EVALUATION OF COLOUR PREFERENCES AMONG PRE-PRIMARY SCHOOL CHILDREN IN ZARIA METROPOLIS: IMPLICATION FOR TEACHING AND LEARNING

BY

OKEZIE, STELLA NNENNA

M.ED/EDU/02051/2008/2009

DEPARTMENT OF EDUCATIONAL FOUNDATION AND CURRICULUM
AHMADU BELLO UNIVERSITY, ZARIA. NIGERIA.

FEBRUARY 2014

EVALUATION OF COLOUR PREFERENCES AMONG PRE-PRIMARY SCHOOL CHILDREN IN ZARIA METROPOLIS: IMPLICATION FOR TEACHING AND LEARNING

BY

OKEZIE, STELLA NNENNA

M.ED/EDU/02051/2008/2009

THESIS SUBMITTED TO POSTGRADUATE SCHOOL
AHMADU BELLO UNIVERSITY ZARIA. NIGERIA
IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTERS DEGREE IN EDUCATION (INSTRUCTIONAL TECHNOLOGY)

DEPARTMENT OF EDUCATIONAL FOUNDATION AND CURRICULUM
AHMADU BELLO UNIVERSITY, ZARIA. NIGERIA.

FEBRUARY 2014

DECLARATION

I declare that this study is an original work of research done by me to the best of my knowledge; it has never been presented partially or wholly anywhere for the award of higher degree in any form.

. . . .

Okezie, Stella Nnenna **Date**

CERTIFICATION

This Thesis "EVALUATION OF COLOUR PREFERENCES AMONG PRE-PRIMARY SCHOOL CHILDREN IN ZARIA METROPOLIS: IMPLICATION FOR TEACHING AND LEARNING" by Okezie, Stella Nnenna meets the regulation governing the award of Masters Degree In Instructional Technology of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

....

Professor. A.T. Kadage Date

Chairman, Supervisory Committee

....

Dr. J.I. Azi Date

Member, Supervisory Committee

....

Dr. B. Maina Date

Head of Department

Education Foundation and Curriculum

....

Prof. A. A. Joshua Date

Dean, School of Postgraduate Studies

DEDICATION

I dedicate this work to The Almighty God who has been my chief helper throughout my life. May all honour, glory, adoration be ascribed to him now and Forever. Amen.

ACKNOWLEDGEMENT

I Acknowledge JEHOVAH GOD who has continually been my Chief helper in every aspect of my life even in this academic pursuit. I express sincere gratitude to my supervisors Prof. A.T. Kadage and Dr J.I. Azi who made time to go through my work repeatedly giving me guidance and directions. Many thanks go to all my other lecturers Dr. Salisu, Prof. Abolade, Mal M.O. Ibrahim, Mal Z. Suleiman for their tireless supports, encouragement and consultations. I acknowledge my indebtedness to the Education secretary Sabon-gari Zaria and The head teachers, as well as the class room teachers of nursery classes of layin Zomo L.E.A, Bomo L.E.A., Muchiya Model primary school, Maramara L.E.A, Angwan Kanawa L.E.A., Samaru Model primary school, Dogarawa L.E.A., Jafaru Model primary school, Aminu Model primary school and Saidu Model primary school for all the assistance they readily rendered to me during my research. I humbly appreciate the contributions of my collegues Funmi Buraimoh, Musa Idoko, Deborah Boyis, and Charity Boor.

I finally and very sincerely render my thanks to my Husband who tirelessly assisted me financially and morally throughout this programme. I will not fail to mention his tireless efforts in getting all my assignments typed, the manuscript of this work, the several times I had to make corrections my husband humbly saw that my work was typed properly. I raise my hands for him.

ABSTRACT

This thesis aims at evaluating the "Colour Preferences among Pre-primary School Children in Zaria" Metropolis: Implication for Teaching and learning. The relevance of colour in the pre-primary school environment, The relationship between colour preference and academic performance of the E.C.C.D.E. child. Evaluating colour choice among males and females of the pre-primary school level and determining the difference between the colour preference of E.C.C.D.E. child in rural areas and their counterparts in the urban areas. The research design for this study was post- test only control group design. The total population was 864 and sample size was 100. The direct observation method was adopted to collect the data. Percentage mode and Chi-square was used to retain or reject the Null hypotheses stated (0.05). Four hypotheses were tested and findings showed that hypotheses one and three were rejected while hypotheses two and four were retained. The study revealed that colour combination could enhance increased academic performance as well as clarify. It also showed that gender and location has no effect on colour preference. It was recommended that colour combinations should be incorporated as part of structure of the pre-primary school environment in Zaria metropolis. Teaching and learning should be done as much as possible in colour presentations, the provision of learning materials and other such compositions should take the choices for the four (4) and five (5) years old into consideration and that in improvisation of instructional materials in the pre-primary schools. Colour should be one of the factors to be considered.

TABLE OF CONTENTS

DECLARATION: i

CERTIFICATION: ii

DEDICATION: iii

ACKNOWLEDGEMENT: iv

ABSTRACT: v

CHAPTER ONE

1.1 Introduction: 1

1.2 Background of the Study: 1

1.3 Statement of the Problem: 4

1.4 Objectives of the Study: 6

1.5 Research Questions: 6

1.6 Hypotheses: 6

1.7 Significance of the Study: 7

1.8 Scope of the Study: 9

1.9 Operational definition of terms: 9

CHAPTER TWO

2.1 Review of related Literature: 15

2.2 Introduction: 15

2.3 History of ECCDE Programme: 15

2.4 History of Instructional Technology: 16

2.5 Importance of colour: 18

2.6 Factors upon which colour preference are based: 25

2.7 Cultural Effects on Tints and Shades: 28

2.8 Colour is Psychological: 30

2.9 Symbolic Meaning of Colours And How It Influences Learning: . . 33

2.10 The Beauty of Colour: 44

2.11 Colour Preferences and Age: 47

2.12 Colour Preferences and Gender: 50

2.13 Effects of Colour on Learning: 53

2.14 Summary of the Literature Review 57

CHAPTER THREE

3.1 Research Methodology: 59

3.2 Introduction: 59

3.3 Research Design: 59

3.4 Population: 59

3.5 Sampling and Sampling Procedure: 60

3.6 Instrumentation: 61

3.7 Procedure for Data collection: 65

3.8 Validity: 66

3.9 Reliability: 66

3.10 Pilot study: 66

3.11 Procedure for Data Analysis: 68

CHAPTER FOUR

4.1 Data presentation and analysis: 69

4.2 Introduction: 69

4.3 Presentation of Data: 69

4.4 Test of Hypotheses: 72

4.4.1 Null Hypotheses I: 72

4.4.2 Null Hypotheses II: 74

4.4.3 Null Hypotheses III: 75

4.4.4 Null Hypotheses IV: 76

4.5 Major findings of the study: 78

4.6 The implication of findings: 78

4.7 Discussion: 79

CHAPTER FIVE

Summary, Conclusion, and Recommendation:

5.1 Introduction: 81

5.2 Summary: 81

5.3 Conclusion: 82

5.4 Recommendation: 83

5.5 Recommendation for further study: 84

References: 85

Appendix: 90

List of Tables: 93

CHAPTER ONE

INTRODUCTION

1.2 Background of the Study

Colour inundates every facet of our lives, primarily in the form of manufacture colour.

In ages past, however, coloured objects were considered a luxury possessed by the wealthy. The remainder of the population experienced little colour, only being able to afford natural materials in neutral colours. In a sense colour has lost its “specialness” today and its effects are taken for granted.

The human nature is bound to contain historical context of colour symbolic preference beautification and communication that plays a vital role in communities in both historic and modern times throughout the world. Daniel (2002), viewed that the tendency of everyday visual perception is to bisect the visible world into two parts that is colour and object. We perceive objects more with their colours. The term colour is perhaps simpler to define than to explain its influence and significance. There are many competing definitions of colour.

Colour is generally defined as the characteristics of any object that is described in terms of hue, lightness and saturation. In 1666, Sir Isaac Newton noted that the spectrum was continuous, but decided to use seven colours (red, orange, yellow, green, blue, indigo and Violet) by analogue with the notes of musical scale (Britainnica ‘colour’). Although,Newton stated that there were seven colours in the spectrum, he realized that colours other than those in the spectral sequence do exist.

All the colours in the universe which are made by light and depend not on the power of imagination are either the colours of homogeneal lights (spectral colours) or compound of the spectral colours.

In the Oxford Advanced Learners Dictionary, colour is defined as that "quality of nature of which objects present different appearances to the eye when considered with regard only to the kind of light reflected from their surface." In the international Encyclopedia of social sciences, the concept is defined on page 221 as:

(a) Stimulus or things as when we speak of the colours of grasses,

Flowers and parts of other subjects;

(b) Sensation as when one says that of a colour look.

(c) Characteristics of light that are identified neither with radiant energy nor with sensation.

From these definitions, one can say that colour is a complexion that an object is seen to have when light falls on it.

According to Encyclopedia Encarta (2005), colours are defined as Physical phenomenon of light or visual portion of the electromagnetic spectrum. It therefore means that colour is light, where there is no light, there can be no colour. Not only do we not see colour in the dark room, but the colour is really not there. White light is a mixture of colours.

Cheskin (1951), states that colours are wave lengths of light. At one end of the spectrum of radiant energy are radio waves and infra-red waves of heat that are very long and invisible, at the opposite end of a spectrum of radiant energy are the invisible very short ultra-violet waves, followed by the even shorter cosmic ray waves. Between the very long and visible sound waves and ultra-

violet waves and infra-red waves at one end of the spectrum and the very short and invisible ultra-violet waves and cosmic waves at the other end are the waves of radiant energy that are visible. These waves are the components of visible light, which we call colour.

Silver (1987), said it has been proven that advertisement in colour increase sales to fifteen times more than the same advertisement in black and white. Silver (1981), classified all colours into five: yellow, red, and blue were classified as pigment primary colours. Secondary colours are green, orange and violet, while Russel, olive and Citronel are classified as tertiary colours. Theoretically, black and white has been regarded as classification of colours called neutral. Gold and Silver are the colours that are same in appearance and tone. There were no contrasts; Gold and Silver are classification of colours referred to as metallic.

Julius (2001), viewed that "colour attracts and excites as such advertising outfits must devise strategies to add values in the application of colours. To sell goods and services you must command the attention of the audience" Colour is an important psychological factor in our daily lives and is universally associated with beauty. A beautiful form is made up of varied parts, all complimenting one another. Beautiful forms like beautiful colours possess elements of variety. This variety gives room for choice therefore colour preference can be explained as the choice of colour among many. The word preference is derived from the word 'prefer' and according to Oxford Advance Dictionary (1977) preference means like better, choose rather, or favoured against one over another. Therefore, colour preference according to investigation conducted by Gelineau (1981), may mean individual colour stability, relationship between colour and personality, likeness of a person or group of persons favoured colour.

Colour taste and preferences have always been transparent in the customs, rituals and taboos, arts and culture of peoples in different parts of the world.

From the foregoing, it is necessary to carry out an investigation which will provide data on colour preference of pre-primary school children in selected schools in Zaria Metropolis, in order to outline their implications in the production of Learning and Instructional Materials (LIMS) in the Nursery and primary schools. The result of this study will help the designers and printers in deciding the colour scheme that can be used for children in designing prototype, teaching aids, books and other educational materials that will capture the attention of children of four and five year olds. The result will also be useful for industries that produce products and toys which are familiar with children for mass industrial product and for mass marketing.

1.3 Statement of the Problem

Colours have been observed to affect human emotions and behaviours and the tastes are said to differ from one person to the other. The importance attached to colour is reflected in the preparation of Learning and Instructional Materials (LIMS) for school use. In the studies carried out by Dauda (1990) and Ochu (1992) respectively, it was found out that colours are indispensible factors for effective instructional materials. This is because they are rich means for generating a rich visual presentation. Ochu found out that, Egbira (A tribe in Kogi state in Nigeria) pre-school children preferred yellow, orange and red hues. In Dauda's study, he discovered that Nursery/Primary school children in Ogun State Nigeria preferred orange and blue hues.

Among other researchers from the Southern part of the country Salihu (1978) conducted a study on differences in colour – form preference among children in Oyi Local Government Area of Kwara state Nigeria. His findings showed that age was a clear factor in determining the trends of colour preferencs and children that have great preference for colour. Also, Obielodun (1984) investigated warm and cool colour preference on children, the warm colour response of 180 subjects used, showed preference for warm colours. One of the recommendations of the study was that

instructional media should be designed using colours that elicit a high frequency of response from the student. It has therefore become necessary to find out the colour preferences of children in the Northern part of the country. Therefore, the researcher's main purpose is to find out the colour preferences of four (4) and five (5) year old Pre-primary school children and the implication of their choice of colours in learning.

Producers of children's learning and instructional materials such as flannel charts, still and motion pictures as well as publishers of story and text books have been publishing and producing LIMS without careful note of using hues that are appealing to children. These and other factors like the type of illustrations used, the inability or inconsistency of applying such elements like surprise (an abrupt infusion of colour or a dramatic change of size) when producing LIMS for children's information, but worn out when the message becomes monotonous, coupled with the inappropriate use of colours that can arouse and capture the interest and attention of learners. This is what is apparently lacking among the pre-primary school children in Zaria.

Teachers are also sharing in this problem because the teaching materials that are readily available are those that the colour combinations are not appealing and so the teacher's job is made more tasking because teachers with sound knowledge of the effects of colour on learning have to improvise the materials they can use to teach effectively.

In addition to these, the teachers have the added responsibility of providing these materials, when the school could not provide all the needed materials. This may also create a situation of lack of uniformity in the teaching materials. The school administrators have to spend extra time to critically search for appropriate teaching and learning materials for teachers and children's use.

1.4 Objectives of the Study

The study is specifically set out:

i. To determine if colour is a relevant element in the pre-primary school environment in Zaria Metropolis.

ii. To determine the relationship between colour preference in the pre-primary school environment and learning among pre-primary school children.

iii. To determine colour preferences among gender at the pre-primary school level.

iv. To determine the difference between the colour preferences of the pre-primary school children in rural area schools and their counterparts in the urban area schools.

1.5 Research Questions

To serve as a guide to the study, the following research questions are posed:

i. Is colour a relevant element in pre-primary school environment?

ii. What is the relationship between colour preference in the pre-primary school environment and academic performance of the children?

iii. Does gender have any effect on colour preferences among ECCDE children?

iv. Are there any differences between colour preferences of pre-primary school children in rural area schools and their counterparts in the urban area schools?

1.6 Hypotheses

For the purpose of this research project the following hypotheses will be tested;

i. Colour is not a relevant element in the pre-primary school environment.

ii. Colour preference among pre-primary school has no effect on the academic performance of the ECCDE child in Zaria metropolis.

iii. There is no significant difference between the colour preferences of the pre-primary school boys and girls in Zaria metropolis.

iv. There is no significant difference between the colour preferences of the pre-primary school children in the rural area and those in the urban area schools.

Basic Assumptions of the Study

1. It is assumed that colour naturally excites and attracts and so colourful instructional materials are bound to attract and arouse the interest of learners.

2. It is also assumed that if all things were to be in white and black (monotonous), human beings would have very great tasks in identifying and differentiating things.

3. It is assumed that if all teaching and learning materials, environment and facilities were all in white and black, the task of teaching and learning would have been very difficult if not impossible.

1.7 Significance of the Study

In appropriate use of children's preferred colours in the production and publication of learning and instructional materials have greatly reduced or in some forms which includes making learning task relatively easy, arousal and sustenance and maintenance of learners attention and

ability to bring about retention and power to recall facts and exposing learners to richer learning experiences.

The following will benefit from this study:

Educational curriculum planners and policy formulators; Educational curriculum and policies for instructional purposes will be planned, formulated in a way that will enhance use of children's preferred colours to make learning interesting. As an educator and educational planner, it's important to know how colour influences learning and what colours are best for specific age levels and environments.

Educational monitoring agents: The agent will use results of the research to advice and monitor quality of instructional texts for use in schools.

Producers of other educational materials, producers of every educational material will be able to use the complimenting colours that are favoured by children when producing educational materials

Advertising agents; Advertising agencies will be able to make adverts especially on children's products in a manner that will make young ones hunt for their products, thereby increasing their sales.

Industries that produce children's products should endeavour to produce children's products with complimenting/ appealing colours to children.

Health practitioners like Nurses and Pediatricians. These groups of people will make children's wards in clinics and hospitals look appealing and soothing. Colour consultants believe that the colour used in the design of environment can have a significant impact on the emotions and

feeling of people in that environment. For example the ancient Chinese, Egyptians and Indians believe chroma – therapy (healing with colours).

Parents and teachers of Nursery/primary schools children; Parents to endeavour to buy items as well as learning materials that can impress and arouse the interest of children to learn. Teachers will also produce visual materials that can enhance learning and emotional response.

1.8 Scope of the Study

This research project shall be limited to ten schools in Zaria Metropolis due to financial constraints and availability of time.

The Local Government schools will be used because the pupils are mostly children from the indigenous Hausa speaking communities.

The schools are:

- Saidu Model School

  Angwan Kanawa L.E.A.

- Layin Zomo L.E.A.
- Bomo L.E.A
- Muchia L.E.A.
- Ja'afaru Model School 1
- Samaru Model School
- Aminu Model Primary School
- Maramara Model Primary School

- Dogarawa L.E.A.

1.9 Operational Definition of Terms

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

1 ECCDE= Early Child Care Development Education.

2 LIMS = Learning and Instructional materials

3 Hue: Is frequently used in the sense of colour as red, yellow, etc. It is also Used when referring to a variation of colours with it. Thus we say that the hues of blue spread out towards the green-blues on the other. To the scientist, hue means a colour of a definite wave-length.

4 Chroma: Refers to the strength, brilliancy or intensity of a colour. We can say that Chroma – yellow is a brilliant colour of high Chroma; or that it is a strong colour, while yellow –ochre is a dull colour of weak Chroma. Colours lose in Chroma or intensity as a result of it being neutralized or grayed.

5 Shade: Refers to the darker effects produced by adding black to a colour. In a broader sense, the term shade is now commonly used to include the tints of lighter steps as a colour, as well as the darker effects. The shade of a colour refers to spectral or brilliant colour to which black has been added thus lowering the tone.

6 Tint: A tint of a colour is of lighter effect produced by adding white to an oil colour or water to a transparent stain. A tint is lighter and more delicate than the standard colour which is the spectral hue.

7 Tone: Usually refers to the general effect," as painted in dark tones" means that the effect is dark. Adding black or white to normal colour changes its tone.

8 Warm colour: Are the fire colours represented by red, orange and yellow. Red is sometimes called the hot colour.

9 Cold colour: Are the ice colours of blue. Its neighbors in the spectrum, green and violet. A yellow – green may be called a warm – green and a red – violet called a warm – violet.

10 Colours of the prismatic solar spectrum: While light or sunlight has been known to be composed of seven prismatic colour: (colours of rainbow) red, orange, yellow, green, blue, indigo, and violet.

11 Primary colours: For many years, red, yellow and blue have been called the primary colours because it was thought that they cannot be made by mixing pigment together.

12 Secondary colours: When pigments of the primary colours are mixed together in pairs, new hues called secondary colours are produced.

Red + Yellow = Orange

Yellow + Blue = green

Red + Blue = Violet (purple)

13 Tertiary colour: By mixing the secondary colours in pairs, a new set of hues obtained are known as Olive, Citrine and Russet called tertiary colours.

Orange + Green = Citrine

Green + Violet = Olive

Orange + Violet = Russet

In mixing colour for citrine, (citron) four parts of orange and one part of green are required. Olive is made from four parts of green and one part of violet. Russet is obtained by taking four parts of orange and one part of violet.

14 Quaternary colours: Are obtained by mixing tertiary colours in pairs

Citrine	+	Russet	=	Buff
Russet	+	Olive	=	Plum
Citrine	+	Olive	=	Sage

15 Complex mixed colours: Many other colours can be obtained by mixing primary, secondary and tertiary colours together in various proportions. The result from any mixture depends upon the Chroma of brilliancy of the primary colours used as the original pigments.

16 Neutral colours: Black and white, while not colours in the ordinary sense. They can be used for contrasting effects with any of the colours and making a clear harmony. Black and white is often mixed with other colours to make tints and shades. When mixed together they make a gray. Any colour can be neutralized or changed to a neutral gray by adding a sufficient amount of its complimentary colour.

17 The colour circle: Many attributes on colours arrange twelve of the colours of the spectrum in a circle using red, orange, yellow, green, blue and violet with intermediate or half steps between. Some writers use ten steps instead of twelve in the circle.

18 Complimentary colours: Effects that can be produced by mingling or blending lights cannot be reproduced by mixing pigments. The complimentary colours in the two cases are not exactly the same. The pigment compliment of a colour is that which

when mixed with it produces a neutral gray. The approximate compliment of any pigment colour can be found by looking at the opposite ends of any diameter on the circle.

19 Contrasts: Effective contrasts can be scored by using black or white adjacent to a colour or by placing complimentary colours side by side. A neutral gray can also be used with colours if a less striking or more subdued contrast is wanted. One or both of two complimentary colours may be omitted and the colours adjacent to either one on the colour circle substituted for the broken – up hue, in order to produce more subtle or delicate contrasts.

20 Colour Triads: An equilateral triangle of the proper size, so that the three points of the angle just touch the circumference of a circle. When the triangle is placed over the circle, will divide the colour-ring into three equal parts. The points of the triangle will, in any position that it is placed, point to three colours that are approximately harmonious because any two mixed together, will produce the complement of the third.



Colour Wheel



Colour Scheme

21.Colour harmony: Are colours that have pleasing effect when they are placed

together. Each has unlimited number of variations changing towards the adjacent hue on each side of it on the colour circle.

22. Analogous and Contrasting colours: Are the two types of colour harmonies. Analogous colours are closely related or those that are adjacent to each other on the circle. Analogous colours are much used in decorative schemes for home and in women's costume. Colour contrast harmony, are found at the ends of any diameter on the colour circle as yellow and violet contrast harmony may be through a tone balance.
23. Spectral colours: Are those that come from white light and can be recombined into white by the use of a second prism, which must be inverted and placed so as to gather the rays of light that have been dispersed into a spectrum by a similar prism, which originally broke up the white light into spectral colours.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.2 Introduction

Colours have been found to play tremendous roles on perception, peoples' identity, their tastes and preferences as well as in other human behaviours, emotions and healing. The review will focus on the following sub-themes:

2.2 Introduction

2.3 History of the ECCDE programme

2.4 History of Instructional technology

2.5 Importance of colours.

2.6 Factors upon which colour preferences are based.

2.7 Cultural effects on tints and shades

2.8 Colour is psychological.

2.9 Symbolic meaning of colours and how it influences learning

2.10 Beauty of colour

2.11 Colour preference and age.

2.12 Colour preference and gender.

2.13 Effects of colour on learning.

2.14 Summary of the Literature Review

2.3 History of ECCDE Programme

The Federal Government initiated an Early Childhood Care Development Education (ECCDE) programme in early 1990s, but rapid changes in political events prevented it from making progress. In 1991 only 47% of preschool children had some pre-primary education. The programme called for community-based child care. In 2001,as support for the UBE program, some communities began building their own nursery and preschool facilities with federal government money and international grants loans.

Early childhood is a critical period of rapid physical, cognitive and psycho-social development of a child. The quality of care and education which a child receives at this crucial age will determine to a great extent the level of his/her physical and cognitive development in the future.



2.4 History of Instructional Technology

The first use of instructional technology cannot be attributed to a specific person or time. Many histories of instructional technology started in the early 1900s, while others go back to the 1600s. This depends on the definitions of instructional technology. Definitions that focus on a systems approach tend to reach further back in history, while those definitions focusing on sensory devices are relatively more recent. The use of audio and visual instruction was boosted as a military response to the problems of a labour shortage during World War II in the United States. There was a definitive need to fill the factories with skilled labour. Instructional Technology provided a methodology for training in a systematic and efficient manner. With it, came the use of highly structured manuals, instructional films and standardized tests. Thomas Edison saw the value of

Instructional Technology in films but did not formalize the science of instruction as the US military did so well.

Instructional Technology is a growing field of study. It uses technology as a means to solve educational challenges, both in the classroom and in distance learning environments.

While instructional technology promises solutions to many educational problems, resistance from Administrators to the use of technology in the classroom is not unusual. This reaction can arise from the belief of fear- the ultimate aim of instructional technology is to reduce or even remove the human element of instruction. However, most instructional technologist would counter that education will always require human intervention from instructors or facilitators.

Many graduate programmes are producing instructional designers who increasingly are being empowered by industry and universities to create materials for distance education programs. These professionals often employ an e-learning tool which provides distance learners the opportunity to interact with instructors and experts in the field even if they are not located physically close to each other. More recently a new form of instructional technology known as Human Performance Technology has evolved. HPT focuses on performance problems and deals primarily with corporate entities.

2.5 Importance of colour

In all cultures, ancient people used colour as language. The clothes they wore and the colours with which they adorn themselves had special meanings for them. In those early years, colour was very functional. In cultures where traditional religions are still widely practiced, some gods and goddesses , have their peculiarly distinguishing colours. Examples are Obatala, Ogun and

Orisaoko which are some of the gods and goddesses of the Yoruba people, the goddess of Athene of ancient Greece. These traditional divinities have their distinguishing colours. The worshippers of these divinities must put on clothes which must always be painted with colours that match those of the various deities.

Abolade (1993), states that nature is full of colours, without colours nature would not be as beautiful as it is. The environment will be dull since it will be only of one colour. One cannot imagine how bad the entire universe will be if trees, rivers, the sky, the earth, human beings and other living things are all in one colour: white, black or red. In fact, there will be chaos. Indeed, nature has a mosaic of colours that make the universe beautiful and habitable for all organisms. According to Dauda (1990), "people in most situations solve their problems by their psychological reactions to appearances and changes taking place in their immediate environment". He says that some may express their feelings by saying that an environment is inviting or stimulating or that the colour or scenery of the whole environment is pleasant.

Schwar (1972), says that when we look at the sky we observe different types of blue and green at different times of the day. Each type of colour is referred to as a hue. The sea presents various hues of blue while rivers combine the hues of silver and green. In the words of Pegg, (1974) the rainbow presents the widest variety of colours possible in life. It contains all the elements of both primary and secondary colours.

Colour is perceived when the central portions of the retina are being stimulated. Colours help immensely in the perceptual ability of individuals and organisms use the hues perceived in their immediate environment for protection against danger. The chameleon and the caterpillars of most insects are typical examples.

As humans, our very survival is hung on the identification of colour. We "stop" our cars for red lights or "go" on green, we look at the colour of certain plants and animals to determine whether or not they are safe for us to eat or touch. The subliminal messages we get from colour shape our thoughts, in fact the bottom line is that colour is a very important part of our daily lives.

According to Ochu (1992) and Dauda 1991), colours are indispensable factors for effective instructional materials because they are means for generating a rich visual presentation. Colour presentations provide learners with more information and more stimulation.

In the studies carried out by Dauda (1990) and Ochu (1992) respectively, it was found out that colours are indispensible factors for effective instructional materials. This is because they are rich means for generating a rich visual presentation. Ochu found out that, Egbira (A tribe in Kogi state in Nigeria) pre-school children preferred yellow, orange and red hues. In Dauda's study, he discovered that Nursery/Primary school children in Ogun State Nigeria preferred orange and blue hues.

Among other researchers from the Southern part of the country Salihu (1978) conducted a study on differences in colour – form preference among children in Oyi Local Government Area of Kwara state Nigeria. His findings showed that age was a clear factor in determining the trends of colour preference and children that have great preference for colour. Also, Obielodun (1984) investigated warm and cool colour preference on children, the warm colour response of 180 subjects used, showed preference for warm colours. One of the recommendations of the study was that instructional media should be designed using colours that elicit a high frequency of response from the student.

Cockeril & Muller (1983) conducted a study to examine how children learn to choose the preferred colours in situations. The study was designed to investigate whether preschool aged

children choose preferred colours based on traditional stereotypical colour associations or based on situational factors.

In addition the study also looked at whether or not preschool aged children's favourite colour is a traditional stereotypical colour. Fifty preschool children ranging in age from three (3) to five (5) years were tested on the basis of favourite colour for themselves and children of the opposite sex.

Children were randomly placed into one of four testing conditions, each consisting of a story and illustrations depicting a relationship between colour and sex. Specifically male\blue, male/pink, female/blue and female/pink Children were asked to choose their preference from pink, blue or white paper squares and to pick what they thought a child of opposite sex would choose as their preference prior to and after testing. Children were also asked to state their favourite colour. Results show that children choose favourite colours and colour preferences based on traditional stereotypical colour association.

Cockenil and Muller (1983) further tested the effect of colour on motor skill performance. When children wore their choice of coloured goggles while performing pegboard tests, they performed more accurately and at a quicker pace than while wearing non preferred coloured goggles.

In examining the ways children use colours in decision making and in performance, associations of preschool children as related to mood, they found that the colour red is chosen as a preferred colour more often than any other colour regardless of mood influences. Palmer (1973) also found that red was chosen most often regardless of children's age and race. Eysenck (1941) as reported in Vandewiele, D'Hondt, Didillon, Iwawake & Mwammenda (1986) found that children show

a general preference for the colour blue. Some research indicates the way children form colour preferences may be directly related to the environmental cues society has related to their sex.

Colour is extremely important in interior decoration. Lines and forms are equally important. Colour gives life to form, texture helps bring out the beauty of natural hues.

Lewis (1969) states that colour definitely affect our spirit. Some colours make us feel excited and cheerful. Others refresh us or make us feel depressed. When used imaginative colours will not only improve the mood, but also the climate of a room. It seemingly affects the size of a room. A very small room cannot be enlarged to give more actual space, but receding colour makes it to be seen larger.

According to Mehra (1980), colour can bring any décor to life. It can brighten up a drab corner of the house and can create an atmosphere of gaiety. She said, "We react emotionally to different colours and because of this, colour scheme is largely responsible for the atmosphere of a home. It can be soothing or irritating, cheerful or depressing, charming or boring, welcoming or repelling.

Irene (1978) Further states that people differ in their reactions to colour, but most find red vibrant and exciting, blue and green calming and relaxing. Colours on the blue side of the wheel can make a warm room seem cooler. Yellow suggests lightness, spirit and good cheers.

Berlyne (1960) considers colours as being capable of information density and in so doing, can give the individual learner more information. A similar view was expressed by Dioyer (1983), who said that colour has omnipresent characteristics which make it an important instructional variable in improving pupils' information acquisitions under specific condition. When choosing colours for instructional materials, the emotional response is to be considered (an active, dynamic, warm)

feeling or a more contemplative, thoughtful cool feeing. No wonder why important cues are highlighted in red or orange and cool colour background. However, the cultural bases to colour response which are often deep-seated and unconscious are also to be considered, so that the right information will not be misunderstood.

The environment in which living organisms live is very visual and colourful. Consequently, must be in colour because man has a limited capacity for assimilating and processing information. He is constantly selecting and rejecting incoming visual stimuli for subsequent retention in his memory. Consequently, how colour is used in instructional materials is an important variable because a good use of colours in LIMS production can help learners perceive and interact with critical content of the learning materials.

The use of colours, add glamour, taste and interest to fashion, advertisements, film-show etc. Without the use of appropriate combination of them it would have been so boring to watch these scenes. The creator of the universe knew that colour is beauty, so he created flowers of various tints and shades to make the scenery of the earth colourful and beautiful.

Silver: (1987), agrees with this view, he stated that it has been proven that advertisement in colour increases sales ten to fifteen times more than the same advertisements in black and white. Thus colours are attention getting and stimulating.

Vaishali (2000) quotes Khaiw (1995), in his article that states that colours are used to determine site's mood and personality as well as to set an identity.

In the Western culture, colour is used to identify the personality of an individual. By careful observation of someone's colour choice, his or her temperament can be determined. Colours are also used in shopping on the web.

According to Fisher (1999), our personal history can also be traced by our colour preferences and using heritage colours has been proven to make people feel more contented by making them feel more connected to their ancestry. For instance, Asians wear white to funerals and a black colour for their wedding dresses, since black represents joy in Asian culture. He also said that the understanding of the effects of colour is very important when making interior design decisions for the home.

About eighty percent (80%) of the information which we assimilate through the sense is visual. However, colour does more than just give us objective information about our world – it affects how we feel. The presence of colour becomes more important in interior environment, since most people spend more time inside than outside.

Colours are also used for differentiation and identification: therefore we can say the

Blue houses, Green cars, Yellow shoes and many more. There would have been so much confusion and monotony if all things are of the same colour. Colour is an important part of children's lives and they learn to use colours in many ways. Colour is used by children to classify objects, to discriminate between objects and even in determining the sex of people.

Mankind would have lost the opportunity of identifying and grouping things according to their colours. Imagine a child that has ten pairs of shoes of the same colour, though there are other features that can be used to differentiate like size, it would have all the same been very hard and time consuming for that child to pick the choice pair of shoe at any given time.

There has been little research done in examining how children learn to choose the colours they prefer to use in situations. Cockerill & Miller (1983) conducted a study to examine how children learn to choose the preferred colours in situations. The study was designed to investigate whether

preschool aged children choose preferred colours based on traditional stereotypical colour associations or based on situational factors.

In addition the study also looked at whether or not preschool aged children's favourite colour is a traditional stereotypical colour. Fifty pre-school children ranging in age from three(3) to five(5) years were tested on the basis of favourite colour for themselves and children of the opposite sex.

Children were randomly placedinto one of four testing conditions, each consisting of a story and illustrations depicting a relationship between colour and sex. Specifically male\blue, male/pink, female/blue and female/pink Children were asked to choose their preference from pink, blue or white paper squares and to pick what they thought a child of opposite sex would choose as their preference prior to and after testing. Children were also asked to state their favourite colour. Results show that children choose favourite colours and colour preferences based on traditional stereotypical colour association.

Of all the non-verbal communication, colour is the most instantaneous method of conveying messages and meanings before humans learned to appreciate the aesthetics of colour. These were the far more practical aspects of communicating colour. Our very survival depends on the ability to identify necessary objects and or warning signals and colour is an integral part of that identification process. Among other uses, colour stimulates and works synergistically with all the senses, symbolizes abstract concepts and thoughts, expresses fantasy or wish fulfillment, recalls another time or place and produces an aesthetic or emotional response.

There is no better proof of the effectiveness of colour than the market place where it is a virtual key of communicating a positive, enticing and irresistible image for a product often called the silent sales person, colour must immediately attract the consumer's eye.

Colour adds tremendous meaning to communication as it virtualizes the usual message delivering and instant impression that is most often universally understood. This is especially important in conveying a mood or idea where verbiage is not used or understood. Colour is a univers

al language that crosses cultural boundaries. Colour affects the totality of our being, the whole quality of our life each day. Colours can bring on illness or promote wellness; they can cause us to experience an uplift of spirit, a conditioned response to familiar surroundings, a slow boost into psychological well-being.

2.6 Factors upon Which Colour Preferences are Based

All the colours have their own meanings, denotations symbols and emotional associations for each person. Every hue connotes a different meaning, feeling or emotion to the perceiver of the colour in relation to his associations with colours. Therefore the colour preference of each person is different from the others.

There are many aspects of colour preference. They include: culture, education, past experience, memories, history, perception of colour, the meanings attached to colours, their symbolization, age and gender, aesthetic attributes, values and value judgments, the psychological and physiological conditions of the users and the sub-consciousness. The applications of these preferences to the environments people occupy give people the feeling of identity and belongingness. So it is important that the colour preferences of the users of an environment are considered important while making choices of colour for such environments.

According to Basoglu (2000) environments are living and changing systems. They are not only physical spaces but rather they include the way time is structured and the roles the occupiers are expected to play, they include all the external conditions and factors that are capable of

influencing an organism. The condition the way people feel, behave and think while affecting the quality of their life. The environment either works for or against the user as the user conducts its life. The experience of space and environment is individual. Some environments affect people differently from each other. These differences have many reasons depending on the psychology, past experiences with various places, familiarity of the individual with the space the different cognitively processing ways people deal with the information they receive from their environments.

There are two major reactions of people towards the spaces; approach and avoidance. They are more than physical reactions. They also define the characterized behaviour of the people who cannot physically remove themselves from the environments. There are measures of determining whether an environment is avoiding or approaching. The generalization is that an environment, which causes approach behaviour is positive and desired, has to do with movement toward exploration, friendliness, improved performance and voiced preference or liking. Whereas an environment that causes avoidance behaviour is negative and has to do with movement away from, withdrawal, interpersonal coldness and defective performance and voiced dislike.

All the environments have their information rates depending on the information rate an environment can be high-loaded or low-loaded. If an environment is uncertain, varied, complex, novel, contrasting, surprising, moving, improbable, rare, large-scale, dense, random heterogeneous, crowded and intermittent, it is high-loaded. If an environment is certain, redundant, simple, familiar, similar, usual, still, probable, small-scale, sparse, patterned, homogeneous, un-crowded and continuous, it is low-loaded. These loads on environments cause certain emotional reactions on individuals and these reactions cause the individual to approach or avoid the environment.

Basoglu (2000) further states that there are basic dimensions of emotional reactions: arousal – non-arousal, pleasure – displeasure and dominance – submissiveness, which form the basis palette from which all the feelings are active, stimulated, excited, frenzied, jittery, wide-awake or alert.

Pleasure is a state, in which, a person is joyful, happy, satisfied, contented or feel good. Dominance is a state in which a person feels dominant; it is free to act in a variety of ways in its environment. The three dimensions exist free of each other in the environments. There may be environments that may cause radical changes in one of the dimensions without disturbing the other two dimensions.

Suitable colour in the learning environment provides an unthreatening environment that improves visual processing reduces stress and challenges brain development through visual stimulation/relationships pattern seeking. Visual stimulation actually rewires the brain, making stronger connections while fostering visual thinking, problem solving, and creativity (Simmons, 1995). Well-chosen colour variety reduces boredom and passivity. Therefore classrooms should incorporate a variety of colours (based on age, gender, subject and activity) to reduce monotony and visually refresh perception. However, over-use of colour [using more than six colours in a learning environment] strains the mind's cognitive abilities.

Therefore, children's school environment should be designed so that they become preferred environments by their users. Children spend most of the time during school days at school, so the school environments are very influential on children. Children's environment should have a positive effect on children's ability to learn and perform, increase the desire to stay, explore and interact with others. To achieve these results, the children's school environment should be arousing and pleasant and less restricting. In the general sense, teachers prefer a neutral or slightly unpleasant and non-arousing school environment to be able to control the children, but the children get bored and confined and create their own pleasing and arousing high-loud environments with their own attitudes.

Furthermore, the elementary school children are extroverted by nature, hence the use hence the use of correct colours will decrease the problems of nervousness, irritability, lack of interest and bad behaviour.

Basoglu (2000) in his study therefore suggested the use of bright colour scheme to reduce the tension, nervousness and anxiety and to enhance attention and concentration which will lead improved learning.

2.7 Cultural Effects on Tints and Shades

In the view of Molly (2000), the use of colour in a worldwide context is an element of web design that is often misunderstood or overlooked. Perception of colour depends not only in the ability to see that colour, but also on the interpretive context of emotional and cultural realities. Blue is the most globally accessible and safe colour, perhaps because of its relationship to the sky and therefore, to deities. For some colours, cultural significance makes them more risky. For example while pink is popular with both sexes in Japan, in East Indian and American cultures, pink signifies femininity. Purple and red are also colours with significant cultural meaning differences. Another important issue is that men and women's reactions to colour differ significantly. Web designers therefore need to think carefully about that the colours they choose could be saying to their chosen audience.

Personal history also has a significant influence of our colour preferences and using heritage colours has been proven to make people feel more connected to their ancestry. For instance, American couples must often prefer to have bride dressed in white, representing purity during wedding ceremonies (other countries that were colonized by the whites like Nigeria have adopted the same culture). Asians, on the other hand, wear white to funerals and prefer a black colour for their wedding dresses, since black represents joy in Asian culture.

Aaron & Gould(2000), in their article titled cultural dimensions and global web user-interface design, used the classic study by Hosfstede of cultures in organizations and considers how they might

affect user-interface design. Hofstede identifies femininity and masculinity as one of the dimensions of culture. Pertinent points examine cultural differences in regard to colour meaning and masculinity/femininity as gender roles. Japan and Austria are considered as countries with strongly masculine cultures while Sweden is the least masculine.

Climate can also affect colour preferences and people respond differently to various colours, depending upon the climate conditions in the INC. For example Scandinavians have a preference for light yellows, bright whites and sky blues in contrast to their long dark winter nights. San Franciscans, who live in an area that is always foggy and overcast, generally aren't fond of gray, but are gray a popular colour among people in Miani. It is also observed that dwellers in the Eastern part of Nigeria are not fond of green because they have become too familiar with green in the form of grasses, leaves and vegetables.

Colour affects human beings in many ways, on both the conscious and subconscious levels, every day of our lives and a thorough understanding of the effects of colour is very important when making decisions for choice of wears, interior design for the home, choice of cars etc.

Jill (1998) views the problems of accurate colour representation caused by both operating systems and monitors and discusses the use of colour as a communicator, especially in its symbolic representation. Also, stressed that when colour and form are combined, the symbolic power is increased. As in China a green hat signals that a man's wife is cheating on him and in Japan white carnation signifies death. Resultantly, colours have the capacity to "mutate both technically and symbolically" on the web.

2.8 Colour is Psychological

The physicist studies colour in light. The chemist produces pigments. The artist's mixes colour to produce beautiful designs and pictorial composition. The physiologist designs a pictorial

composition. The physiologist or medical doctor studies the relationship of colour to the eyes and to other parts of human body. The psychologist, finally studies colour as it affects man's emotional life. Colour psychology therefore refers to investigating the effects of colour on human behaviour and feeling.

According to Oslie (2000), Colour psychology is an immature field of study viewed dubiously by mainstream psychologist and therefore qualifies as " alternative medicine" Critics views it as an overstatement of what different cultures have completely different interpretations of colour.

Practitioners of colour psychology sometimes called colour consultants, claim there are a number of reactions to colour which seem to be noted in most persons. They also noted

that common effects which often accompany the psychological effects. Colour consultants claim hues in the red area of colour are typically viewed as 'warm' while those in the blue and green range are typically viewed as 'cool'. Reds are also viewed as active and exciting while the blues and greens are viewed as soothing and passive. Physiological test have revealed similar responses (Varichon, 2006, p.138). It is claimed that red hues increases bodily tension and stimulates the autonomic nervous system, while 'cool' hues release tension. Black is considered unique as it can be either evil or malevolent, yet it also stands for elitism and style. White is associated with purity whereas grey is viewed as dull or boring (or elegant and sophisticated). Colour consultants also point to an increasing number of studies linking colours to specific responses.

One study found that weight lifters have more powerful performance in blue rooms. Another study found that babies cry more frequently in yellow rooms. Colour consultants believe that the colour used in the design of environment can have a significant impact on the emotions and performance of people with that environment.

In one system, red is considered to motivate action, orange and purple are related to spirituality, yellow cheers, green creates coziness and warmth, blue relaxes and white is associated with either purity or death.

Although colour psychology is a relatively new area of scientific research, ancient civilizations believed in the influence of colour on humans. The ancient Chinese, Egyptians and Indians believed in chromo-therapy (healing with colours.)

In addition Soeliner (2009, p.202), states that psychology plays important role in the tactical advantage. One medical equipment manufacturer found colour useful (replacing bar codes, scanners, database queries) for quickly identifying which department a borrowed device is designed, colour psychology could offer a thermal map; an informative alternative to featureless blog calendars of archived entries. Indication to users where writing produced a range of comments, colour provides the user psychology of signaling information. (What information design calls information scent?), colour psychology offers an instantaneous method for conveying meaning and message in logo design. It's probably the most powerful non-verbal form of communication designers can use and it's important for designers to use colour appropriately and understand the meaning behind the colours we choose.

There are dozens of tutorials which equate blue to calm corporate competence. When have you seen a web widget suggesting a range of ties-from conservative to adventurous colour pallet - for that dress or shirt you are considering online? Such accessory suggestions at the right time can increase orders by supporting the psychology behind the shopping process.

Sites like Etsy can support user psychology with a shop – by colour feature. Culture the user competitor, the situation whether a colour evokes a positive or negative emotion is as dependent on context as colour in isolation. Far too often people are turning to those colours emotion charts the

way some use newspaper horoscopes. A paper titled The Impact of colour on Learning by Kathie Engelbrecht suggests colour psychology can improve focus and relieve eye fatigue in the classroom. Colour can instruct and reduce accidents in the workplace, but only when applied to human psychology.

We all experience colour sensations. Many people however, completely lack colour perception - that is they are not aware of their colour environment and have no conscious reactions to specific colours. Only occasionally do we hear an expression like "I hate this colour' or I love that colour'.

Cheskin (1951) observes that colour sensation affects people who are completely unaware of the presence of colour. Often the visual sensation produces a physical reaction. People will feel cold in a blue room and hot in a red room yet not realize that colour produces the sensation. The cool colours have a sedative effects and being in an environment of cool colours has proved to be very calming to highly nervous people who feel extremely uncomfortable in an environment with an abundance of certain types of red. Some persons become depressed when surrounded by strong blues. Still others react negatively to yellow. Cheskin identifies that generally people surround themselves with diluted colours (tints or tones) of both cool and warm hues unconsciously seeking a balanced diet of calming and stimulating colours. We should always differentiate between our sensations of colours and our knowledge that comes through the intellect. Sensations plus associations result in perception. Knowledge comes only after the perceptions have been analyzed and formed into distinct conceptions.

Although colour sensation does not always reach the conscious mind, it nevertheless creates an emotional response which is best illustrated by the fact that people feel cool in a blue room and warm in a room with much red.

2.9 Symbolic Meaning of Colours and how it Influences Learning

Colour symbolism in art and anthropology refers to the use of colour as a symbol throughout culture. Colour symbolism is a contentious area of study which is dependent upon a large body of anecdotal evidence, but not supported by data from well-designed scientific studies.

Colour symbolism and colour psychology are culturally constructed linkages that vary with time, place and culture. In fact one colour may perform very different symbolic or psychological functions in the same place. For example red is often used in North America to indicate stop, as with a stop sign or danger, as with a warning light. At the same time, red symbolizes love as with Valentine's Days. A person not familiar with the cultural coding of red in North America could theoretically confuse the symbolism of red and mistake a red Valentine's Day heart for a warning. Cross-cultural diversity is found in the symbolism of white, which historically has signified purity, virginity or death (as in Herman Melville's Moby Dick). In Western traditions it is the colour worn at weddings. During certain periods in history, it was the colour worn at funerals of China, Korea and Japan.

In Buddhist art, there is the most famous Stupa of Badnath showing the colour of the Buddha's eyes as light blue. It is not known whether this colour is due to symbolism or whether Buddha Shakyamuni is believed to have been blue – eyed.

Like death and taxes, there is no escaping colour. It is ubiquitous. Yet what does it all mean? Why are people more relaxed in green room? Why do weight-lifters do their best in blue gyms?

Though meanings of various colours have continued to change over the years, researchers have generally found the following to be accurate:

White Colour

White projects purity, cleanliness, neutrality, peace, innocence, refined, sterility, simplicity, surrender, winter, humility, security, snow, truth, reverence, light, coldness, fairness, unimaginative, air, death and life (in western culture), hope, bland, empty (interior) and virginity. Brides wear white to symbolize innocence and purity. White reflects light and is considered summer colour. White is popular in decorating, drawing and fashion because it is light, neutral and forms a good background even on websites and goes with everything. Doctors and Nurses wear white to imply sterility. A white flay connotes surrender or parley.

In Ancient Greece the temple of the goddess Athene was made of white marble linking the colour to virginity. How white colour affects humans mentally and physically:-

It aids mental clarity, encourages us to clear clutter or obstacles, it also evokes purification of thoughts or actions and enables fresh beginnings.

White catches attention quickly but it is the only colour used in the production of learning materials. The intended objective may be lost because every object does not appear in white. Thus four and five year old can easily get confused hence white is better used as a good background rather than the actual colour of the objects except in cases when what is taught is white in actual life ,like the picture of an angel.

Black Colour



Black is technically the absence of colour. It is a multi-dimensional colour that can mean new or classic. It has an ominous characteristic symbolizing death. It has an air of intelligence (graduation robes) marked with rebellion (the bad guy), shrouded in mystery (space). It conjures authority, boldness, elegance, power and tradition. Black can be found in many logos for its boldness, simplicity and sophistication. It is popular in fashion because it makes people appear thinner. It is also stylish and timeless. It implies submission. Priests wear black to signify submission to God. Some fashion experts say a woman wearing black implies submission to men. Black outfits can also be overpowering, or make the wearer seem aloof or evils.

Black goes on to project fear, emptiness, darkness, seriousness, conventionality, rebellion, anarchism, unity, sorrow, professionalism, modernity, formality, wealth, mystery, style.

The black colour creates a restful life, a feeling inconspicuous and mysteriously evokes a sense of potential and possibility.

To the pre-primary school child black can easily be taken to represent Satan and except for the purpose of just naming the objects as in black shoe, black bag and so on and so forth, using only black colour in drawing slows down the pace at which they learn.

Gray Colour



From a moral stand point, it is the area between good white and evil black. It is neutral and cool. Gray is timeless, practical and solid. A longstanding favourite suit colour can mix well with any colour. Although, often worn, people rarely name gray as a favourite colour possibly because gray is also associated with loss or depression.

Furthermore gray projects authority, corporate mentality, dullness, humility, moody, respect, stableness, somberness, elegance, subtlety, wisdom, old age, pessimism, boredom, decay, pollution, decrepitude, urban sprawl, strong emotions, balance, mourning or formality. The gray colour makes us expectant and unsettling.

Grey has the same effect that white has on pre-primary school learners. So in the same way that white is being used, grey can be used as a background colour.

Red Colour



Red is an intense colour that can summon conflicting emotions from blood and warfare to love and passion. It is often used in logo design to grip the viewer's attention and has been known to raise one's blood pressure or make people hungry. It strikes a chord with more cultures than many other colours because of its intensity, passion and invocation of an inherent physiological response. Red is the colour of celebration and good luck (China), purity and integrity (India) and mourning (South Africa). When used with a wide brush, red typically makes whatever it's painted on look larger, whether it's a torso or wing-back chair. Red is bold and audacious, so it usually dilutes the

colours around it. It's used to accent and highlight objects of importance such as stop light on a traffic signal.

Red typically symbolizes passion, strength, bravery, energy, fire, sex, love, romance, excitement, speed, heat, arrogance, ambition, leadership, courage, masculinity, power, danger, gaudiness, blood, war, anger, revolution, radicalism, communism, aggression, respect, martyrs, the Holy spirit, conservatism, action (U.S. politics), liberalism (Canadian politics), wealth (China), marriage (India), vigor, drive or adventure.

Red has more personal associations than any other colour. Recognized as a stimulant, red is inherently exciting and the amount of red is directly related to the level of energy perceived.

The colour red affects us by increasing enthusiasm, stimulating energy and appetite, encouraging actions and confidence as well as giving a sense of protection from fears and anxiety.

To the nursery school pupil, red is sharp, attractive and captivating. So when objects are presented in red colour, they will quickly turn to the direction of the object in order to clearly see everything about the object. For the best use of red, it has to be used in consideration with the colour harmony.

Orange Colour



Orange is a compound of yellow and red and can represent attributes from each of these colours. It sparks more controversy than any other hue. There is usually strong positive or negative association to orange and true orange generally elicits a stronger "love it" or "hate it" response than other colours. It is less intense than red but still packs a lot of punch. It's more playful and youthful than red. It's often used in logos to create playfulness or stimulates emotions and even appetites. Orange is a perfect colour choice for Nickelodeon whose target audience is children. It is fun, lighthearted and youthful which reflects the T.V. channels programming. Fun and flamboyant orange radiates warmth and energy. Interestingly, some of the tones of orange like terra cotta, peach or rust have very broad appeal.

Orange is enthusiasm, 'get-it-done' attitude and balance. It typically symbolizes Hinduism, Buddhism, happiness, heat, fire, gaudiness, autumn, desire, Sagittarius and September. It is calmed by yellow. Orange is symbolic of the Royal family of the Netherlands, so in the Netherlands, orange symbolizes royalty, and as William of orange was the Calvinist colour, it symbolizes Protestantism particularly in Ireland (Orange Order).

The ECCDE school child reacts to orange in almost the same manner he/she reacts to red colour. The little difference is that orange seems to hold their attention longer than red. I feel that it is because orange has a calming effect on the eyes, which is absent in red.

<u>Yellow Colour</u>

Yellow echoes the dual nature of red. Yellow like red, can have conflicting messages. Cheerful sunny yellow is an attention getter. While it is considered an optimistic colour, people lose their tempers more often and babies cry more in yellow rooms. It is the most difficult colour for the eye to take in, so it can be overpowering if overused. Shades of green yellow carry the promise of a positive future. It will advance from surrounding colours and instill optimism and energy, as well as spark creative thoughts. Yellow enhances concentration, hence its use for legal pads.

Yellow typically symbolizes sunlight, joy, happiness, earth, optimism, intelligence, idealism, wealth, summer, hope, air, liberalism, cowardice, illness (quarantine), fear hazards, dishonesty, avarice, weakness, greed, decay or aging, femininity, gladness, sociability friendship, Gemini, Taurus, Leo (golden yellow, star signs) April, September, deceit, hazard signs, death (Middle Ages) mourning (Egypt and Frank Herbert's Dune), courage (Japan) royalty (China) and God (gold) caution, curiosity, playfulness, and warmth.

To humans, yellow speeds up metabolism, it is mentally stimulating and also stimulates the nervous system, activates memory and encourages communication. The four and five year old get easily attracted to yellow just as they do to other warm and bright colours. Their attention can be aroused with the use of yellow colour hence with good skill knowledge can be transferred.

Green Colour



Green says ‘nature’, which explains why it is such a powerful in the eco-friendly movement as well as “ initiative” and ‘wealth’ but just as it symbolizes good, the extremes of green are considered to be bad as in green with envy or its association with money which is sometimes deemed as ”the root of all evil?. It soothes the eyes and produces a calming effect when seen. It’s also the colour of spring, a time of rebirth and renewal.

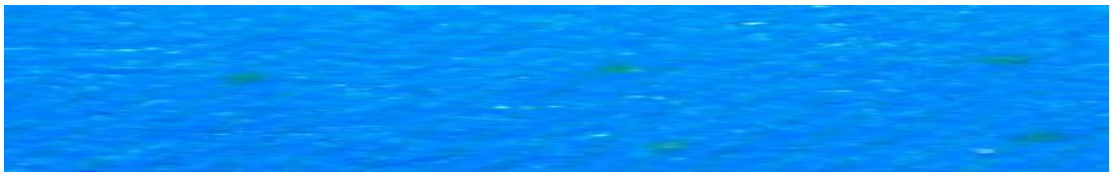
Green occupies more space in the spectrum visible to human eye and can improve vision. Green is a persuasive colour in the natural world that is an ideal backdrop I interior design because we are so used to seeing it everywhere. The natural greens, from forest to lime, are seen as tranquil and refreshing, with a natural balance of cool and warm (blue and yellow) undertones. It is considered the colour of peace and ecology. It is calming. People waiting to appear on TV sit in “green rooms” to relax. Hospitals often use green because it relaxes patients. Brides in the middle Ages wore green to symbolize fertility. Dark green is masculine and implies wealth. However, seamstresses often refuse to use green thread on the eye of a fashion show for fear it will bring bad luck.

Green symbolizes tranquility in experience, nature, spring, fertility, youth, environment, wealth, good-luck, vigor, generosity, go, grass, coldness, cunning, jealousy, perverseness (Spain), deceit, disgrace (China) illness, greed, corruption (North Africa), like eternal, air, earth, sincerity, cancer (bright green, star sign), natural abundance growth, health, August, balance, harmony, stability, creative intelligence, Islam, hope, gem, gracious and precious. During the Middle age, both green and yellow symbolism the devil. It is believed to be the luckiest of colours in some Western countries like Britain, Ireland and the U.S. It is used to show forward motion – ‘go’ traffic light.

Green colour affects us by making us relaxed mentally and physically, helping to alleviate depression, nervousness and anxiety, offering a sense of renewal, self-control and harmony, feeling soothing, and stimulating appetite.

The way green affects the pre-primary school child is not very clear. Sometimes they are drawn closer to green at other times they may look uninterested. Objects with green colour sometimes make them feel just the same way they feel when exposed with black (boring) at other times they feel excited

Blue Colour



Blue is the colour of the sky and the ocean, perceived as a constant in our lives. As a collective colour of the spirit, it invokes rest and can cause the body to produce chemicals that are calming, however not all blues are serene and sedate. It aids intuition. Blue is non-threatening, yet confident and stable. Many police uniforms are blue because the colour says security and confident. Weight lifters perform better in blue rooms. It causes the opposite reaction as red, bedrooms. Electric or brilliant blues are dynamic and dramatic. It is the least "gender specific" colour having equal appeal to both men and women.

Blue also symbolizes seas, men, clouds (New Zealand), productive, interior, skies, peace, unity, coolness, trust, conservatism, water, ice, loyalty, dependability, technology, winter, depression, coldness, idealism, air, wisdom, royalty, nobility, Earth, (planet), Virgo (light blue), Pisces (pale blue) and Aquarius (dark blue, star sign) strength, steadfastness, light, friendliness , morning (Iran) truthfulness, love, and liberalism (US politics). Blue is also used to symbolize the Greek god "Yotuma" that protected standard soldiers at sea. In religious beliefs, it is held to keep bad spirits, stupidity and misfortune away.

Just as with the green colour, blue does not have a very stable response from the early child care education learners. However, they seem to feel more relaxed with blue colour for a longer time. So objects in blue can be used as toys.

Violet Colour



Violet represents the harmony of the universe because it is a combination of red and blue. In the U.K. it is traditional to package chocolate in violet because of the association of the colour royal purple with luxury. Violet symbolizes magic.

Purple Colour



In Thailand purple is the colour of mourning for widows. Purple embodies the balance of red simulation and blue calm. This dichotomy can cause unrest unless the undertone is clearly defined at which point the purple takes on the trait of the undertone. Purple is often well liked by very creative or eccentric types and is found to be the favourite colour of adolescent girls.

In western cultures, it is the colour of royalty and wisdom. The Purple Heart, a military honor, given to those wounded or killed in the United States military, embodies both purple attributes. Purple can symbolize nobility, envy, sensuality, spirituality creativity, wealth, royalty, nostalgia, ceremony, mystery, wisdom, enlightenment, arrogance, flamboyance, gaudiness, exaggeration, profanity, bisexuality, pride, May, November, riches, romanticism, (light purple), delicacy, (light purple), penance, fantasy, justice, regal, sophistication, and luxury. It is also feminine and romantic. However, because it is rare in nature, purple can appear artificial. The purple colour is uplifting, calming to mind and verves, offers a sense of spirituality and encourages creativity.

Generally children are attracted to purple easily. This could be attributed to its rare nature. To the pre-primary school child, they sort of want to explore the colour more.

Brown Colour



Solid, reliable brown is colour of earth and is abundant in nature. Light brown implies genuineness while dark brown is similar to wood or leather. Shades of brown represent skin tones and produce a comforting feeling. Brown is used in logos related to construction and legal logos due to its simplicity, warmth and neutrality.

Brown indicates stability, reliability, natural organisms, approachability, calm boldness, depth, nature, richness, rusticity, tradition, anachronism, fascism, boorishness, dullness, filth,

heaviness, poverty, roughness, earth (classical element), October, sad or wistful, utility, woodsy, simplicity, serious, subtle, steadfastness, friendliness and dependability. Men are more apt to say brown is one of their favourite colours. The brown colour gives us a feeling of wholesomeness; it connects us to the earth, offers a sense of orderliness, creates a feeling of stability and stimulates the appetite.

To the pre-primary school child brown may not easily capture his or her attention but when it does the attention can be sustained for a good length of time, especially where the complimenting colours as well as the colour harmony are combined.

Pink Colour



Pink is a sister colour of red, but they are very different in terms of symbolism. It is a feminine colour that conjures feelings of innocence and delicateness. Pink can stir up visions of little girls, bubble-gum and cotton candy. It is also widely associated with breast cancer awareness. Pink is often used in logo to add a feminine a flare (Mattel's Barbie logo). It is a fitting colour for a toy marketed to little girls. It is a tranquilizing colour and for this reason many prison cells of the most dangerous residents are painted pink. It symbolizes spring, appreciation, love, admiration, sympathy, socialism, femininity, health, romance, June, marriage, joy, innocence, flirtatiousness, child-like features, floral girly gratitude and softness

To the young minds pink is exciting and captivating, hence when used in the teaching and learning environment their attention is quickly aroused. Instructional materials in pink colour sustain the attention of children so knowledge and information can be transferred.

2.10 The Beauty of Colour

When the aesthetic sensations are converted into mental images, they become perceptions which often develop into intellectual concepts. Primitive people produce art and decoration with pure, bright colours, while most civilized people prefer to decorate their homes mainly with subtle tints ortones, using pure colours only as accents.

Fisher, (n.d.), states that in music also, musically untutored individuals are deeply moved by loud, sharply rhythmic syncopation, while those with developed musical sensibilities prefer to hear the subtle nuances of a symphony with only accents of powerful sounds.

According to William (1977), environment undoubtedly influences colour preferences. Persons of European peasant origin, particularly those from Eastern countries, show a preference for pure, bright colours whereas their city-bred children generally prefer more neutral and delicate colours. Latin peoples (French, Italian and Spanish) usually prefer the warm colours of the red-yellow families, whereas Nordics – (Swedish, Norwegian and Danish) generally like the cool colours of the blue family. Persons who have lived in the Orient often develop a taste of Orient art and colour.

Although a colour has inherent trait, it is at the same time endowed with social symbolism and with considerable subjectivity. Colours have entirely different symbolic meanings for Eastern peoples than they have for Western, and also in the same family there may be great differences in colour preference.

In other words, concepts of beauty are threefold: universal, social and individual. Proportion and harmony are universally recognized as the basic essentials of beauty differ in various countries in accordance with the type of civilization and culture. Within the social concept of beauty, there is still the element taste of personal taste.

Specific colours inherently produce sensations of warmth or coolness, stimulation or relaxation, cheer or gloom, pleasantness or unpleasantness. Blue is a cool colour to a Frenchman, a Sweden or a Russian and red is warm to all of them. Colour symbolism in Western civilization is best exemplified by such practices as using brilliant red as a fire signal of health. These objective colour symbols are generally recognized. However, colour sensations are often purely subjective. A colour that produces a pleasant sensation for most people like magenta red may for some individuals have a very unpleasant effect because of an early traumatic experience associated with the colour. A typical example of subjective colour reaction due to an early traumatic experience is that of a girl who has a strong dislike for light blue because an aunt who was very cruel to her frequently wore a light blue dress.

Colour preferences tests have demonstrated that reds, violets and blues (half of the colour circle) are liked much more than oranges, yellows and greens. However, difference in preference between two values of the same hue is often greater than between two different hues. Example of the pure hues, green-blue has a preference rating of nearly eighty (80) and yellow has a preference rating of about sixty (60). When green-blue is deepened with black and converted into a shade, its rating drops 10 to 15 points. When the yellow is deepened with black, on the other hand, its rating drops more than forty (40) points.

Transforming hues into tints may either raise and/or lower their preference ratings. For example pure magenta red has a very high preference rating. When the magenta red is mixed with white and reduced to pink, it becomes cold and ceases to be a popular colour. Orange-red has a very

low preference rating in an undiluted state. It is liked by few people because it's highly vibrating and sharp. However when orange-red is diluted with a quantity of white and converted into a peach, it receives one of the highest preference rating. Most tints of peach are very popular with both men and women.

In addition to the specific value of the hue, colour preference is conditioned by the area the colour occupies, by the preference of other colours and by the object by which the colour is associated with (in the room or in the mind). Pure colours are generally preferred only in small areas. A certain red may be acceptable and even pleasing next to a neutral background, but it may give the effect of being much too vibrant when placed next to green, it's complementary. A colour may be liked when associated with the wall of the room but disliked as a colour for a garment.

In colour preference, rarity is also a factor that should be given consideration. Red, violet and blue are sometimes preferred because they are rare colours in nature; in addition to being inherently more pleasing psychologically than the other colours. Red violet and blue flowers are few in comparison with green grass and leaves. Rich blue skies and violet and red sunsets are seen only occasionally. Elements associated with rarity are surprise and newness. Surprise is emotionally stimulating and newness is intriguing. We should remember, however, that complete newness and shocking surprise may be negative in effect. We are generally pleased by something new about the old. The new aspect is stimulating and the old gives us the feeling of familiarity and thus creating a sense of security.

Because some colours are only seen occasionally, they possess the elements of newness and surprise as well as familiarity. But common colours, like common foods are monotonous, they become tiresome and we therefore set out to look for new stimulants.

2.11 Colour Preferences and Age

If children rely on colours heavily enough to use them for judgment, then it is important to know how they form their choice of favourite colours. It is also important to know if their formation of colour preference is based on their own thoughts or what they learn from others and at what age this formation is salient and not discriminable.

Previous studies have shown that colour preferences change from early childhood to adulthood. According to Ajaji-Dopemu (1983), children see colour flowing through everything. Their reception of colour is true, clear and brilliant. As stated by Lark-Horvitz (1976), until children are about five years old, they usually see colours as substance in itself made more colour conscious by emphasizing his or her reactions to colour and by making meaningful the interaction between the child and colour.

Salihu (1978), conducted a study on differences in colour-form preference among children in Oyi Local Government Area of Kwara State of Nigeria. His finding showed that age was a clear factor in determining the trends of colour preference and that, children have great preference for colour.

Obielodan (1984), investigated warm and cool colour preference on children, the warm colour response of 150 subjects used, showed preference for warm colours. One of the recommendations of the study was that instructional media should be designed using colours that elicit a high frequency of response from the students.

We love colours naturally. Our love for colours begins in earliest childhood when the world appears as an exciting scene of red, pink, yellow and orange. Children tend to respond to these colours hence children's toys, wears and illustrations in their books are of these colours. Furthermore, if children are permitted to decorate their bedrooms and classrooms, they would obviously choose these colours. As we mature into adolescents, sex affects our choice of colours.

Ladies go for attractive colours (bright and sensational ones), while boys of their age go for neutral and cool colours like blues, browns etc.

As we mature, colour preferences move beyond warm radiant colours to deep hues of blues, green and purple. At still older age, some people tend to lose sight of aesthetics with regard to choice of colours, thus people at this age can afford to go on very dull colours.

In the study that Birren (1962) conducted, the colour orange and yellow were preferred by children and they (orange and yellow) seem to lack popularity among older people. In his book, blue and red maintain a high preference throughout life, but seem to drop down the list while other colours become more preferred. Yellow for example is well liked by children, but begins to fade away when they become adults. Birren states, with maturity comes a greater liking for hues of shorter wave length (blue, green, purple) than for hues of longer wave length (red, orange and yellow).

In further research, it's interesting to find the preference of green in the younger age groups and the preference of purple in the older age groups. Terwogy, M.M. &Hoeksma J.B. in the research study on colours and combinations and they noted that as people get older, their preference are likely to change as a result of social and cultural influences. They state.

Children use colour in their everyday decisions. Even at young ages children use colour in choosing certain objects that they classify by colour such as different kinds of food (Macario, 1991). Children also use colour in drink identification and selection (Oram, Laing, Hutchinson & Owen 1995).

Colours are also used by children to discriminate between objects. Children function better in activities where they have chosen the colour of objects they use in the activity. Isaacs (1980) studied colour preference and its effects on ball catching. He found that children when catching balls of

different colours, tended to catch the ball of the colour they had previously chosen better than other colours.

Thus, by letting children choose an object's colour in fine motor skills, tasks such as ball catching, colour improves performance. Cockenil and Muller (1983) tested the effect of colour on motor skill performance. When children wore their choice of coloured goggles while performing pegboard tests, they performed more accurately and at a quicker pace than while wearing non preferred coloured goggles.

In examining the ways children use colours in decision making and in performance, associations of preschool children as related to mood, they found that the colour red is chosen as a preferred colour more often than any other colour regardless of mood influences. Palmer (1973) also found that red was chosen most often regardless of children's age and race. Eysenck (1941) as reported in Vandewiele, D'Hondt, Didillon, Iwawake & Mwammenda (1986) found that children show a general preference for the colour blue. Some research indicates the way children form colour preferences may be directly related to the environmental cues society has related to their sex.

2.12 Colour Preferences and Gender

Sexual perception of colour preference such as pink for girls and blue for boys are present in our lives. Boyatzis and Varghese (1994) reported that colour adage is used by parents to convey sex information to their children's environments. Advertisers also realize these sexual colour preferences of parents and use them in their marketing strategies every day, (Picariello, Greenbery & Pillemer, 1990) from first day children are bombarded with these sexually specific colours.

Adults use this information to define the sex of babies and small children before it is outwardly obvious. Not only adults use colour as a sex defining mechanism, children use one's colour clothing as one factor of sex determination even before they have a basic knowledge of the biological difference between the sexes (Picariello, Greenberg & Pillemer, 1990). Children are familiar with the implications portrayed by colour.

The Princeton group posits that kids become aware by age two that there are two distinct genders and that they belong to one of them. Securing a place in one's gender is important to a child's psychological development. One easy way for a child to achieve this security is by adopting the colour assigned to his gender by society and rejecting the other.

Since the Princeton (university) study suggests a combination of both Biology and Culture at work in colour preferences, the question still remains: Is Biology or Culture responsible or both? Neuroscientists Hurlbert and Ling (2000) found that women of two distinct cultures tend to prefer red tones, including pink, but why? In their published findings, the scientist suggests that the preference comes from the role assigned to ancient women. Bands of hunters/gatherers composed humanity before the advent of agriculture around 10,000 years ago. In these bands, men generally hunted while the women foraged for fruits, vegetables and other plants.

It's Hurlbert's and Ling's view that women become attuned to the reds of the ripe berries and other fruits that would win an ancient woman's points among the others in her band. As such, women came to focus on the colour red (and the rewards associated with it) in order to make their search easier). Hurlbert and Ling said that this would also come in handy for recognizing flushed faces, a sign of illness, among the women's children.

To explain the preference for blue found among both men and women in the study. Hurlbert suggested that to these ancient bands, blue signified “good weather” and “good water source” men preferred orange to yellow; while women placed orange at the bottom of the list.

Gulliford and Smith (1959), found men were generally more tolerant toward achromatic colours than women. Thus Gulliford and Smith proposed that women might be more conscious and their colour tastes more flexible and diverse. Likewise, McInnis and Shearer (1964), found that blue green was more favoured among women than men, women preferred tints more than shades. They also found 56% of men and 76% of women preferred cool colours and 51% men and 45% women chose bright colours. In a similar study, Plater (1967), found men had a tendency to prefer stronger chromas than women.

Rikard Kuller (1967), conducted a study on the effects of colour in two opposite environments. Six men and six women were asked to stay in two rooms; one room was colourful and complex, while the other was gray and sterile. Electro-encephalogram (EEG) and pulse rates were recorded throughout the period as well as the individuals’ subjective emotional feelings. The results showed heart rates were faster in the gray room than in the colourful room. Moreover, men were found to have stress reactions more than women in the gray room. Kuller also postulated that men could not achieve the same degree of mental relaxation as women.

Thomas, Curtis and Bolton (1978), interviewed seventy-two (72) Nepalese and asked them to list the names of all the colours they know. There was a significant difference between men and women. Although, the women consistently listed more colour names than men did, the cultural context of this study must be noted since Nepalese women traditionally wear more colourful clothing than men do. A similar study by Greene (1995), examined the colour identification and vocabulary skills of college students. They were asked to identify the colours of twenty-one (21) colour chips. The results showed that women recognized significantly more elaborate colour than did the men.

Findings also indicated that gender different responses in colour identification may be attributed to a difference in the socialization of men and women.

Another study examined the appropriateness of colours used on the walls of a simulated domestic interior furnished in one of the three styles; Georgian, Act Nouveau & Modern Whitefield (1984), reported that internal consistency among women is higher than for men. When the study was broadened to include marital status, married women achieve significantly more internal consistency in each condition of the three styles than did the men.

More recently, Radeloff (1990), has found that women were more likely than men to have a favourite colour. In expressing the preferences for light versus dark colours, there was no significant difference between men and women however, in expressing the preference for bright and soft colours, there was a difference with women preferring soft colours and men preferring bright ones.

Khouw (1995) reviews the research of gender differences in the response to colour. Using slides of interior environments with different colour palettes and a list of words describing the characteristics of these environments, Khouw's analysis showed colour response to be influenced by gender differences, especially in regard to combinations of colour properties such as hue, value and chroma. Rooms with high chromatic relationships were rated higher by men than by women and in general men were more tolerant of the use of either chromatic or achromatic colour in interiors.

2.13 Effects of Colour on Learning

Colour has been frequently considered as a means of generating richer visual presentations. It has been assumed that its presentations provide learners with more information cues and more stimulation. Thus it has been theorized that colour presentations would enhance learning. Chute

(1979),reported that perceptual and psychological experiments have shown that chromatic colours (colour prints) were more arousing than non-chromatic ones (black and white), and that subjects spent more time fixing chromatic stimuli. However, research comparing effects of colour and monochrome versions of a fixed-pace media presentation has indicated that this increased arousal does not necessarily translate to increased learning.

Kanner and Rosenstein (1960), reported two extensive studies conducted at two different military installations. These experiments compared a colour videotape treatment with a black and white videotape treatment that had verbal colour cues in the audio and visual channels. There was no significant difference in cognitive learning as measured by an objective multiple-choice test. The researchers recommended to the United States Army that they continue to use black and white tape television production facilities for training, since the more expensive equipment could not be justified in terms of increased learning effectiveness.

Vernon (1962) found out that those patients who were blind from birth, and operated on for cataracts, perceived colour more readily.

According to Ajayi- Dopemu (1983), children see colour flowing through everything. Their reception of hues is true, clear and brilliant. As stated by Lark- Horvitz (1976), until children are about five years old, they usually see colours as substance by itself, not as mere attribute of things. According to Lowenfeld and Brittain (1975), a child can be made more colour-conscious by emphasizing his or her reactions to colour, and by making meaningful the interaction between the child and colour.

Kemp& Crowell (1970), gave some merits of photo-series in teaching and learning situations to include the permission of close-up study of detailed study at individual space, very useful as simple self-study materials for display and requires no equipments for use.

In the teaching of art appreciation and graphics, photo-series have been found very useful as they bring vitality, clarity and accurate information about style, characteristics and historical antecedent of the very place of study.

Photographic prints in instructional text have been found with a variety of effects. For example they add to reader's interest and enjoyment. They affect attitudes and arouse emotional responses. They also prove worthwhile in providing special information that is difficult to express in words. Series of research conducted in this area have shown an overwhelming advantage to text with pictures over text without picture (Levie & Lent 1982). Vernon (1953), found that photographs facilitates learning points. He also speculated that pictures could over emphasize on certain points and therefore distracts attention from the rest of the text. In his own study, Holiday (1979) tested pictorial multiple choice items with visual verbal items and discovered the pictorial showed relatively greater advantages than the verbal texts. Dryer (1978) concluded that the use of certain types of photographic prints was a function of the relatedness of the photographic print combination. Print also facilitates the recall of related verbal captions but not the unrelated ones (Booher 1975). Several researchers have predicted that picture will not help the good students but may likely enhance better performance of the less advantaged ones (Levie & Lentz, 1982: Bogusch, 1983 & Skiba, 1983)

According to Kivi (1998) colour affects learning in the following ways:

Colour encourages learning: Children learn and retain information longer when colour is used in educational material and in the classroom. Eight percent of the brain receives information visually. Colour stimulates the visual sense and encourages the retention of information.

Different colours cause different moods: The colours red, orange and yellow stimulate and increase brain activity. The colours green, blue and violet induce relaxation. Teachers can design classroom

decoration to match either an active or relaxed style of learning. Classroom assignments and presentations can use colour to enhance learning. Children that are overly stimulated could benefit from the relaxing colours. Children with attention disorders can benefit from brain stimulating colours

Children remember colours better than verbal cues: A study conducted in 1990 by Vvonteila, showed that children remembered colour cues better than verbal cues. Combining lesson material to colours can help children to memorise information. For instance, flash cards with facts can be presented in coloured backgrounds. Each fact can be a different coloured background. The students will associate the colour with the fact, helping them to recall the information.

Colour and creativity:Colour inspires creativity and encourages student in coming up with new ideas. The use of not only assists students in artistic projects. Colour stimulates creative thinking towards strong writing and helps students to evaluate and solve questions.

Coloured writing utensils: The simple adjustment to classroom instruction of allowing students to use various coloured pens and pencils to complete their school work has proved to motivate students to do their school work. It also holds the students attention span for longer periods of time and helps to retain classroom information.

Colour at home:Parentscan create a creative environment in the home to inspire creativity and learning. Starting at infancy, a colourful bedroom is beneficial to the learning of a baby. Babies that have colourful bedrooms increase intelligence at a faster rate than babies who do not have colourful bedroom. The use of colourful toys and décor for infants and children alike creates a fun environment as well as a learning environment. Colour can affect mood. Warm colours can induce a comfortable feeling and bright colours induce the feelings of excitement.

Adults and colour: The benefits of colour on learning, does not only pertain to infants and children. Colour affects adults in the same way that it affects children. Colour should be used in college classrooms to assist in learning. Places of entertainment such as restaurants often use colour to entice a fun experience. The fast food chain McDonald's knew what they were doing when they designed their restaurants red and yellow, the two colours that excite and stimulate the brain.

In the words of Abolade (1993), education at the initial stage is supposed to be child centered. He advised teachers and other educators to prepare LIMS that will be child centered. Colours have been discovered to have effect on children towards learning. A child's learning environment must therefore be made beautiful through appropriate use of colour combinations.

2.14 Summary of the Literature Review

Looking at the sub-themes treated in this chapter, we are now aware of the fact that colour is important in the day–to-day life of humans and that their roles though some are ignorant of them cannot be overlooked.

It was traced that ancient men even spoke in colours; it was a non-verbal way of communicating messages. It then means that every member of such community is aware of the symbol or meaning of colour in that society.

In some cultures, some people are ignorant of colour meanings, though they constantly make use of colour in fashion, home decoration, shopping, art, religion and education. In religion and art, its uses have been obvious. For instance, orthodox Churches in the Western world and in countries colonized by the whites observe the symbols of colour when making their priestly garments

and in the decoration of churches. Also in art the knowledge of pure hues, colours etc have always been put into practice.

Colours that are traditionally considered feminine or that appeal most strongly to or are more closely associated with women can be good choices for marketing messages, web sites and interior design targeting women. In the same vein, colours that appeal most strongly to men are to be considered good choices for men's products. Colour studies done over the years indicate that favourite colours of women and men differ and some of these differences may be attributed to culture, conditioning and psychology. However, psychology is been rated high because everything about colour is psychological. The awareness of a colour symbol creates a consciousness of considering the meaning of the colours we prefer and use.

CHAPTER THREE

RESEARCH METHODOLOGY

3.2 Introduction

This chapter focuses on the research methodology for conducting the study. It is presented in the following order: Research design, Population, Sampling and Sampling procedure, Instrumentation, Procedure for data collection and Data analysis

3.3 Research Design

A factorial model of collecting data through an experiment was applied in the study. The study was basically experimental in nature. With the factorial model, the test conducted were splitted between boys and girls, urban and rural areas and the scores were basically based on rated performance on choice and identification. Since the study is basically experimental, data were collected along the factorial structure.

3.4 Population

Presently thirty-one (31) schools in Zaria metropolis have started running the Early Child Care Development Education (ECCDE). Out of these 31schools, ten (10) schools were selected randomly.

Since it was an experimental study, the selection of ten (10) schools was basically because of the need to eliminate exogenous variables which could cause bias if only one school was selected. The ten (10) selected schools and their population are shown below.

TABLE3.1: Four (4) and Five (5) years old pre-primary school pupils of the sampled schools

S/No	I Names of School	1I Boys	III Girls	IV Total
1.	Layin Zomo L.E.A.	60	42	102
2.	Bomo L.E.A.	32	25	57
3.	Muchia Model Primary School	41	37	78
4.	Maramara L.E.A	74	65	139
5.	Angwan Kanawa L.E.A	45	50	95
6.	Samaru Model Primary School	55	60	115
7.	Aminu Model Primary School	20	19	39
8.	Dogorawa L.E.A.	38	40	78
9.	Ja'afaru Model Primary School	52	45	97
10.	Saidu Model Primary School	29	35	64
		446	418	864

Source: Sabon Gari Local Government Education Authority

3.5 Sampling and Sampling Procedure

Out of the ten (10) schools which were randomly selected within Zaria metropolis, ten (10) pupils were selected from each school with the adoption of the systematic random procedure. The ten (10)

pupils consist of five (5) four (4) and five (5) years old boys, five (5) four (4) and five years old girls from both the rural area and the urban area, giving a total of 100 pupils.

The systematic random technique shall be adopted by way of selecting the samples from each chosen school. Ten (10)elements shall be selected from each school which shall comprise of 5 (4year and 5year old boys), 5 (4year and 5year old girls) respectively shall be sampled from each school.

Tables 3.2 and 3.3 show the schools. This number thus consist the sampled population used in the experiment.

TABLE 3.2: Rural area pre-primary school pupils of the sampled schools

S/No	**I** **Name of School**	**II** **Boys**	**III** **Girls**	**IV** **Total**
1.	Layin Zomo L.E.A.	5	5	10
2.	Bomo L.E.A.	5	5	10
3.	Muchia Model Primary School	5	5	10
4.	Maramara L.E.A.	5	5	10
5.	Angwan Kanawa L.E.A.	5	5	10
.		25	25	50

Source: Sabon Gari Local Government Education Authority

TABLE 3.3: Urban area pre-primary school pupils of the sampled schools

S/No	I Name of school	II Boys	III Girls	IV Total
1.	Samaru Model Primary school	5	5	10
2.	Aminu Model Primary School	5	5	10
3.	Dogorawa LEA	5	5	10
4.	Ja'afaru Model Primary School	5	5	10
5.	Saidu Model Primary School	5	5	10
		25	25	50

Source: Sabon Gari Local Government Education Authority

3.6 Instrumentation

The tables below shall be used to show cases where colours shall be correctly named.

a1	**a2**	**a3**	**a4**	**a5**	**a6**	**a7**	**a8**	**a9**

QUESTIONNAIRES

	ITEMS	Right	Wrong
Q1	**What is the colour of a leaf?**		
Q2	**What is the colour of your teeth?**		
Q3	**What is the colour of your hair?**		
Q4	**What is the colour of fire?**		
Q5	**What is the colour of the wall in your classroom?**		
Q6	**What is the colour of your desk and bench?**		
Q7	**Go and touch an object in orange colour**		
Q8	**Pick up and object in purple colour**		
Q9	**Name the object that is in brown colour**		
Q10	**Name the object that is black in colour**		
Q11	**Which balloon would you take for yourself?**		
Q12	**Take two more colours that you like**		

A research design that includes two or more factors is called a factorial design. It can also be said to be a concept of experimental layout in which a number of independent variables are nested.

In this study, the score of the pupils constitute the dependent variable while the sex of the pre-primary school children, the location of the schools, the numbers of sampled schools, the period of the experiment constitute the independent variable.

The performance of the pre-primary school children which was measured by the test was repeated two times by respondents in the ten schools using a post-test only design.

Basically the instruments used for the study consisted of real objects in the primary, secondary and neutral colours. The real objects include: three (3) red balloons, three (3) blue eating plates, three (3) yellow footballs, three (3) orange coloured plastic chairs, three (3) green whistles, three (3) purple coloured berets, three (3) white socks, three (3) black school bags, three (3) brown lunch boxes, coloured balls and coloured balloons in the nine (9) colours mentioned below.

The instruments mentioned-above were chosen because the colours appeal to the children and to find out their preference, I had to also use instruments that are familiar with children. Because they are familiar objects, their selection determines the colour that they prefer, i.e. would like to either play with, use at home or in school. They are shown below;

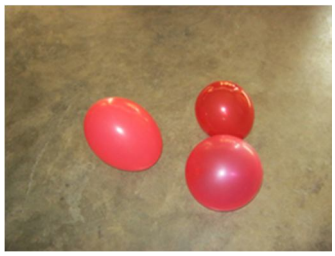


Blue Plates

(A primary colour)

To every child after play

the next thing is food



Red Balloons

(A primary colour)

Watch them competing for

Balloons in birthdays,weddings etc.



Yellow Balls

(A primary colour)

Football is a major game



Orange Chairs

(A secondary colour)

Use both at home and in school



Green whistles

(A secondary colour)

For creating noise and attention



Purple Berets

(A secondary colour)

Pupils hardly come to school without berets



White Socks



Black School Bags

(A neutral colour)

Most school accepts only white socks as part of school dress

(A neutral colour)

Very common colour among bags, especially school bags





Brown Lunch Boxes

(A neutral colour)

As it is with plates, lunch Boxes are for food while in school.

Coloured Balls

Even at the ages of one, balls are used to play.



Coloured Balloons

Give children balloons and watch what they will do with them

3.7 Procedure for Data Collection

The balloons were spread out on the floor and the various objects on another side of the room on tables in such a way that every instrument was been visible and accessible to serve every

child. The instruments in nine colours were used to find out if children can identify and name colours. Randomly sampled children were asked to name or touch named colours. Randomly sampled children also went to pick three (3) balloons of their choice at once. The balloons were returned and the same child was been asked to pick three (3) balloons of his or her choice again. The research was done in a manner where the selections of a child was not be seen by other children. After recording the selections of a child the instruments were returned to the floor or tables as the child went back to his or her seat. Another child was called until all the ten (10) sampled children in each school were called. The essence of picking balloons twice was to find out the reliability of the test.

Pupils who were able to identify the primary colours and the relevant colours in the instrumentation were scored (1) while those unable to identify and name the colours were scored zero mark. The cumulative scores were used as the major mark with each of the scores.

3.8 Validity

The design instrument was subjected to evaluation by submitting to the supervisor, statisticians and other professionals who went through and made some useful suggestions which were incorporated into the main questionnaire before the actual study was carried out. According to Anasti, face validity is usually considered sufficient for an instrument of this nature. Therefore, the instrument could be considered valid for the study.

3.9 Reliability

The instrument was administered two times using one of the classes at Baba Ahmed L.G.E.A. Model, School, Tudun Wada, Zaria. The collected performance schools were then subjected to a

reliability test using a test and re-test method with the spearman brown formula. The observed reliability index for the test was 0.913. This is an indication that the instrument cold be considered reliable since the reliability index is approximately 1.

According to Anasti, (1980), the closer to 1 the reliability of an instrument, the more reliable the instrument, therefore the instrument could be considered reliable.

3.10 Pilot Study

A pilot study was conducted using the E.C.C.D.E. classes in Baba Ahmed LGEA Model School: Nursery 1A and Nursery 1B respectively. Both classes consist of boys and girls of the pre-primary school age. The purpose of the study was to find out if colours have any effect on the performance of children.

The two classes were taught names of things or objects in the house, one class (Manipulative group) were taught with instructional materials that were prepared with the use of colour (colour pencils, water colours, drawing paints) and the second class (control group) were taught with same kinds of teaching aids but the difference being that coloured materials were not used. The drawings were made just in white colour and black colour and it was observed that when the diagrams with colours were presented to the children, they all started to talk randomly about the things in their various houses. Example of comments that were made, are “my daddy has this type of radio”, he used to hold it on his hand. Pointing at the bowl yet another said, “Teacher, my mother has this type, she used to put pepper on it”, it is *kwaryi*, another said we used to drink *fura* with it. Pointing at the broom, one said “This is *tsintsiya*”

In a nutshell, the class became very lively and active when I displayed the coloured diagrams and they were eager to talk about the things found in their homes and even about those that their pictures were not included in the chart due to lack of space. All the children were eager to talk even when not allowed by the teachers.

In regards to participation, concentration, co-operation stimulation etc they were all very participatory and co-operative. Aminu and Hajara asked questions about the microwave, like what is this one and I replied, that is a microwave and that it is used to warm food when it gets cold. I went on to remind them that the things in our homes are kept according to needs and uses. Example: a knife is kept in the kitchen because it is in the kitchen that a knife is used most often. It was really an interesting class and it made me know that colours have a way of affecting how children learn.

In the second class, the same topic was taught with colour-less diagrams. It was observed that a greater number of the pupils could not recognize the pictures of the chart on sight. I had to explain what some of the items are and what they are used for. It was also observed that unlike the manipulative group (Those taught with coloured pictures), the control group (those taught with pictures on black and white) were looking so morose and confused, trying to relate the pictures to real life objects. From the foregoing, it can be said that colours aid in making pictures more meaningful and identifiable, because the objects do not all appear in black and white in real life.

3.11 Procedure for Data Analysis

Data collected were scored and subjected to statistical analysis using the Chi-square procedure. This was necessary to establish the statistical association between the pupils to determine the pupil's performance of colour in relation to the school environment, performance and possible association within preference of colour and sex of pupils along with the location of schools. All the hypotheses were tested at 0.05, level of significance

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.2 Introduction

The methodology used in this evaluation of colour preference among pre-primary school children in selected schools in Zaria metropolis: implications for learning have been discussed in Chapter 3. In this Chapter, the researcher presents the statistical analyses, and interpretations of the results of the data collected from the experiment. The chapter is organized around the research objectives and research questions. The hypotheses of the study are tested at the tail end of the chapter with a discussion of the findings from the test of the hypotheses.

4.3 Presentation of Data

A total of one hundred pre-primary school children were involved in the study. They consisted of 52 or 52% males and 48 or 48% females. Their ages were between 4 and 6years for those within 4 years 28.7%, those who were 5years 69.3% and those who were 6years were only 2.0% of the total population. This was because most children of 6years and above normally go to the primary school level. For location, 51 or 51% of the children were in rural areas while 48 or 48% were in urban setting of the study area. For the purpose of colour evaluation, the sex of the pupils was used as the independent while the colour preference was used as the dependent variable. Table 4.1 shows the colour preference of the pupils by their sex.

Table 4.1 Scores on the Choice of Colours by Sex

Colour	Choice of Balloon		First choice of colour		Second choice of colour	
	Male	Female	Male	Female	Male	Female
Blue	14	2	14	1	6	2
Brown	11	2	7	9	7	17
Green	7	4	9	3	6	4
Orange	2	6	4	5	7	2
Purple	7	8	6	14	13	14
Red	3	12	5	2	4	6
White	5	5	0	1	7	0
Yellow	4	9	8	13	3	3
	52	48	52	48	52	48

One major observation in the table is that the male prefer blue colour while the female had variability in their preference with purple dominating followed by red and yellow colours. On the part of the male, purple colour was a second major preference.

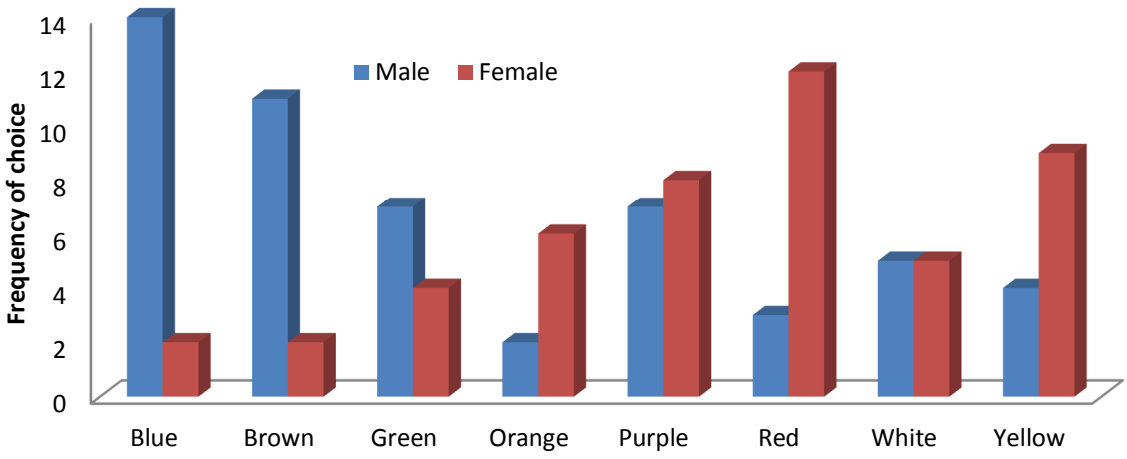


Fig. 1: Choice of balloon by sex of pupils

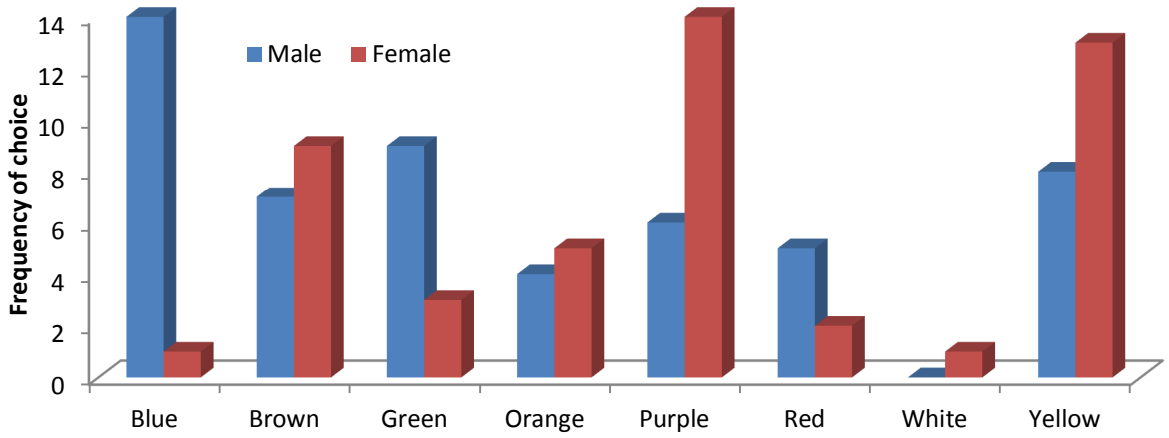


Fig. 2: First Colour preference by sex of pupils

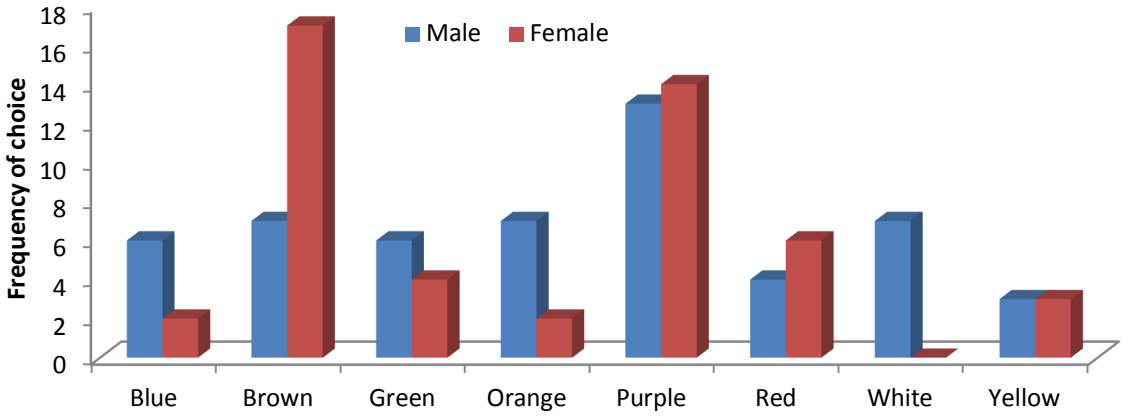


Fig. 3: Second choice of colour by sex of pupils

The figure shows that the male and female pupils generally have different direction in their preference of colour. One outstanding observation however is that Blue, red, purple and yellow colours were major preference of the pupils.

4.4 Test of Hypotheses

Four (4) hypotheses were formulated to guide the establishment of colour preference among pre-primary school children in the selected schools for this study.

The hypotheses are formulated in line with the research objectives and questions. The hypotheses are tested as follows:

4.4.1 Null Hypothesis I:

Colour is not a relevant element in the pre-primary school environment in Zaria metropolis.

This hypothesis is aimed at addressing the first objective of the study which sought to determine the relevance of colour preference among pre-primary school pupils in the school environment. The hypothesis was tested with the pupils' choice of balloon with their first and second colour preference. The chi-square was used for the test as summarized in Table 4.2. The table shows the expected and observed counts for each of the variables.

Table 4.2:Chi-square on choice of balloon by first and second colour preference among pupils

Colour	Choice of Balloon		First choice of colour		Second choice of colour	
	Observed	Expected	Observed	Expected	Observed	Expected
Blue	16	13.00	15	13.00	8	13.00
Brown	13	17.67	16	17.67	24	17.67
Green	11	11.00	12	11.00	10	11.00
Orange	8	8.67	9	8.67	9	8.67
Purple	15	20.67	20	20.67	27	20.67
Red	15	10.67	7	10.67	10	10.67
White	10	6.00	1	6.00	7	6.00
Yellow	13	13.33	21	13.33	6	13.33
Total	100		100		100	
Chi Square = 28.871, DF = 14, 0.011						

The result of the test revealed that colour preference is significantly associated with the choice of balloon by the pre-primary school pupils. The observed chi-square value is 28.871 at 14 degree of freedom compared with the critical value of 23.7. The observed level of significance in the test is 0.011 ($P < 0.05$). This means that the null hypothesis that colour is not a relevant element in the pre-primary school environment could be rejected. The test revealed that the colours of the balloons constituted the major factor in their choice by the preprimary school pupils. The research question used for this investigation which sought to determine whether colour is a relevant element in pre-primary school environment in Zaria metropolis was ended. The observation from the test is that colour is a significant factor in the pre-primary school environment.

The second research questions of the study, which seeks to determine the relationship between colour preference of pre-primary school pupils and their academic performance. This

research question was investigated with the test of the second hypothesis of the study. The hypothesis is stated as follows:

4.4.2 Null Hypothesis II:

Colour preference among pre-primary school pupils has no effect on their academic performance Zaria metropolis.

This hypothesis was tested with the performance of the pupils in the identification exercises used in the study. The scores were subjected to a chi-square test along with their first choice of colour preference to determine possible association between their academic performance and their choice of colours. A summary of the chi-square test is presented in Table 4.3. In the table, the expected counts are printed below the observed count.

Table 4.3: Chi-square on colour preference and pre-primary school pupils' academic performance

Perfomance	Colour Preference								
	Blue	**Brown**	**Green**	**Orange**	**Purple**	**Red**	**White**	**Yellow**	**Total**
0.00	0	0	0	1	0	1	0	0	2
	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.3	2.0
3.00	1	0	0	0	0	0	0	0	1
	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
4.00	6	3	5	6	7	4	4	2	37
	5.9	4.8	4.0	2.9	5.5	5.5	3.7	4.8	37.0
5.00	8	4	4	1	6	8	5	7	43

	6.8	5.5	4.7	3.4	6.4	6.4	4.3	5.5	43.0
6.00	1	2	2	0	2	1	1	4	13
	2.1	1.7	1.4	1.0	1.9	1.9	1.3	1.7	13.0
7.00	0	3	0	0	0	1	0	0	4
	0.6	0.5	0.4	0.3	0.6	0.6	0.4	0.5	4.0
8.00	0	1	0	0	0	0	0	0	1
	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
Total	16	13	11	8	15	15	10	13	100
	16.0	13.0	11.0	8.0	15.0	15.0	10.0	13.0	100.0
Chi-Square = 50.491, DF = 42, 0.173									

The figures in Table 4.3 are expected count (scores) derived from the experiment and the figures below are the observed counts.

The test did not reveal that colour preference among pre-primary school pupils could be significantly associated with their academic performance. The observed chi-square value (50.491) is lower than the critical value of 55.8 and the observed level of significance in the test is 0.173 ($P > 0.05$). This means that the pre-primary school pupils' colour preference is not a factor of their academic performance in the school. Therefore the null hypothesis that colour preference among pre-primary school pupils has no effect on their academic performance could not be rejected. This finding provides the solution to the second research question of the study which sought to determine the relationship between colour preference and pre-primary school pupils' academic achievement. In the test, no significant association between colour preference and the pupils' academic achievement was observed.

The third research question of the study was set to find out if gender has any effect on the colour choice of pre-primary school children in Zaria metropolis. The hypothesis formulated from the objective is:

4.4.3 Null Hypothesis III:

There is no significant difference between the colour preference of the pre-primary school male and female pupils in Zaria metropolis.

This hypothesis was tested with colour preference of the male and female pupils using the chi-square procedure as summarized in Table 4.4. In the table, the expected counts are printed below the observed counts.

Table 4.4: Chi-square on colour preference and gender of pre-primary school pupils

Sex	Colour Preference								
	Blue	**Brown**	**Green**	**Orange**	**Purple**	**Red**	**White**	**Yellow**	**Total**
Male	14	11	7	2	7	3	5	4	53
	8.4	6.8	5.8	4.2	7.9	7.9	5.2	6.8	53.0
Female	2	2	4	6	8	12	5	9	48
	7.6	6.2	5.2	3.8	7.1	7.1	4.8	6.2	48.0
Total	16	13	11	8	15	15	10	13	100
	16.0	13.0	11.0	8.0	15.0	15.0	10.0	13.0	100.0
Chi-Square = 25.253, DF = 7, 0.001									

The numbers in Table 4.4 are scores gotten from the experiments for each colour, while the decimal numbers in Table 4.5 below are the expected counts for each colour.

The test revealed that colour preference of the male and female pre-primary school pupils differed significantly by their sex. This is indicated with an observed chi-square value of 25.253 at 7 degree of freedom compared with the critical value of 14.1. The probability level of significance observed in the test is 0.001 ($P < 0.05$). By these observations, the null hypothesis that there is no significant difference between the colour preference of the pre-primary school male and female pupils is therefore rejected. This finding provides the solution to the third research question of the study which was stated as: Is there any effect of gender on colour preference among pre-primary school pupils in Zaria metropolis?. From the result of this test, there is ample evidence to show that the male and female pupils differed significantly in their colour preferences.

The last research question was designed to find out the differece between the colour preference of the pre-primary school pupil in urban and rural locations of the study area. This objective was investigated with the last hypothesis of the study stated as follows:

4.4.4 Null Hypothesis IV:

There is no significant difference between the colour preference of male and female pre-primary school pupils in Zaria metropolis.

This hypothesis was tested with the score of colour preference of the pupils from the rural and urban locations who were involved in the experiment. The result of the chi-square used for the test is summarized in Table 4.5. In the table, the expected frequency counts are printed below the observed counts.

Table 4.5: Chi-square on colour preference and location of pre-primary school pupils

Location	Blue	Brown	Green	Orange	Purple	Red	White	Yellow	Total
Rural	8	6	5	2	9	5	7	10	52
	8.2	6.7	5.7	4.1	7.7	7.7	5.1	6.7	52.0
Urban	8	7	6	6	6	10	3	3	49
	7.8	6.3	5.3	3.9	7.3	7.3	4.9	6.3	49.0
Total	16	13	11	8	15	15	10	13	100
	16.0	13.0	11.0	8.0	15.0	15.0	10.0	13.0	100.0
Chi-Square = 9.723, DF = 7, P = 0.205									

The result of the test did not reveal that location of pupils' school could be significantly associated with their colour preference. In the table, the observed chi-square value is 9.723 and it is lower than the critical value of 14.1 at the same degree of freedom. The observed level of significance for the test is 0.205 ($P > 0.05$). This means that the null hypothesis that there is no significant difference between the colour preference of male and female pre-primary school pupils in Zaria metropolis cannot be rejected. This finding help to provide the solution to the last research question of the study which sought to determine where there is a significant difference between the colour preference of male and female pre-primary school children in Zaria metropolis. From this test, the pupils from urban and rural location were not found to differ significantly in their colour preference. This means that location has no effect on the colour preference of the pupils selected for the experiment.

4.5 Major Findings of the Study

The major findings from the analysis of the data and test of the study's hypotheses are summarized below:

1. Colour is a significant element of teaching and learning among pre-primary school environment in Zaria metropolis.
2. Colour preference among pre-primary school pupils is not a significant factor of their academic performance
3. The colour preference of male and female pre-primary school pupils is significantly different. The male pupils tended to prefer blue colour while there was variability among the female with red and purple dominating in their preferences.
4. Location of school was not found to be significantly associated with the colour preference of the pre-primary school children involved in the study.

4.6 Implication of the Findings

Increase in pupils' academic performance is a pre-requisite to better academic performance among students as they grow. This study revealed that colour combination could enhance performance environment. For stakeholders interested in the enhancement of pre-primary school children's increased performance and conducive environment for the teaching and learning, this study has revealed that colour combination could be a point in the right direction. For the teachers and other stake holders, the finding from this study could be a stepping stone for improving the teaching and learning among pre-primary school children.

4.7 Discussion

This study evaluated colour preference among pre-primary school children in selected schools of Zaria metropolis and its implication for learning. Four hypotheses were tested. In hypothesis I, the significance of colour in the environment of pre-primary school pupils' environment was investigated. The test revealed that colour is a significant aspect of the pre-primary school children's environments. The null hypothesis was therefore rejected. In the test, it was revealed that choice of balloons by the pupils was significantly influenced by their colour preference. This means that colour is a major factor in the preprimary school pupils' school environment. This finding agrees with Salihu (1978) observation where it was reported that children have great preference for colours. The finding is consistent with Isaacs (1980) where it was reported that children tended to catch the ball of the colour they had previously chosen better than balls with other colours. The finding is consistent with the report of Obielodan (1984) where it was reported that children show more preference for warm colours. In a similar study, Macario (1991) reported that colour influences children's selection of drinks.

Hypothesis II tested the preference of colour and the pupils' academic achievement. The chi-square procedure was used for this test. The result did not reveal significant association between colour preference of the pupils and their academic performance. The null hypothesis was therefore retained. The observation from the test points to the fact that though colour may be of significance to the pupils' school environment but such preference would not necessarily translate to the pupils' academic performance in the school. This finding agrees with Levie and Lentz, (1982), Bogusch (1983) and Skiba (1983) who predicted through experimental studies that colours will not really help the good students but may likely enhance better performances of the less advantaged ones.

Hypothesis III tested difference in in the colour preferences of the male and female pre-primary school pupils. The chi-square was used for the test. The result revealed that the male and female pupils differed significantly in their colour preference. The null hypothesis was therefore rejected. It was observed that colour preference of the male pupils differ from those preferred by the female pupils. This finding collaborates the report of Chute (1979) where it was reported that perceptual and psychological experiment have shown that chromatic colours were more arousing than non-chromatic ones among black and whites subjects involved in the experiment. This finding is consistent with similar report by Picariello, Greenbery and Pillemer (1990) where it was reported that colour is often associated with sex and that specific colours are often associated are more a depiction of a particular sex than others. In a similar study, Hurlbert and Ling (2000) found that women tended to prefer red tones including pink than other colours.

Hypothesis IV tested possible significant difference in the colour preference of pupils from rural and urban locations involved in the study. The chi-square procedure was used for the test. The result did not reveal significant differences in the colour preference of the pupils from the two locations. This null hypothesis was therefore retained. The implication here is that colour preference of the pre-primary school children does not depend on the location of their schools.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In this chapter, the summary of the evaluation of colour preference among pre-primary school children in selected schools in Zaria metropolis: its implications for learning are presented along with the major findings from the test of the related hypotheses. The chapter presents the conclusion, implication of the study, recommendations on the subject.

5.2 Summary

Colours have been observed to affect human emotions and behaviours. However, preferences of colours have been found to differ from one individual to another. It has been observed that children pay more attention and tended to be more arouse where colours have been appropriately used. It has been established that children are bound to pay attention as long as they are getting novel stimuli or new information but worn out when the message becomes monotonous, coupled with the inappropriate used of colours that can arouse and capture the interest and attention of learners. The researcher observed that these appropriate colour combinations are generally lacking in the teaching and learning of pre-primary school children in Zaria metropolis. This problem is not generally attributable to teachers alone in the sense that the school authorities are expected to provide some learning materials up to some extent. Though much work has been done on this problem but not much has been reported among pre-primary school children in the Northern part of Nigeria. This dearth of knowledge of the impact of colour preference among pre-primary

school children and its implication on the learning informed this researcher to carry out this evaluation of colour preference among pre-primary school children in selected schools in Zaria metropolis: its implications for learning

To effectively evaluate colour preference among pre-primary school children in selected schools in Zaria metropolis and its implications for learning and experiment was conducted with pre-primary school pupils in some selected schools in Zaria metropolis. The performances of the pupils in the experiment were collected. A total of 100 children of pre-primary school age were selected for the study.

The study was structured into five chapters. Chapter one gave the background of the study, the theoretical framework, and statement of the problem, the objectives, research questions, and the study's hypotheses. The scope and limitation of the study were also given within the chapter. Chapter two consisted of the review of the related literatures to the study. In chapter three, the methodologies used in study were stated. The statistical analysis and interpretation of the findings from the analyzed data were presented in chapter four. The chapter is made up of an analysis of the students' demographic variables and their performances in the test. Four hypotheses were tested. The hypotheses were structured along the research questions and objective of the study. The findings from the test and an analysis of the data are stated below.

5.3 Conclusion

From the findings of this evaluation of colour preference among pre-primary school children in selected schools in Zaria metropolis and its implications for learning, some observations were made. It was observed that use of colours could act as stimulant among the pre-primary school pupils especially in the choice of action and activities in the schools. On

this observation, it was discovered that male pupils tended to have different colour preference from their female counterparts. Though this observed colour preference did not significantly influence the pupils' performances in the study but it was found to be a major stimulant to performance by making the learning environment more conducive. However, the colour preference among the pupils was not found to depend on the location of their schools. It is therefore concluded that colour combinations could be considered a vital aspect of the teaching and learning in pre-primary schools in Zaria metropolis.

The pilot study also revealed that colours made learning tasks relatively easier as learners attention could be sustained and maintained. It also helps to bring about retention and power to recall facts very fast from memory because the colours helped the children to associate pictures with objects they have at home and recall their names. Complimenting hues can as well create interest in arousing children and sustaining their attention and are capable of stimulating imagination.

5.4 Recommendations

Based on the findings from the analyzed data, the researcher would want to recommend as follows:

1. That colour combinations should be incorporated as part of the structure of the pre-primary school environment in Zaria metropolis, because colour has been found to be a relevant element in the pre-primary school environment.
2. Teaching and learning in pre-primary schools within the metropolis should as much as possible be done in colour presentations, also because colour has been discovered to enhance teaching and learning stimulates and arouse learners interest.

3. The provision of learning materials and other such compositions should take their colour preferences into consideration, because a colourful illustration makes abstract topics to be lively.
4. In the improvisation of instructional materials in the pre-primary schools, colour should be one of the factors to be considered.
5. Government at all levels to mandate educational practitioners and stakeholders go back to the drawing board and make use of visual media that are relevant to the learners. Text-book designers, Book illustrators and publishers to use the supplementary and complimentary advantages of colour when preparing text illustrations for instructional purposes. Instructional text should henceforth be accompanied with colour illustrations for instructional enhancement.

5.5 Recommendations for Further Study

This study concentrated on pre-primary schools in Zaria metropolis. It could be extended to cover other metropolis in the Federation of Nigeria especially in the Northern geopolitical zones.

REFERENCES

Abdulssalam, A.S. (2005).Research methods in Education. Ibadan: Stirlin-horden Publisher (Nig) Ltd.

Abolade, A.O. (1985). Education Technology and middle level Educational Manpower Development in Nigeria, the College Review 2 (1); 49-55.

Abolade, A.O. (1986). The Role of Educational Technology in Vocational Technical Teacher Education Programmes in Nigeria: An Appraisal in the Nigeria Journal of Technical Education 4 (1) : 91-96

Abolade, A.O. (1991). The Roles of LIMS in Teaching Science and Technology in Nigeria, a Commissioned Paper for the Journal of Education.Adeyemi College of Education: Ondo.

Abolade, A.O. (1993). Colour Preferences Among Nigerian Children: Implications for Nursery/ Primary Education Learning and Instructional Materials: NIJET, 4 (2) : 30-36

Ajayi - Dopemu (1984). The Effect of Colour on Students Cognitive Achievement in Video Instructions. Media and Development Countries: EMI,(2) 64 – 69.

Ajayi – Dopemu (1985). Education Through Television in Nigeria. Journal of Educational Television 4 (1): 115-118.

Amos, L.B. (1953). Development of perception in the Young child as observed in the

Responsesto the Rorschach Test Blots. Journal of Genetics Psychology. 82, pp183-204.

Andy. R. New Blog PostA colourful HistoryRetrieved on Dec.18th 2010 from http://ow.ly/164m6y

Anney, A. (1980). Context of psychological testing: Mc-Graw-Hill Book Company New York USA.

Birren,F. (1962). The Power of Colour.A very Publishing Colour in Your World. New York. Callier-Books.

Birren F.(1979).. Colour Psychology and Colour Therapy; A Factual Study of the Influence of Colour on Human Life. New York. Kessinger Publishing Co. Retrieved on 15th Jan. 2010 from www.Suzipliukelt.Blogspot.Com.

Bonewits, P.E. I (1971, p147).Real magic. New York: Berkley Medallion Books.

Booher, H.R. (1975). Relative Comprehensively of Pictorial Information and Printed Words in Proceduralized Instructions Human Factors; 17 (3), 266 – 277.

Bourgeois – Baidetti, A.M. & Cerbus, G. (1977). Colour Associations to wood stories in first Grade boys.Perceptual and motor skills, 45.1051-1056.

Boyatzis, C.J., & Varghese, R. (1994). Children's emotional associations with colours. Journal of genetic Psychology, 155.77-85.

Cheskinn L. (1951). Colours And What They Can Do. Great Britain: Blandford Press Ltd.

Chute, A.G. (1979). Analysis of the Instructional Functions of Colour and Monochrome Cueing in Media Presentation, Educational Communication and Technology Journal. 27,4,, 251 – 262.

Cockerill, I.M., & Miller, B.P. (1983). Children's colour preferences and motor skill performance with variation in environmental colour. Perceptual and Motor Skills, 56. 845 – 846.

Colour Perception Among Children. Retrieved on Jan. 14, 2011 from: www.naturalhandymail.com.

Cornford, Lily (1906-2003). (In co-operation with Ronald Leech) Colour Healing Therapy School of Healing in London: England.

Dan. C. Colour communicator 2. Retrieved on Jan. 14th 2011 from:www.just-normlicht.de

Daniel P. (2002).Industrial Print Solutions. Severange Way Tombridge: R.W. Miller Freeman Plc.

Dryer, F.M. (1978).Strategies for Improving Learning. Pennsylvania: College, Pennsylvania.

Eisner, E.W. and Ecker, O.W. (1966). Reading in Art Education London: Blaisdell Publishing Company, p71.

Elizabeth, G.M & Barbara, K.The Effect of Colour on Flavour Names on Consumer Choice. Retrieved on 16th May, 2011 from knowledge. Wharton. Upenn.edus

Encyclopedia Encarta (2005). 'Colour' Retrieved July 2006 from Encyclopedia Everyman (1978) (1) London: Sextart – Tracheid.

Engelbreeht, K.The Impact of Colour on Learning. Retrieved on 18th April, 2011 from: www. ncef.org.

Fisher, J. (n.d.) doghouse to dollhouse for Dollars, Retrieved on 18thDec. 2010 from: http//www.doghousetodollhousefordollars.com/pages/5/index.html.

Fisher, J. (1999), Joy to the Home. Retrieved on 18thDec. 2010 from: http//www.doghousetodollhousefordollars.com.

Gelineau, E.P. (2005). A Psychometric Approach to the measurement of colour preference. com/cs/coloursla/symbolism ntm.

Greenman, J.M. (1988). Caring Spaces, Learning Places. Redmond W.A.Exchange Press Inc.

Gulliford and Smith (1959). Colour Images. Retrieved on 24th March, 2011 from: Coloradowest.auraria. Edu

Haunted H. Psychology of colour Retrieved on Dec. 12th 2010 from: http://www.hauntedhamilton.com/3symbolandritual.html

Holiday, W. (1979), Critical Analysis of Pictorial Research Related to Science Education: Science Education. 57 (2) 201– 214

Hopkins, C.O. (1980).Understanding Educational Research: an Inquiry Approach. Columbus Ohio: Charles E. Merrill Publishing Company.

Hotzschlag, M. (2000). Colour my world. Retrieved Nov. 26th, 2010 from: http://webtechniques.com/archives/2000/09/desi/.

Isaacs, L. D (1980). Effect of ball size, ball colour and preferred colour on catching by young children. Perceptual and Motor Skills, 51. 583-586.

Itase, A.O. (1998). The use of colour in interiors London: Mc-Graw – Hills Book.Retrieved on 24th March ,2011 from www. Slideshore.Net

Jill. L. Morton in colour matters for kids Retrieved on Feb. 16th 2011 from: www.colormatters.com/kids

Julius, M. (2001). Meeting Marketing Objectives Lagos: Printing News.

Kanner, J. H. and Rosenstein, A.J. (1960). Television in Army Training: Colour Versus Black and White (Part 1). Merril, Columbia.

Khouw, N. (1995*). T*he meaning of colour for gender. Retrieved on Jan. 15th2011 from: http://www.colourmatters.com/khouw.html.

Kivi, R (1998). How Does Colour Affect Learning ? Retrieved on 18th May, 2011 from: http/ www/ c:/Users/ Administration/eHow. Com

Levie, W.H. and Lentz, R. (1982). Effects of Texts Illustration: A Review of Research. Educational Technology Journal 30 (4) Winter.

Lloyd, R.E. (1987). Colour Sensation and the Realization of colour on Exterior Architecture:

An Archival and Experimental study of colour perception. Michigan: UMI Dissertation Services.

Lowenfield, V and Brittain, W.L. (1975) Creative Mental Growth. 6th Edition, New York: Macmillan.

Macario, J.F. (1991). Young children's use of colour in classification: Foods and canonically coloured objects. Congnitive Development, 6. 17- 46

Magenta Foundation Retrieved on November 18th 2010 from: http://www.magentafoundation.org.

Mahnke, It. F and Rudoolf, H.M. (1987).Colour and Light in Manmade Environments. New York: Van Nostrand Reinhold.

Marcus, A. and Gould, E. (2000). Cultural dimensions and global web user- interface design. Paper presentation at the sixth conference on Human factors and the Web.Austin:T.X.

Mehrabian, A. (1976). Public Places and Private Spaces. New York. Basic Books Inc. Publishers.

Morton, J. (1998). Colour, the chameleon of the web. Retrieved on Dec. 18th, 2010 from: http://www.colourmatters.com/chameleon.html.

Muhammad, A.A. (2006) Colour Preferences of Children between the ages of 6-12.

NBTE- The Nigerian Journal of Technical Education. Vol.4, no 1 & 2 April/ October 1987 pp91-96.

New Blog Post I LOVE LA Thanks to Robert Irwin and his Getty garden. Retrieved on Dec. 18th 2010from:http://ow.ly/165ax7.

Nigerian Journal of Educational Foundations Vol 4. No ISSN 1116-0381 Sept., 1993.

Ogunlola, O. (May, 2003). Printers Digest. Lagos: Graphics, Printers and Packaging Industry.

Oram, N. & Laing, D.G. & Hutchison, I. & Owen, J. (1995). The Influence of flavour and colour on drink identification by children and adults. Developmental Psychology. 28. 239-246.

Oslie, P. (2000), life colours: What the colours in your Aura reveal. (pp.44-51) Novato: California.

Palmer, E.L. (1973). General colour preference in young children of different race , age and neighbourhood of residence. Perceptual and Motor Skills, 36. 842.

Picarioello, M. L. & Greenberg, D. N. & Pillemer, D. B. (1990). Children's sex-related Stereo-typing of colour.Child Development, 61. 1453 – 1460.

Salihu, O.A. (1978). Differences in colour form preferences Among Yoruba School Children in Oyi Local Government Authority of Kwara State Nigeria. Unpublished B.Ed Project ABU Zaria

Saunders, D.J. (1979). Visual communication Handbook. Teaching and learning using simple visual materials. G.B. Ebenezer Bay's and Sons Ltd.

Silver, G.A. (1981).Graphics layout and Design. New York : Delmar publishers, Albany.

Singh, V. (2000). Colour design for the web. Retrieved on Jan. 15th, 2011 from: http://www.coolhomepages.com/cda/color/

Tansley, D.V. (1984). Subtle body.

Vandewiele, M., D'Hondt, W., Didillon, H., Iwawake, S., & Mwamwenda, T. (1986). Number and colour preferences in four countries.Perceptual and Motor Skills, 63. 945-946.mm

Varichon, A. (2006). Colours: What They Mean and How to Make Them. (P.138). New York: Abram.

Varley, H. (1980).ISBN 0-89535-037-8 P.222. Marshal Editions Ltd.

Vernon, M.D. (1962). Cultural Differences in Children's Colour and form preferences. Journal of Social Psychology (70). 3-10

Wangboje, I (1992).A Textbook on Art for Junior Secondary Schools in Nigeria. Evans Brothers (Nig) Publishers Ltd.

William. F. (1977).When we were young.London Thanes and Hudson.

William, W. (1979). Visualisation in Learning and Instructional: A Cognitive Approach. Journal of ECTS 30 : (1)

Winch, W.H. (1909). Colour Preferences of School Children. British Journal of Psychology. 3: 42-65.

Wood, W.A. (1956). Some Experiments of Attitude Towards in combination Perceptual and Motor Schools in Ochu, R.O. (1992).A Study of colour Identification and colour Tastesof Egbira Primary School Pupils. Unpublished M.Ed Thesis, University of Ilorin.134.

Appendix D

PROPOSED GUIDING QUESTIONS FOR RESEARCH

Research Topic; Evaluation of colour preferences among Pre- primary school children in selected schools in Zaria metropolis: Implication for teaching and learning

Name:……..

Gender:……

Class:……..

Age:……

School's name:……..

Location: 1 Urban

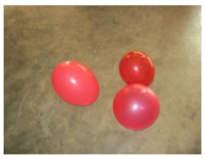
Location: 2 Rural

Instruments in primary colours:



Blue plates

To every child after Playthe next thing is food



Red balloons

Watch them competing for balloons in birthdays and weddings etc



Yellow balls

Football is a major game

Instruments in secondary colours:



Orange chairs

Use both at home and in schools



Green whistles

For creating noise and attention



Purple berets

Pupils hardly come to school without berets

Instruments in neutral colours:



White socks

Most school accepts only white socks as part of school dress



Black school bags

Very common colour among bags,especially school bags



Brown lunch boxes

As it is with plates, lunch boxes are for food while to school

INSTRUMENTATION

The tables below shall be used to show cases where colours shall be correctly named.

a1	a2	a3	a4	a5	a6	a7	a8	a9

QUESTIONNAIRES

	ITEMS	Right	Wrong
Q1	What is the colour of a leaf?		
Q2	What is the colour of your teeth?		
Q3	What is the colour of your hair?		
Q4	What is the colour of fire?		
Q5	What is the colour of the wall in your classroom?		
Q6	What is the colour of your desk and bench?		
Q7	Go and touch an object in orange colour		

Q8	Pick up and object in purple colour		
Q9	Name the object that is in brown colour		
Q10	Name the object that is black in colour		
Q11	Which balloon would you take for yourself?		
Q12	Take two more colours that you like		



Coloured balls

Even at the ages of one

Balls are used to play.



Coloured balloons

Give children balloons

and watch what they

will do with them

To evaluate the reliability of the test:

Ask questions like

- Show me the yellow ball.
- Show me an object with purple colour
- Pick up a brown object, etc,
- Name your favorite colour.
- Name three colours you like most in their order of preference

……

Research Assistant.

LIST OF TABLES

TABLE3.1: Four (4) and Five (5) year old pre-primary school pupils of the sampled schools

S/No	I Name of school	1I Male	III Female	IV Total
1.	Layin Zomo L.E.A.	60	42	102
2.	Bomo L.E.A.	32	25	57
3.	Muchia Model Primary School	41	37	78
4.	Maramara L.E.A	74	65	139
5.	Angwan Kanawa L.E.A	45	50	95
6.	Samaru Model Primary School	55	60	115
7.	Aminu Model Primary School	20	19	39
8.	Dogorawa L.E.A.	38	40	78
9.	Ja'afaru Model Primary School	52	45	97
10.	Saidu Model Primary School	29	35	64
		446	418	864

Source: Sabon Gari Local Government Education Authority

TABLE 3.2: Rural area pre-primary school pupils of the sampled schools

S/No	I Name of school	II Male	III Female	IV Total
1.	Layin Zomo L.E.A.	5	5	10
2.	Bomo L.E.A.	5	5	10

3.	Muchia Model Primary School	5	5	10
4.	Maramara L.E.A.	5	5	10
5.	Angwan Kanawa L.E.A.	5	5	10
.		25	25	50

Source: Sabon Gari Local Government Education Authority

TABLE 3.3: Urban area pre-primary school pupils of the sampled schools

S/No	**I** **Name of school**	**II** **Male**	**III** **Female**	**IV** **Total**
1.	Samaru Model Primary school	5	5	10
2.	Aminu Model Primary School	5	5	10
3.	Dogorawa LEA	5	5	10
4.	Ja'afaru Model Primary School	5	5	10
5.	Saidu Model Primary School	5	5	10
		25	25	50

Source : Sabon Gari Local Government Education Authority