CHIDERA	M	95
114	NWABUIKE CHIDERA	M	80
115	OBI OHARY CYNTHIA CHINAEMELUM	F	95
116	ADALA SOLOMON	M	85
117	NZUBE ANIDI	M	90
118	OKOYE NWANNEKA HAPPINESS	F	75
119	UZOAMAKA EDENE	F	100
120	CHIDERA NDUKWE	M	95
121	ALAZOR BENITA	F	20
122	CHUKWUEMEKA IBEGBUNAM	M	95
123	CHUKWURAH JULIET	F	80
124	OBIEKEZIE CHIDIMMA	F	80
125	CHIMA CHINWUKO	M	80
126	GLORIA CHUKWU	F	75
127	PASCHAL NWABUISI	M	95
128	NWEKOYO ESIMME J.	F	85
129	UGWU CHIGOZIE U.	M	85
130	AKUMA PATIENCE CHIAMAKA	F	85
131	CHUKWU ONYEDIKA JOSHUA	M	90
132	VICTOR AGBOM EMEKA	M	90
133	MMESOMA OKORO	F	100
134	NGWUEZE OBUMNEME	M	95
135	ANIJAH IZUCHUKWU	M	95
136	OYIBE SCHOLASTICA CHIDERA	F	90
137	CHIKWUOROM VIVIAN C.	F	90
138	EZE MMESOMA	F	85
139	JOHN HELEN NWANNEKA	M	70
140	ANEKWE PETER	M	95
141	ATAGA MARTIN	M	95
142	ABUCHI UGWUANYI MARTIN	M	95
143	MIRACLE OZOEMENA	M	100
144	NONSO AGALA	M	95
145	CONCILIA ONWUNMERE C.	F	90
146	OKWUNWANNE SANDRA ADAOBI	F	90
147	OJUKWU CHIOMA EMMANUELA	F	90
148	UGWU VICTOR	M	95

149	IHEJIRIKA KINDNESS AMARA	F	100
150	OZOEMENA CHIKODILI	M	95
151	NWANUTA UCHECHUKWU	M	90
152	NNAJI AMARACHI FAVOUR	F	90
153	NWEZE NZUBE EMMANUEL	M	95

APPENDIX G

LESSON PLAN I FOR CONVENTIONAL METHOD

Date: **14th May, 2016**

School: **Prince Memorial High School**

Class Level: **JSS 2**

Age range: **13 – 14 Years**

Subject: **Christian Religious Studies**

Topic: **The Early Life of Jesus (Lk 1:5-25)**

Time: **1hr 20 Mins (Double period)**

Number of Students in Class: 40

Instructional Materials/Resources: Textbooks, Chalkboard and Bible

Behavioural Objectives: As the lesson progress the pupil should be able to:

(a) Identify who prepared the way for the coming of Jesus Christ

(b) What John the Baptist ate in the wilderness.

(c) Narrate the story about the birth of John

Introduction

The teacher will introduce the lesson by telling the students the topic which is the early life of Jesus and that the topic is splitted into three units which are: (a) Preparation for the coming of Jesus (b) The Birth of Jesus (c) The childhood of Jesus Christ. The teacher then informs the students that they will start with the preparation for the coming of Jesus Christ.

Presentation

The teacher presents the lesson through the following steps:

Step I

The teacher tells the student that John the Baptist was the man who prepared the way for the coming of Jesus Christ. Before His birth, His mother Elizabeth was barren, his father Zachariah was a priest and they were old people. One day as Zachariah was performing his duty in the temple as a priest suddenly an angel of the Lord appeared to him, the angel told him that his wife would bear a son and the name of the boy would be

John. The angel told him the type of work the boy would perform and that he would prepare for the coming of the Lord.

Step II

As God promised, his wife Elizabeth conceived and bore a son and named him John. As John grew, people thought that he would be a priest like his father. He grew up and went into the wilderness, he wore a garment made of camel hair, he also wore a belt made from leather. His food was locust and honey of wild bees. While in the wilderness God revealed to him what his work would be.

Step III

John started preaching in the wilderness of Judea, he asked people to prepare themselves for the coming of the Lord. People that heard him went down to river Jordan and he baptized them. He seized the opportunity to tell them about Jesus Christ, he told them that He who was coming after him was mightier than He. He told them that his baptism was of water, but the one coming would baptize them with fire.

Evaluation

The teacher evaluate them by asking them about John the Baptist and how he prepared the way for Jesus Christ.

Conclusion

The teacher concludes the lesson by asking them to read the birth of Jesus which is the next topic to be treated.

LESSON PLAN II

Date: **21ST May, 2016**

School: **PMHS Onitsha**

Class Level: **JSS 2**

Age range: **13 – 14 Years**

Subject: **Christian Religious Studies**

Topic: **The Birth of Jesus Christ (Lk. 2:1-20)**

Time: **1hr 20 Mins (Double period)**

Number of Students in Class: 40

Instructional Materials/Resources: Textbooks, Chalkboard and Bible

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

(a) Mention the parents of Jesus

(b) Identify the gifts brought to Jesus by the three wise men.

(c) Narrate what led to the flight to Egypt.

Introduction

The teacher will introduce the lesson by asking the pupils questions based on their previous knowledge:

(1) Who prepared the way for the coming of Jesus?

(2) What are Jesus the Baptist doing in the wilderness of Judea?

(3) What was his cloth and belt made of?

Presentation

The teacher presents the lesson through the following steps:

Step I

The teacher tells the students that Mary was engaged to a man named Joseph. Angel Gabriel visited Mary and told her that she would bear a son whose name will be Jesus. When the time for her to deliver was approaching, Joseph went with her down to Bethlehem in Judea because caeser Augustus had ordered that census should be conducted in all the countries in his empire. Bethlehem city of David was the hometown of Joseph, as they were searching for a place to stay many fell into labour and Joseph rushed her into a stable where animals were kept, it was then that Mary gave birth to the Holy child Jesus and wrapped him in swadding clothes and laid him in a manger.

Step II

The teacher tells the students that after the birth of Jesus, wise men from the East came into Jerusalem to pay homage to the new born King because they had seen a great star in the sky which was a sign that a great king had been born. They followed the direction of the star and arrived in Jerusalem. They went to the place of King Herod thinking that it was there the child was born. When Herod heard about the birth of the new kings he became disturbed. He told the wise men to come back to him when they found the new king that he may go and worship him. Herod's intention was not to worship the new king but to kill him. When the wise men entered the place they saw the child with his mother Mary and they fell down and worshipped him. They gave him gifts of gold, Frankincense and myrrh.

Step III

The teacher explains to the students that after the wise men had gone, the angel of the Lord appeared to Joseph in a dream and told Joseph to take the child and the mother to Egypt. They would remain there until they were instructed to return because Herod would want to kill the child. When Herod failed to see the wise men again he was angry and ordered his soldiers to go to Bethlehem and kill all the baby boys under two years he did not know that Jesus had been taken to Egypt. Joseph and his family remained in Egypt till the death of Herod.

Evaluation

The teacher evaluates the students by asking to narrate the birth of Jesus.

Conclusion

The teacher concludes the lesson by asking them to read the childhood of Jesus which is the next topic.

LESSON PLAN III

Date: **28th May, 2016**

School: **Prince Memorial High School**

Class Level: **JSS 2**

Age range: **13 – 14 Years**

Subject: **Christian Religious Studies**

Topic: **The Childhood of Jesus Christ (Lk 2: 41-51; Mk 6:3; Lk 2:1-20, Matt. 2:13-15)**

Time: **1hr 20 Mins (Double period)**

Number of Students in Class: 40

Instructional Materials/Resources: Textbooks, Chalkboard and Bible

Behavioural Objectives: As the lesson progress the pupil should be able to:

1. Mention one occasion when Jesus suffered hardship in his childhood.
2. Know why the Jews celebrate the feast of Passover.
3. Explain the occupation of Jesus when he was a young man/

Introduction

The teacher introduces the lesson by asking them questions based on their previous knowledge:

(i) Why did Joseph and his wife travel to Bethlehem?

(ii) Why was Jesus laid in a manger?

(iii) Mention the gifts presented to Jesus by the wise men.

Presentation

The teacher presents the lesson through the following steps:

Step I:

The teacher tells the students that Jesus Christ had a difficult childhood, he endured hardship and his birth place took place in a strange place that is not fit for human beings to stay. During his childhood, Jesus obeyed his parents, he helped his parents in their domestic work. His father Joseph was a carpenter and Jesus helped him in his work and he also obeyed Jewish laws.

Step II

The teacher further tells the students that at age twelve, Jesus obeyed the religious custom of the Jews. He followed his parents to Jerusalem to celebrate the feast of Passover. Passover feast was a very important feast to the Jewish people and it was celebrated annually in commemoration of the exodus of the Israelites from Egypt. After the feast Jesus remained in the temple He sat among the teachers, listening and asking them questions. When the parents noticed that He was not in the company of those returning home, they went back to Jerusalem. They found him in the temple. He followed his parents down to Nazareth and he stayed with them, obeyed and respected them. He continued to help his father in his carpentry work, as a young man he was a carpenter until the time when God wanted him to fulfill the purpose of His coming on earth.

Evaluation

The teacher evaluates the students by asking some of them what Jesus was doing in the temple with the teachers.

Conclusions

The teacher concludes the lesson by giving them homework: write a short note on the childhood of Jesus.

TEACHING MODULE

Module 1: Unit 1

Title: Preparation for the coming of Jesus Christ (Lk. 1:5-25; 57-80)

Date Active: 14th May, 2016

Module Overview:

"The preparation for the coming of Jesus Christ"

Who prepared the way for Jesus Christ to come and the incidence that took place before the birth of Jesus Christ? How did John the Baptist was conceived? What led to the visit of Angel Gabriel? What happened when John the Baptist was born? What he ate? The clothes he wore and his place of domicile. In this two week module you will read about the man John the Baptist, mysteries surrounding his birth, the reason why his father was deaf and dumb until the day he was christened, why he lived in the wilderness, the type of clothes he wore and his food. Finally, why John the Baptist preached and baptized people in river Jordan.

Module objectives:

After completing this module, students will:

* Identify who prepared the way for Jesus Christ
* Explain why Zachariah was made dumb.
* Mention what John the Baptist ate and the clothes he worm in the wilderness of Judea.

Assessments

- Homework

Tools or Materials

- Bible
- Textbooks
- Projector
- Laptop

TEACHING MODULE

Module 1: Unit 2

Title: The Birth of Jesus Christ (Lk. 2:1-20; 30 & 32; Matt. 2:1-12)

Date Active: 21st May, 2016

Module Overview:

The birth of Jesus Christ according to the epistles of Luke and Matthew. Six months after angel Gabriel told Zacharian that his wife Elizabeth would bear a son, the angel also visited a virgin called Mary who was betrothed to a man called Joseph that she would conceived by the Holy Spirit. When her time of delivery was approaching, Joseph went down with her to Bethlehem because Caesar Augustus had ordered that census be conducted in all the countries in his empire. As they were searching for a place to stay, Mary fell into labour and she was rushed into a stable where animals were kept, it was there she gave birth and wrapped the baby in swaddling clothes and laid him on a manger. The three wisemen seeing the star of Jesus in the east came and paid homage to the baby with gifts of gold, frankincense and myrrh. After the departure of the wise men, the angel of the Lord told Joseph in a dream to escape to Egypt because Herod wants to kill the child and Joseph did as was instructed.

Module objectives:

After completing this module, students will:

* Mention the parents of Jesus Christ
* Identify why Jesus was born in a stable and laid in a manger
* Mention what gifts presented to Jesus by the wise men.

Assessments

- Homework

Tools or Materials

- Bible
- Textbooks
- Projector
- Laptop

TEACHING MODULE

Module 1: Unit 3

Title: The Childhood of Jesus Christ (Lk. 2:41-51; Mk.6:3, Lk. 2:1-20; Matt. 2:13-15)

Date Active: 28th May, 2016

Module Overview:

Jesus Christ had a difficult childhood. He endured hardship and he was given birth to in a strange place. During his childhood, Jesus obeyed his parents and he helped his parents in their domestic work. His father was a carpenter and Jesus help him in his work; he also obeyed Jewish laws and traditions, he was circumcised on the eight day after his birth because this was in obedience to the Jewish custom of circumcision. At the age of 12 he followed his parents to Jerusalem to celebrate the feast of Passover, Passover feast was very important to the Jewish people. After the feast Jesus remained in the temple at Jerusalem, he sat among the teachers, listening and asking them questions. When the parents noticed that he was not in the company of those returning home they went back to look for him. They found him in the temple and his mother asked him why he had treated them the way he did. Jesus replied by telling them that they must expect him to be in his father's house. His answer showed that he was getting ready for the work God wanted him to do.

Module objectives:

After completing this module, students will:

* Mention one occasion when Jesus suffered hardship in his childhood.
* Identify the occupation of Jesus when he was a young man.
* Explain why did the Jews celebrate the feast of Passover.

Assessments

- Homework

Tools or Materials

- Textbooks
- Bible
- Projector
- Laptop

LESSON PLAN FOR THE EXPERIMENTAL GROUP

Date: **14th May, 2016**

School: **Prince Memorial High School**

Class Level: **JSS 2**

Age Range: **13 – 14 Years**

Subject: **Christian Religious Studies**

Topic: **Preparation for the coming of Jesus Christ (Lk. 1:5, 25, 57-80; Matt. 3:1-12).**

Time: **1 Hr 20 Mins (Double Period)**

Number of Students in Class: 50

Instructional Materials: Projector, Laptop, Holy Bible

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

(a) Identify who prepared the way for the coming of Jesus Christ

(b) What John the Baptist ate in the wilderness.

(c) Narrate the story of the birth of John.

Introduction

The teacher entered the class with her laptop and projector, switched on the laptop and connect it to the projector. The work projected was in slides.

Presentation

The first slide showed the students the topic to be treated which was the early life of Jesus followed by the next slide which tells the students that the topic is sub-divided into three units which are: the preparation for the coming of Jesus, the birth of Jesus Christ and the childhood of Jesus Christ. The next slide followed with a text "preparation for the coming of Jesus Christ" after which the other slides with texts followed with the teacher's explanation.

Slide 4: Showed picture of Elizabeth and Zachariah who are the parents of John the Baptist.

Slide 5: Showed pictured of Angel Gabriel when he appeared to Elizabeth.

Slide 6: Showed John the Baptist wearing a cloth made of animal skin and how he ate locust and honey in the wilderness.

Slide 7: Showed John he Baptist preaching and baptizing people in the wilderness of Judea. Both the Pharisees and the Sadducees.

Evaluation: The teacher evaluated them by asking them about John Baptist and how he prepared for the coming of Jesus.

Conclusion: The teacher concludes the lesson by asking them to read the birth of Jesus which is their next topic.

LESSON PLAN II

Date: **21ST May, 2016**

School: **PMHS Onitsha**

Class Level: **JSS 2**

Age range: **13 – 14 Years**

Subject: **Christian Religious Studies**

Topic: **The Birth of Jesus Christ (Lk. 2:1-20)**

Time: **1hr 20 Mins (Double period)**

Number of Students in Class: 40

Instructional Materials/Resources: Textbooks, Chalkboard and Bible

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

(a) Mention the parents of Jesus

(b) Identify the gifts brought to Jesus by the three wise men.

(c) Narrate what led to the flight to Egypt.

Introduction

The teacher introduced the lesson by asking them questions based on their previous knowledge.

(i) Who prepared the way for the coming of Jesus?

(ii) What is John the Baptist doing in the wilderness of Judea?

(iii) What was his cloth and belt made of?

Presentation

Teacher connects her laptop to the projector in preparation for the day's lesson. The teacher projects slide 1 with the topic the "Birth of Jesus Christ" and informs the students about the topic to be treated. Following slide 1 with texts are:

Slide 2: Showed the picture of Angel Gabriel visiting Mary and giving her the prophecy of the birth of Jesus Christ.

Slide 3: Showed the picture of Mary and Joseph the parents of Jesus.

Slide 4: Showed the picture of the city of Bethlehem, what the city looked like.

Slide 5: Showed the picture of Caesar Augustus.

Slide 6: Showed the picture of Jesus, Mary and Jesus as he was laid on the manger by his mother.

Slide 7: Showed the picture of the star from the east that attracted the three wise men.

Slide 8: Showed the picture of the three wise men with their gifts of gold, frankincense and myrrh.

Slide 9: Showed the picture of King Herod.

Slide 10: Showed the picture of Jesus, Mary and Joseph on a donkey on their way to Egypt.

.LESSON PLAN III

Date: **28th May, 2016**

School: **Prince Memorial High School**

Class Level: **JSS 2**

Age range: **13 – 14 Years**

Subject: **Christian Religious Studies**

Topic: **The Childhood of Jesus Christ (Lk 2: 41-51; Mk 6:3; Lk 2:1-20, Matt. 2:13-15)**

Time: **1hr 20 Mins (Double period)**

Number of Students in Class: 40

Instructional Materials/Resources: Textbooks, Chalkboard and Bible

Behavioural Objectives: As the lesson progress the pupil should be able to:

1. Mention one occasion when Jesus suffered hardship in his childhood.
2. Know why the Jews celebrate the feast of Passover.
3. Explain the occupation of Jesus when he was a young man/

Introduction

The teacher introduces the lesson by asking them questions based on their previous knowledge:

(i) Why did Joseph and his wife travel to Bethlehem?

(ii) Why was Jesus laid in a manger?

(iii) Mention the gifts presented to Jesus by the wise men.

Presentation: The teacher after connecting the laptop to the projector, projects the topic for the day which is the childhood of Jesus in the first slide as she explains.

Slide 2: Showed the picture of young Jesus how big he has grown.

Slide 3: Showed picture of Joseph and Jesus in his father's carpentry shop where he was helping his father in his business.

Slide 4: Showed picture of Jesus at the age of twelve.

Slide 5: Showed the picture of the Passover.

Slide 6: Showed the picture of Jesus in the midst of the teachers listening to them and asking questions

Slide 7: Showed the picture of her mother when she came back to look for him in the temple.

Slide 8: Showed a text in form of a summary and that was what ended the treatment of the experimental group.

APPENDIX H

Table 3.1: List of secondary schools and Students' Distributions of JSS 2 classes

S/No	Name of School	No of Male Students	No. of Female Students	Total
1.	Dennis Memorial Grammar School	50	.	50
2.	Patterson Memorial Grammar School	45	-	45
3.	Queen of the Rosary College	-	42	42
4.	St. Charles College	50	-	50
5.	Anglican Girls' Grammar School	-	45	45
6.	Ado Girls Secondary School	-	48	48
7.	Inland Girls Secondary School	-	50	50
8.	Eastern Academy Onitsha	-	50	50
9.	Government Technical College Onitsha	50	-	50
10.	New Era Girls Secondary School	-	40	40
11.	Prince Memorial High School	48	-	48
12.	Washington Memorial Grammar School	25	25	50
13.	Metu Memorial Secondary School	-	45	45
14.	Onitsha High School	25	25	50
15.	Army Day Secondary School	30	20	50
16.	Christ The King College Onitsha	50	-	50
17.	Urban Boys Fegge Onitsha	48	-	48
18.	Urban Girls Fegge Onitsha	-	50	50
19.	Modebe Memorial Secondary School	30	20	50
20.	Metu College	50		50
21.	Special School for the Deaf	20	20	40
22.	Our Lady's High School Onitsha	48	-	48
23.	Community Girls Secondary School Okpoko	-	50	50
24.	Government Technical College Ossomalla	48	-	48
25.	Community Secondary School Atani	25	25	50
26.	Ideke Girls Secondary School Odekpe	-	50	50
27.	Josephine OduaMen. Secondary Sch. Akili O21202	20	20	40
28.	Community Boys Secondary School Okpoko	50	-	50
29.	Unity Comprehensive Girls High School Okpoko	-	48	48
30.	Ogbaru High School Ogbakuba	24	24	48
31.	Anthony Obaze Mem.comm. Secondary School Ochuche	25	25	50
32.	Community Secondary School lyiowa Odekpe	30	20	50

Grand Total = 1533

Source: Anambra State Ministry of Education (2014)

APPENDIX I

T-Test

NPar Tests

Mann-Whitney Test

Ranks

	sex	N	Mean Rank	Sum of Ranks
INTEREST	Male	30	20.83	625.00
	female	20	32.50	650.00
	Total	50		

Test Statistics[a]

	INTEREST
Mann-Whitney U	160.000
Wilcoxon W	625.000
Z	-3.012
Asymp. Sig. (2-tailed)	.003

a. Grouping Variable: sex

Impact of instructional graphic simulation strategy
On learning CRS
Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.892	.942	16

Item Statistics

	Mean	Std. Deviation	N
it has helped me to be more active in class	3.60	.883	20
my approach towards learning Christian religious studies is greatly enhanced	3.10	1.410	20
the topics covered in Christian religious studies are interesting by the use of instructional graphic simulation strategy	2.80	1.436	20
would you prefer another approach to learning Christian religious studies concept than one we have used	1.75	.550	20

instructional graphic simulation strategy has made me score more marks in Christian religious studies than i used to do	2.75	1.446	20
does the new learning experience improve your performance in Christian religious studies	2.40	1.353	20
it has improved the frequencies and quality of interaction in the class during lesson	2.80	1.361	20
it has helped me to see the concepts of Christian religious studies not as difficult as i thought they are to understand	2.25	1.293	20
it increases my interests in Christian religious studies	2.50	1.357	20
it has made Christian religious studies lessons more clearer and vivid through the use of pictures	2.65	1.387	20
instructional graphic simulation strtegy always made the lessons boring	1.70	.657	20
instructional graphic simulation strategy was more practical than the conventional method	2.55	1.234	20
i always complete and submit my assignment on time if it involved learning with the instructional graphic simulation strategy	3.70	4.532	20
i spend less time studying and understanding Christian religious studies after class	2.60	1.465	20
instructional graphic simulation strategy has motivated me to read the bible more	2.00	1.124	20
with instructional graphic simulation strategy Christian religious studies subject is now my best subject	2.80	1.436	20

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.622	1.700	3.700	2.000	2.176	.311	16

Appendix B: Raw scores of the two sets of tests for determining the coefficient of reliability of the test instrument

S/NO	X	Y	X^2	Y^2	XY
1	95	92	9025	8464	8740
2	90	90	8100	8100	8100
3	95	95	9025	9025	9025
4	100	97	10000	9409	9700
5	95	97	9025	9409	9215
6	98	93	9604	8649	9114
7	90	86	8100	7396	7740
8	85	85	7225	7225	7225
9	70	71	4900	5041	4970
10	90	92	8100	8464	8280
11	80	76	6400	5776	6080
12	95	82	9025	6724	7790
13	100	97	10000	9409	9700
14	100	89	10000	7921	8900
15	95	93	9025	8649	8835
16	100	89	10000	7921	8900
17	95	89	9025	7921	8455
18	100	99	10000	9801	9900
19	85	82	7225	6724	6970
20	80	79	6400	6241	6320
N=**20**	∑**X**=1838	∑**Y**=1773	∑**X2**=170204	∑**Y2**=158269	∑**XY** =163959

Note: x and y are first and second tests scores for early child hood education pupils

APPENDIX (Statistics for finding reliability)

Pearson Product Moment Correlation computed for the Reliability index for the instrument used in the pilot study of the research.

The formula for Pearson Product Moment Correlation is given below:

$$R = \frac{N(\sum xy) - (x)\sum Y}{((N(X^2) - (NY^2) - (Y)^2)}$$

N=Number of respondents

X is test scores at first administration

Y is test scores at second administration

$\sum x$ is scores at first administration is summed

$\sum y$ is scores at second administration is summed

$\sum x^2$ is scores at first administration is squared and summed

$\sum Y^2$ is scores at second administration is squared and summed

$(\sum x)^2$ is scores at first administration is summed and squared

$(\sum Y)^2$ is scores at second administration is summed and squared

Where

N=**20**	∑**X**=1838	∑**Y**=1773	∑**X2**=170204	∑**Y2**=158269	∑**XY** =163959

Pearson Product Moment Correlation formula is:

$$r = \frac{N(\sum xy) - \sum (x) \sum Y}{((N(\sum X^2) - (N*\sum Y^2) - (\sum Y)^2}$$

$$= \frac{20*163959 - 1838*1773}{20*(179204)^2 - 20*158269 - (1773)^2}$$

=.849

r=.84

T-Test

Group Statistics

	sex	N	Mean	Std. Deviation	Std. Error Mean
scores	Male	30	80.20	17.121	2.101
	female	20	70.00	16.00	1.980

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
scores	Equal variances assumed	.053	.819	2.505	48	.004	10.20	3.201	6.250	21.761
	Equal variances not assumed			2.505	62.621	0.004	10.20	3.201	6.255	21.760

```
T-TEST GROUPS=groups(1 2)
  /MISSING=ANALYSIS
  /VARIABLES=scores
  /CRITERIA=CI(.95).
```

T-Test

Group Statistics

	groups	N	Mean	Std. Deviation	Std. Error Mean
scores	Experimental	50	83.45	5.101	0.095
	Control	40	51.42	11.502	1.111

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
scores	Equal variances assumed	13.120	.002	9.550	88	.003	32.030	1.101	26.110	36.110
	Equal variances not assumed			9.550	74.101	.003	32.030	1.103	26.110	36.120

NPar Tests

Mann-Whitney Test

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	sex	N	Mean Rank	Sum of Ranks
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Mann-Whitney U	160.000
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a. Grouping Variable: sex