ASSESSING THE QUALITY AND RELEVANCE OF ILLUSTRATIONS IN APPROVED PRIMARY SCHOOL TEXTBOOKS: THE CASE OF UASIN GISHU COUNTY KENYA

BY

BEATRICE JEBET KIPSAT

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DECLARATION

Declaration by Student

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Beatrice Jebet Kipsat

Reg. No. IS/MSC/PUB/55/14

Signature…………………………….. Date…………….......………..

Declaration by University Supervisors

This Thesis has been submitted for review with our approval as the University supervisors

Dr. Duncan Omanga

School of Information Science, Department of Media and Publishing studies

Moi University

Signature………………………… Date: ………………………..........

Prof: Daniel .C. Rotich

School of Information Science, Department of Media and Publishing studies

Moi University

Signature………………………… Date…..

ABSTRACT

Quality and relevant illustrations add value to textbooks essential for primary school pupils' learning. However, some primary school textbooks with illustrations have certain inadequacies in terms of the quality and relevance that inhibit their use. Therefore, this study assesses the quality and relevance of illustrations in approved primary school textbooks in Kenya and recommends strategies for determining and production of quality and relevant illustrations. The study was guided by the following objectives to: establish the criteria of determining the quality and relevance of illustrations in textbooks for primary schools in Kenya; assess primary school pupils and subject teachers perception's on the quality and relevance of illustrations in approved textbooks and how they affect their use; determine factors that contribute to the quality and relevance of illustrations in primary school textbooks; examine challenges faced by primary school pupils and subject teachers, publishers, vetting coordinator and Ministry of Education (MOE) officials in determining the quality and relevance of illustrations in approved textbooks, and recommend strategies and propose strategies for addressing the identified challenges with respect to the quality and relevance of illustrations. The research was guided by the Gate Keeping Theory which helps to appreciate the relationship between illustrations, the users and the gate keepers of illustrations. The study used exploratory survey design with qualitative and quantitative approaches. The research was conducted in Uasin Gishu County, Kenya with a total population of 73,863 and a sample size of 191 respondents comprising of 108 primary school pupils in class five, six and seven and 72 subject teachers sampled from 12 primary schools and 11 key informants from MOE, Kenya Institute of Curriculum Development (KICD) and publishing houses. The respondents were selected using simple random and purposive sampling techniques. Questionnaires and interviews schedules were used to collect data which were analysed qualitatively and quantitatively. Collected data were presented in themes, tables and bar charts. The results of this research are based on 163 respondents comprising of 88 primary school pupils, 66 subject teachers and 9 key informants from MOE, KICD and publishing houses. The major findings of the study are: lack of specific criteria for determining the quality and relevance of illustrations, primary schools pupils and subject teachers considered illustrated textbooks most useful. Quality and relevant illustrations help pupils and teachers achieve cognitive, attention and affection roles. Further, it was established that personnel expertise, preparation and production time, technology, originality of illustrations, quality of printing materials, market research and pre-testing of manuscripts before production contributed to the quality and relevance of illustrations. When dealing with the quality and relevance of illustrations in approved textbooks, the researcher noted that primary school pupils and subject teachers faced user-related challenges, publishers experienced challenges in the preparation and production of illustrations, while MOE and KICD faced problems in terms of cost, illustration universality and management. Therefore, the study concluded that there were evidence of poor quality and irrelevant illustrations in approved primary school textbooks in Kenya. It is recommended that; the vetting authorities must formulate adequate criteria for determining the quality and relevance of illustrations; publishers must give preparation and production of illustrations a professional attention; government must support in textbook development and involvement of subject teachers from all regions in the evaluation panels.

DEDICATION

This study is dedicated to my family members for their great support and encouragement to me.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CAD   Computer Assisted Design

CMYK   Cyan Magenta Yellow Black

KICD   Kenya Institute of Curriculum Development

KIE   Kenya Institute of Education

KLB   Kenya Literature Bureau

MOE   Ministry of Education

OUP   Oxford University Press

RGB   Red Green Blue

UNESCO   United Nations Educational Social-cultural Organization

CHAPTER ONE

1.0 Introduction

This chapter presents the background to the study, statement of the problem, aim and objectives of the study, research questions, assumptions, significance, scope and limitations of the study. Definition of operationalization terms is also provided in this chapter.

1.1 Background to the Study

Quality and relevant illustrations in textbooks play important roles in primary school pupils learning; they decorate, explain, make a page alive and enhance cognition, affection and attention roles while reading textbooks. Textbooks are the media in which ideas, knowledge and morals are kept or passed to the user; authors use them as communication tools.

According to Ikoja-Odongo (2010), the textbooks are created through manuscript preparation: editing, illustrating, typesetting, designing, printing and distributing to the readers. The editorial department in a publishing house is responsible for identifying publishable ideas, appointing authors, reviewing manuscripts as well as editing, designing and illustrating textbooks.

The integration of illustrations falls in the designing stage of the publishing process and this role is performed by graphic designers and illustrators. Brainard (1998) states that illustrations are drawings, pictures, photographs or charts that decorate, explain and depict information locked inside the imagination.

Naturally, all people of all ages are attracted to quality and relevant illustrations in books whether printed or in digital form; for example, before a child can read words, he/she often can recognize labels, signs and illustrations. Segun (1998, p.27) states

>A small child is sensitive to pictures even before it can speak. That's why it is not surprising if we consider that a baby easily distinguishes between its mother's face and other familiar faces on the one hand and strangers on the other hand. The child's mother, sister, brother and the stranger can all be regarded as living and moving images. In the same way, a child will recognize a favourite toy or pet.

This sensitivity to visual stimuli on the part of a child has led to the incorporation of illustrations in textbooks, especially for children. Written communication for children requires the use of quality and relevant illustrations to sell what is contained inside. UNESCO (2009) explains that literacy is achieved through reading of written informational materials like textbooks. Literacy contributes to development of personal, social, economic and political empowerment. The educational system is structured to promote children from one level to another.

The introduction of free primary education in Kenya in 2003 resulted in increased pupil enrolment and increased demand for textbooks. However, information in the textbooks would be best conveyed and understood if words are complimented by quality and relevant illustrations. This is more crucial in primary schools where the learners are at their earlier stages of learning. Rotich (2014) states that primary education in Kenya is the second level of education which caters for children aged between 6 and 13 years and the change of educational system from 7-4-2-3 to the current 8-4-4 in 1984/85 affected educational publishing in Kenya.

In the old educational system, the first seven years constituted primary school education as opposed to the current one in which its eight years. With this change, there was demand for new textbooks which are the major educational material for learning purposes but because of hurried changing of the system with little coordination between Ministry of Education (MOE) and the publishing industry, some inexperienced publishers produced poor quality titles. This forced the government to adopt the approval procedures for all textbooks (Rotich, 2014)

According to Rotich (2014) the Kenya Institute of Curriculum Development (KICD) evaluates vets and approves textbooks for use by schools in Kenya and give guidelines and procedures for use by publishers in producing appropriate textbooks. These books fall in two categories;-course books and reference books. Up to six different titles of course books by different publishers are approved for each subject in each class and are used by the pupils under the guidance of their teachers (MOE, 2009).Among the quality issues considered by KICD is the use with quality and relevant illustrations in textbooks.

Rotich (2014) further states that over 50 percent of the textbooks approved by MOE and used in schools are published by six major publishing houses, namely; The Jomo Kenyatta Foundation (JKF), Kenya Literature Bureau (KLB), East African Educational Publishers (EAEP), Oxford University Press (OUP), Longhorn and Macmillan Kenya.

The MOE produces and issues a complete list of all recommended books every year in which teachers choose from. The Ministerial Course Material Vetting Committee (MCMVC) in the Ministry of Education carries out the role of textbook selection and approval. KICD recommends subject panel members to MCMVC for approval (MOE, 2009). All evaluated and approved textbooks are notified to all publishers submitting the textbooks as soon as MCMVC has approved the evaluation panel recommendations. The director of KICD notifies all publishers who make submissions.

Teachers in primary schools then selects only one of the approved text books for use as a course book for that particular subject in their school. The teachers' choice among the approved books is simply a matter of preference than superiority as all the books approved by KICD adequately cover the relevant content, the only difference being perhaps the language and the format in which the content is presented (MOE, 2009).

Johnson (1993) affirms that the use of quality and relevant illustrations in textbooks is poorly understood. Instead, the purposes of illustrations are seen to be for decoration, attention, cognition and affection purposes. It is therefore necessary that designers and illustrators should be encouraged to develop products that give consideration to children's age, literacy level, relevance and quality of the products (photographs, drawings, paintings and cartoons). Segun (1998) states that pictorial language is literature in its own right and children understand the language and the message better when there are quality but relevant illustrations in textbooks.

Moriguchi (2014), states that children prefer work to play, order to disorder, silence to noise, self-mastery to dependence on others, mutual aid to competition. Children like attractive and show a lot of interest in decorative illustrations. Therefore, primary school textbooks should contain quality and relevant illustrations. Both quality and relevance aid in achieving desired functions like cognition, affection and attention.

Textbooks are important vehicles for ideas, presenting knowledge that changes lives and consequently shape imaginations and aspirations. The study evaluated the quality and relevance of illustrations in approved primary school textbooks in Kenya. The target population was standard five, six and seven primary school pupils and their subject teachers from Uasin Gishu County, Kenya, while key informants were from KICD, textbook publishing houses and MOE.

1.2 Statement of the problem

Quality and relevant illustrations play very crucial roles in pupils learning and teachers' delivery of content. Most pupils take advantage of the naturally occurring events in the classroom and at home environment to enable them solve problems like counting, sorting, matching words, letters and pictures. However, the researcher's observation through interaction with pupils and teachers showed that approved textbooks have illustrations that do not portray experiences or reflect children's natural environment. This has potential to negatively affect how children relate text to illustrations, while teachers experience challenges in delivering content with poor quality and irrelevant illustrations.

Publishers develop textbooks used in primary schools in Kenya as per the syllabus and guidelines generated by MOE. Graphic designers and illustrators from publishing firms play crucial roles in textbooks' development; they plan, arrange, organize and prioritize visual elements for effective delivery of messages in accordance to the design brief from the editors. However, from researcher's experience as a designer and perusing through MOE guidelines given to publishers, most approved textbooks lack quality and relevant attributes.

Additionally, textbook development guidelines provided by KICD may be inadequate in terms of illustrations' quality and relevance. Consequently, publishers develop textbooks which do not meet the standards of quality and relevance thus limiting the overall role of illustrations.

Quality and relevance in illustrations is essential for pupils and teachers to enjoy the full benefits of illustrations. KICD's mandate is to vet and evaluate the quality and relevance of educational materials. Publishers prepare and produce illustrations in

textbooks, while MOE recommends textbooks for use in primary schools. Lea (2012) argued that the quality of an original illustration determines the final printed illustration. However, textbooks approved and recommended by KICD and MOE often have had quality and relevance challenges in terms of illustrations. This possibly means that there are other factors apart from the quality of the original illustrations that contribute to the quality and relevance of illustrations

Rotich and Musakali (2005) in a study established that despite the vetting and evaluation process undertaken, poor quality textbooks still found their way to schools. This may possibly mean that pupils and teachers experience quality and relevance challenges while using textbooks. It is therefore clear that the textbooks as currently produced by publishers often have challenges related to the quality and relevance. Equally, KICD and MOE experience challenges while vetting and approving textbooks' illustrations with regard to their quality and relevance.

In Kenya, there is little information on the quality and relevance of illustrations in approved primary school textbooks. This was a major reason for conducting this research. The study assesses the quality and relevance of illustrations on approved primary school textbooks in Kenya.

1.3 Purpose of the Study

The purpose of this study was to assess the quality and relevance of illustrations in approved primary school textbooks in Kenya and recommend strategies that would guide determination and production of illustrations.

1.4 Objectives of the study

The objectives of this study are to:

(i) Establish the criteria used to determine the quality and relevance of illustrations in textbooks for primary schools in Kenya.

(ii) Assess the primary school pupils and subject teacher's perceptions on the quality and relevance of illustrations in approved textbooks and how they affect their use.

(iii) Determine factors that contribute to the quality and relevance of illustrations in approved primary school textbooks.

(iv) Examine challenges faced by primary school pupils and subject teachers, publishers, vetting coordinator and MOE officials when dealing with the quality and relevance of illustrations in approved textbooks

(v) Propose and recommend strategies for addressing identified challenges with respect to the quality and relevance of illustrations

1.5 Research questions

The following research questions guided the study.

(i) What criteria are used to determine relevance and quality of illustrations in textbooks for primary in Kenya?

(ii) What are the primary school pupils and subject teacher's perceptions of the quality and relevance of illustrations in approved textbooks and how do they affect their use?

(iii) What factors contribute to the quality and relevance of illustrations in approved primary school textbooks?

(iv)   What challenges do primary school pupils and subject teachers, publishers, vetting coordinator and MOE officials face when dealing with the quality and relevance of illustrations in approved textbooks?

(v)   What strategies would guide in addressing identified challenges and proposal for determining and producing of quality and relevant illustration?

1.6 Assumptions of the study

The study was based on the following assumptions;

1. The criteria for determining the quality and relevance of illustrations in textbooks is inadequate

2. As a result of poor quality and irrelevant illustrations in primary school textbooks, primary pupils and teachers experience challenges while using textbooks.

These assumptions were proved true from field study findings thus the research was worth carrying out.

1.7 Justifications of the study

Currently, publishers and the vetting authorities in Kenya do not have detailed specific criteria for determining the quality and relevance of illustrations. As a result, publishers prepare and produce illustrations with serious challenges relating to the quality and relevance. This has resulted to primary school pupils and teachers not enjoying the cognition, attention and affection roles of good quality and relevant illustrations.

1.8 Significance of the study

This study has proposed guidelines and criteria for determining the quality and relevance issues in illustrations on approved textbooks. As such, they can assist publishers and vetting authorities in formulating specific and detailed guidelines and

criteria for determining the quality and relevance of illustrations in primary school textbooks.

Quality and relevance of illustrations greatly affect pupils and teachers' use of textbooks. The enhancement of the quality and relevance of illustrations in textbooks used in primary schools in Kenya has been supported by the findings of this study. The results of this study are expected to guide publishers in preparing and producing quality and relevant illustrations for the benefit of primary school pupils and teachers in Kenya.

Findings from the study may help primary schools and parents in Kenya to make informed decisions in book selection. Given the limited information on the quality and relevance of illustrations in approved primary school textbooks in Kenya, the results of this study can add to the available information. This can benefit scholars by contributing to knowledge on this area of illustrations.

1.9 Scope of the study

This study focused on assessing the quality and relevance of illustrations in approved primary school textbooks in Uasin Gishu County by considering the users of illustrations, producers, vetting and approving authorities of textbooks. Focus was on twelve primary schools in Uasin Gishu County inclusive of private and public schools from the six sub-counties which gave a representative picture of primary schools in Kenya.

1.10 Limitations of the study

Owing to the sensitive nature of information collected, some publishers were suspicious and declined to be interviewed for example one publisher said that the researcher was seeking information for purpose of competition with their firm and declined to respond despite having seen the research permit. Therefore, purposive sampling based on the publishers' willingness to be interviewed was used. This did not affect the findings

since the provision of the research permit, clearance letter and assurance of confidentiality of the collected data made the key informants to fully open up.

Since most of the interviews were done via telephone, a lot of time was spent to make initial contacts and challenges of mobile phone network were also experienced. The unavailability of some key informants because of their busy schedules delayed the interviews and interviews were done with their in charge persons. This did not affect the findings since those in charge gave required information.

Other challenges included declining to fill the questionnaires by some respondents in expectation of being paid to respond for example six (6) subject teachers who had taken the questionnaires kept in their drawers. This did not affect the findings as purposive sampling was used to select the primary schools that fitted the criteria of the sampled schools. Finally, some data from the County Education Officer were not current. However, the researcher obtained the same from the County's website and later verified with them.

1.11 Definition of Operationalization terms

The researcher adopted the following definitions for the significant terms of the study:

Book Designing: Planned arrangement of visual elements in printed books organized and prioritized into a cohesive whole that becomes the visual message (Hendel, 1998)

Curriculum: Set of desired goals or values that are activated through a development process and culminating in a successful learning experience (Wiles & Bondi, 2007)

Curriculum support materials: Denotes information materials used to facilitate curriculum implementation and these include both electronic and non-electronic form (UNESCO, 2009)

Design elements: Visual tools for example value, line, colour, shape, texture and type used in book design that aid the graphic designer and Illustrators (Faimon &Weigand, 2004)

Design principles: Description to perceive and process visual information and the ideas for creating order in designs. For example; - emphasis, variety, balance, space and unity (Benz & James, 1986)

Education: System of training and instruction aimed at providing knowledge and skill (UNESCO, 2009)

Illustrations: Drawings, pictures, photographs or charts in story picture books

Pupils: Young children attending primary schools at Uasin Gishu County aged 9-13 years who are in class five, six and seven who were at the time of conducting this study (Researcher, 2016).

Text books: A written source of information, designed specifically for the use of students on a particular subject or field of study that is usually developed based on a syllabus (UNESCO, 2003)

Relevance: The suitability of an illustration to the target readership (Researcher, 2016).

Quality: Attributes of illustrations in terms of colour, form, value, contrast, shape, line use, sharpness, tonal variation and image registration (Researcher, 2016).

1.12 Summary the Chapter

The chapter introduces the study, giving the background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, assumptions of the study, justifications, significance of the study, scope of the study and definition of operational terms. The background explains the textbook as the media in which authors ideas, knowledge and morals are kept or passed to users. For users to get full potential use of the book, quality and relevant illustrations must be integrated with text. Textbooks for use by primary schools are recommended by the Ministry of Education (MOE) after a thorough vetting by Kenya Institute of Curriculum Development (KICD) which the study has elaborated.

The study objectives guided this study as the researcher attempted to answer the research questions. The study had two assumptions which were proved true from field study findings thus the research was worth carrying out and justifiable. This study was very significant to publishers, vetting authorities, parents and teacher in book procurement and scholars in adding to existing knowledge in the field of illustrations.

The study's scope focused on standard five, six and seven pupils and their English and science subject teachers because of being the key textbook users, Educational publishers by virtue of their role as textbook manufacturers, KICD vetting coordinator and MOE by their role as vetting and approving authorities respectively.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter presents the reviewed literature; Wiersma (1995) states that literature review allows a researcher to critically go through literature that's related and relevant to the problem of inquiry, cover knowledge related to theoretical, methodological as well as the practical dimension.

2.2 Theoretical Framework of the Study

A theory is a system explaining phenomena by stating constructs and how these constructs relate. Theoretical framework shows commonalities in phenomena that may seem isolated at a glimpse. The laws of a given theory help to make predictions and help to control events, as well as organize isolated findings from different studies into an explanatory (Wiersma, 1995).

This study was guided by the Gate Keeping Theory put forward by psychologist Kurt Lewin an Austrian in 1943(Rogers,1994). Lewin was primarily concerned with producing desirable social changes in food habits by controlling the type of food that passed through the various gates existing between the farm and the family table.

This theory was chosen because of its suitability in relating the various variables in the study with the constructs in the theory. For example in the study, criteria for determining the quality and relevance of illustrations, perceptions of the primary schools on the quality and relevance of illustrations, factors that influence the quality and relevance of illustrations are the variables.

Lewin noted that there were gates governed by either by impartial rules or by gatekeepers, who are individuals or groups charged with the responsibility of deciding what passes, and what is denied entry (Rogers, 1994). For the case of the study, rules

are the criteria; factors that influence the quality and relevance of illustrations as described by Shoemaker &Vos (2009) as forces both in front and behind the gates, which determine the amount of change in a message which for the case of this study guided in attaining this objective.

The gatekeeper in this theory was typically the housewife, or sometimes a maid and in relating to media the flood gates were news gathering and dissemination (Rogers, 1994). The theory is relevant to this study as it helped in appreciating the relationship between the illustrations, the users of illustrations and the gate keepers in the publishing discipline. According to Shoemaker & Vos(2009) news creation is a process that begins with raw news collected by news gatherers before turning it to news copy, there are news processors who are editors that goes through the copy before publishing a complete product.

In explaining the process of new movement from the news room to the audience shoemaker came up with a model showing the flow of news (figure 2.1)

Figure 2.1: Gate Keeping Theory
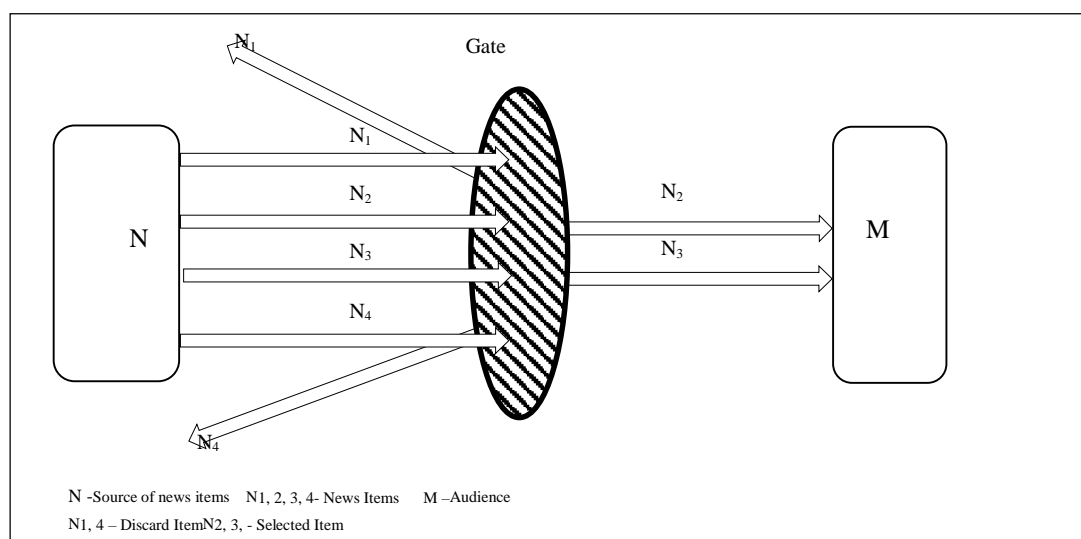
Source: Shoemaker (1996)

Figure 2.1 shows how information (N_1, N_2, N_3, N_4) flow from the source (N), through channels that act as gate keepers which filter information that reach the audience (M).

In publishing, illustrations form integral part of textbooks. Publishers are creators of illustrations of various categories including drawings, pictures, photographs or charts. Editors interpret the design brief for Illustrators and graphic designers to prepare illustration to suit the author's ideas.

MOE act as a policy maker pertaining to education matters. KICD implement these policies by developing curriculum and provision of guidelines to publishers on textbook development, submission, evaluation and approval procedures for print and digital media. Primary school selects approved textbooks from the published 'Orange book' published by Kenya Publishers Association through the MOE.

According to this study, publishers source illustrations either from the firm or from outside which according to gate keeping theory are news items. Preparation and production of these illustrations are done as per the set guidelines which form part of the quality and relevance criteria; relating to gate keeping theory, the criteria are the rules in the gates which determine which news items to reach the audience.

In this study, KICD evaluate, vet and approve textbooks for use in primary schools who are the audience. MOE and KICD decides which textbooks will be used in primary schools and which textbooks to rejectbasing on the set guidelines and procedures. Certain illustrations in textbooks in some cases may fail to meet the set standards of quality and relevance, thus rejected by vetting authorities and returned to publishers thus according to gate keeping they signify gate keepers..

In gate keeping theory, at the gate there are factors that contribute to news items reaching the audience issue like news worthiness, popularity or currency of the news. In this study the study sought to establish factor contributing to quality and relevance of illustrations which covers factors from creators of illustrations (publishers) in the

preparation and production of illustrations and other factors contributed by vetting authorities that determine the quality and relevance of illustrations in approved textbooks.

At the gate possibly there are challenges in deciding which news item should pass to the audience which calls for the news editor to take informed decision based on the set criteria. In the study, creators, quality controllers and users of illustrations experience challenges when dealing with the quality and relevance of illustrations which requires strategies to address then in which the this study determined to establish and recommend strategies.

Figure 2.2: Example illustrating Gate keeping model in textbook illustrations
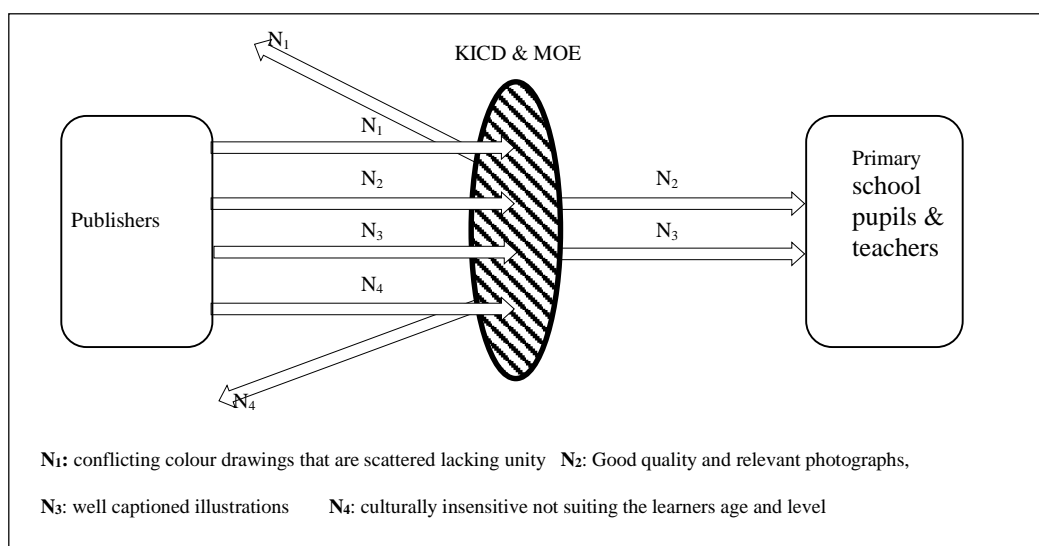
Source: Researcher's (2016) adaptation from gate keeping theory

2.3 Origin of illustrations

Illustrations dates back to the cave painting before the invention of writing. Gosh (2014) narrates that artists used charcoal and ochre to illustrate what they saw around which was crude but vivid charcoal drawing survived because of their remote existence. Stating that a notable exception was the series of Egyptian illustrations discovered in the tombs of the Pharaoh. Emphasizing this, Musakali (2015) adds that illustrations

generally existed for long where painters and artists used to make illustrations, paintings and drawings in caves and other areas as ways of passing given messages. From these it's evident that illustrations existed from generations and are agents of communication to this date especially for the primary school child.

In his findings Gosh (2014) indicated that book illustrations evolved from early European woodblock printing. The first known European block printings with a communications function were devotional prints of saints and with the advent of printing, the art of hand-painted illumination declined as a means of book illustration (Gosh, 2014). Researches observation from the literature is that the introduction of the printing technology placed hand in decline as a means of book illustration as elaborated by Gosh.

Gosh(2014) states that most illustrative drawings were done in pen-and-ink, charcoal, or metal point, after which they were replicated using a variety of print processes including: woodcuts, engraving, etching, lithography, photography and halftone engraving. In the 20th century, four-colour letterpress printing technology was introduced which made possible the reproduction of a full colour painting. Henceforth illustrators could have their drawings and paintings reproduced exactly as created.

Dubowski (2010) says that American illustrators adopted the universal computer systems and computerized methods of image-creation, editing, replication and communication in the 1990s. The art of illustration became the technique of image processing, as more and more commercial artists produced professional pictures without any traditional art training, or without any ability in drawing. Finding from editors in this study commented on technology as one of the factors contributing to the

quality and relevance of illustrations this meant illustration creation development have gone long way in its development.

Dubowski (2010) further elaborates that more and more professional illustrators were replaced by novices' proficient in graphics software programs like *Adobe Illustrator*, *Photoshop*, and *Corel Draw*, as well as *Wacom* tablets and *Kai's Power Tools*. At the same time, however, this type of digital art has been combined with more traditional methods. From researchers point of view illustration's preparation and production has been evolving from traditional preparation to the digital era requiring the use of design software which are user friendly thus contributing to the quality and relevance of the illustration

2.4 Type of illustrations

Illustrations fall in two major categories depending on how they are prepared; line and half-tone illustrations. Alastair (2000) states that illustrations are the simplest and oldest means of visual communication which dates back to prehistoric ages. As a crude form of human interpretation of a real scene, line illustrations uses the minimal amount of data yet effectively conveys object shapes to the viewer.

Lea (2012) argues that line illustrations appear as black and white on white paper only the outline of the illustration is printed. There is no print tone in the background. The shading that's possible is the result of cross-hatching and stippling. Graphs, charts, pen drawings, typed tables and hand-drawn chemicals or mathematical equations are normally produced as line illustrations.

Halftone illustrations are form of illustrations with intermediate greys;-greys, middle tone and dark tones normally on tone of a photograph. A single-colour halftone can produce a range of shading from solid black to paper white. They are made by

superimposing a screen over the original illustration and making a photograph through the screen. The screen breaks up the continuous tone image of the original and leaves a dot pattern which can be reproduced in print (Alastair**, 2000).**

Finding as regarding to pupils and teachers consideration in this study on the criteria for determining the quality and relevance of the illustrations revealed that the type of illustrations is a factor and that publishers also considered the type of the illustration as contributing factor to the quality and relevance of illustrations.

2.5 Book design and illustrations

Book design involves the art of incorporating content, style, format and sequence of the various components into a coherent whole (Hendel, 1998). The various components of a book include: illustrations in the form of drawings, pictures, photographs or charts. Book design like writing, involves problem solving, planning and organizing. In verbal communication, we choose which words to use and how to put them together to best communicate our thoughts and ideas. The use of illustrations in textbooks requires excellence in determining and preparing to enhance the quality and relevance to the users.

Hendel (1998) describes book design process as involving editorial planning and the actual design. He adds that editorial planning involves decisions that are taken to publish a work and resolving technical and legal issues. Authors or staff may rewrite and make small changes in improving the quality of the work. Publishers may maintain a house style and do copy editing to ensure that the work matched the style and grammatical requirements of the primary school pupils. Editors often choose or refine titles and headlines.

In publishing, the word "art" also designate illustrations. Depending on the number of illustrations required by the work, photographs that form illustrations may be licensed

from photo libraries (Segun, 1998). For those works that are particularly rich in illustrations, the publisher may contract a picture researcher to find and license the photographs required for the work. Segun (1998) says that design process prepares the illustration for printing through processes such as typesetting, dust jacket composition, specification of paper quality, binding method and casing, and proofreading. Visual planning- where the overall design of the printed image is determined

The editor's role is to provide a design brief to the designers and the illustrators who ensure the choice of the right illustration, quality resolution and prepare it to suit the specific readers. In the design phase artwork preparation may be commissioned or done in-house. The art editor discusses with the artist and illustrator on the design brief and any corrections are made by the editor. Bgoya et al (2013) states that roughs and a final mock-up illustration are prepared before signing off to go for printing.

Researcher's opinion on book design and illustrations is that illustrations form part of the book; as integration of quality and relevant illustration with text forms effective communication to the users and this majorly lies in the editor's specifications to the illustrators from which the finding of this study support. KICD and MOE of Education commented that the expertise and skill of the personnel involved in preparation of the illustration contribute greatly to the quality and relevance of illustration.

2.6 Determining the quality and relevance of illustrations in textbook

The foundation of many illustrations in book designs is based upon the framework of principles and elements. Designs arrangement that are balanced, well proportioned, and unified by a harmonious combination of elements is visually aesthetic in terms of quality. Benz and James (1986) describe design principles as laws of designing anything including preparing illustrations. Thus, for one to have a good design, these laws must be abided by as they act as guidelines that govern the organization.

Design elements are used to make the design, for example the use of colour, line, shape, value, texture and type. The combination of design principles and elements results in beautifully created designs that appeal to the interests of children (Benz & James, 1986). Therefore, proper use of design elements determines illustrations quality while appropriate use of design principles enhances illustrations' relevance.

2.6.1 Design elements and illustrations

Faimon and Weigand (2004, p.13) define design elements as "pieces, components and building blocks of design". He compares elements to ingredients in a recipe, parts of a machine or the notes in music. On their own, these elements may do little, but put together skilfully, they create an end product. They include line, shape, colour, value and texture. When put together skilfully, they create effective visual communication. One of the most important parts in illustrations' preparation is proper use of design elements that enhance quality of the illustration.

Pupils learning to read are only familiar with basic letter forms and are taught to read black text on white background and the proper use of design elements on illustrations accompanying the text create an aesthetic quality important for children (Faimon & Weigand, 2004). Use of design elements in illustrations; planned and arranged into a cohesive whole in textbooks gives a visual message and improves the illustrations quality hence primary school pupils are able to enjoy using the textbooks..

2.6.1.1 Colour

Belvin (1994) describe colour as a property of light emitted and determined by the wavelength of light. Additive colour is created from emitted light such as a video screen, a computer monitor or theatrical lights The additive primary colours are red, green and blue (RGB) and all other additive colours are derived from them. Combining two primary colours yields a secondary colour: magenta from red and blue, cyan from

blue and green, yellow from red and green, and combining all three additive primaries results in white.

The use of colour in illustrations for children textbooks is very important. Stewart (2002) argues that colour can be dealt in terms of temperature that's warm and cool colours. For example, warm colours red, orange and yellow used on illustrations remind pupils of natural elements like fire and sunlight and create a sense of warmth in the illustration. Blue and green colours used in illustrations remind pupils of water and plants and so they create a feeling of coolness in the illustration used on the textbook.

Stewart (2002) states that colours have symbolism and colour meanings that go beyond ink. Therefore, an illustrator create graphical illustrations should keep in mind how the eye of pupils and the mind perceive certain colours and the colour meanings associate with each colour. Colour consideration in illustrated textbooks is more important because certain colours offend the primary school pupils.

 Bevlin (1994) explains that red colour in children's textbooks may signify defiance, anger, violence, aggression, visual impact, strain, danger to primary school pupils which discourages reading. While the uses of warm colours like orange signify physical comfort, food, warmth, security, passion, abundance, fun, and approachability. Colour helps in identifying illustration and adds life to children's books. Most children are attracted to coloured illustrations to black and white.

From this researcher's view textbooks' illustrations are more quickly recognized by primary school pupils if the colours reflect what they see in the physical world. For example, depending on the natural colour of the illustration, an illustration that is coloured differently, like a blue banana, can cause cognitive conflict that the pupil must resolve. Of course, you may intentionally use unusual colours as a creative, playful or

discordant approach. Therefore, appropriate use of colour determines the quality and relevance of an illustration and illustrators for children's books must use colours that are associated with an illustration or scene.

2.6.1.2 Value

Lauer and Pentak (1995) define value as the relative lightness or darkness which is dependent on context. Value contrast refers to the degree of variation between light and dark. The highest value contrast is obtained using just black and white, the narrower the range of values, the lower the value contrasts. When the range in the illustration is limited to light values it is referred to as high key while a limited range of dark values on the illustrations is called low key. Pupils often confuse value and colour.

Belvin (1994) says that value is often used to add volume to a shape, for example gradual shading on a circle makes it look like a sphere enabling primary school pupils identify with their classroom activities. Value is also used to create the illusion of space, for example an atmospheric perspective. In children's books, areas with high value contrast come forward while those with low value contrast recede into the distance. Value can add emphasis which makes the illustration relevant to use by pupils and areas of high contrast stands out in areas of low contrast.

The appropriate use of value in children's textbook illustrations is very essential since value is able to evoke feelings or moods, for example low value contrast creates a faint, restrained effect that feels calm and quiet in terms of quality is low. High value contrast evokes drama and conflict. The light values of high key images conveys the sense of happiness and lightness, mid-range values evoke sadness and depression and the dark values of low key images create feelings of fear and mystery (Zelanski & Fisher, 1996).

In terms of visual weight, darker values feel heavier than lighter values which are essential in enhancing quality in illustrations in textbooks for primary school pupils. In this researcher's point of view other past studies have not captured the actual purpose of value on used illustrations in young children's books. Findings from the study showed that all the pupils considered value as there criteria for determining quality of illustrations this possibly being attributed by the researcher administering of the questionnaires enabling them understand exactly what value is.

2.6.1.3 Texture

Texture is the surface quality of an object, roughness or smoothness, the sensation of a tactile surface including illustrations (Zelanski & Fisher, 1996). An actual or tactile, texture can actually be felt in 2-Dimensional designs; actual texture is in the feel of the canvas or the surface of the paper. Actual texture can also be created by the thickness of the paint or through a collage. Zelanski & Fisher (1996) further states that visual texture is perceived when we take in visual sensations, but we interpret them tactilely.

Visual textures can be created by reproducing the value and colour patterns of actual textures in illustrations while darks and lights can be used to suggest the furrows in bark or the three-dimensional roughness of a stone surface. Visual texture can also be created by repeating marks or shapes letters and words (text) on a page create a visual texture and changing the size and spacing of the text changes the look and feel of the texture (Stewart, 2002).

Zelanski and Fisher (1996) explain that when dealing with children's books, a designer should recognize that different textures in illustrations affect interest of reading printed books in different ways. For example, some surfaces are inviting and some are repellent, and so are the textures that suggest those surfaces. Using different textures

can increase interest primary school pupils' reading of textbooks by adding variety without changing colour or value relationships.

Texture helps an illustrator to be distinctive or have identifying character and characteristics. With the proper texture, a design looks more fascinating than the average design, hence promoting quality of the illustration in the textbook read pupils

From the researcher's point of view, texture can also determine quality in an illustration. In relation to children, a well- illustrated textbook with appropriate use of texture improves the illustration. This consequently helps in achieving the overall purpose of the illustration since appropriate texture use enables children identify with their daily life experiences.

2.6.1.4 Line

Brainard (1998) define line as a mark that is longer than its width, an infinite number of points or the moving path of a point. A line can have different qualities: it can be curved or straight, thin or thick, loose or precise, delicate or bold, expressive or controlled. The qualities of a line in an illustration always evoke different feelings; a curved line in an illustration evokes feelings of natural and organic characteristics, while a straight line evoke feelings of manmade and mechanical perspective.

The role of lines in children's illustrations are to organize, connect and separate, create movement or direction of movement, show expectation, indicate borders, seams and provide a frame. These illustrations are also used to decorate, convey universal feelings, depict value, define shape, provide emphasis, divide space, represent an abstract concept, describe ambiance and as a tool for communication (Lauer & Pentak, 1995).

In children's illustrated textbooks, line depict various meanings. Horizontal line in an illustration reminds pupils of a calm horizon or a person lying down. It also depicts quietness and restless. Vertical line makes pupils think of a skyscraper or a person standing straight and tall thus, showing a feeling of strength and aspiration. Vertical line also contains potential for activity, and so it creates a more energetic feeling than a horizontal line. Diagonal line is like a bolt of lightning or a person leaning forward poised to run and it suggests energy and movement. Wavy drawing of and the lines drawn give a sense of motion.

Reviewed literature clearly describes line use in illustrations as a design element and brings the real picture on how this element determines illustration quality and affects the use of textbooks by pupils. This shows lines are tools for communication and when an illustrator uses lines to define the edges of an image or describe its surface, to a pupil is like someone telling a story especially when the illustration is quality and relevant. From the researcher's standpoint, line has been well elaborated by previously cited authors to show the real picture of line in illustrations quality determination.

2.6.1.5 Shape

Stewart (2002) states that shape is an area created by an enclosing line; an area created by colour, value or texture; an area created by surrounding shapes or a shape is a 2-Dimensional object that has height and width but no depth. It also refers to a mass or volume which 3-Dimensional as perceived as such; it has height, width and at least the appearance of depth. Straight edges and angular corners create rectilinear shapes. Curves and rounded forms create curvilinear shapes. Brainard (1998) says that geometric shapes such as circles, squares, triangles and rectangles are crisp, precise and mathematical with straight edges and consistent curves. Thus, every illustration has shape which gives it definition.

Natural or organic, shapes are found in illustrated nature such as rose flowers, tree branches or bamboo leaves in which young children are able to identify with. Abstract or stylized, shapes are natural shapes that have been altered or simplified to reflect the essence, rather than the actual representation, of an object in that non-objective or non-representational, shapes are created with no reference to a subject (Lauer & Pentak, 1995).

From researcher's perspective in relation to young children and illustration's shapes, children are able to identify with in their surrounding for or outside classroom or home environment by relating to the shapes of the illustrations. Therefore, appropriate use of shape in textbooks enhances illustrations quality thus enabling the pupil to benefit from the overall role of the illustration.

2.6.2 Design Principles and illustrations

The principles of design are guidelines used for putting elements together to create effective communication. These guidelines determine whether an illustration is relevantly used or not in pupils' textbooks. Design elements are the "what" of a design and the principles are the "how". Using the recipe metaphor, elements are the ingredients and the principles are the directions.

Perhaps even more than the elements, are difficult to separate from one another even for the sake of this study, as it is only when they are working together that an effective illustration is created. In relation to its determination to illustrations' relevance in pupils' textbooks, design principles help to control what the pupils see and help to create illustrations that these primary school pupils are able to understand and relate with (Faimon & Weigand, 2004). These principles include; unity, variety, emphasis, balance and space.

2.6.2.1 Unity

Unity is the fundamental principle of design and it is supported by all the other principles. Evans and Thomas (2004) state that unity is perhaps the most important of the design principles Unity creates an integrated illustration in which all the elements are working together to support the design as a whole. A unified design is greater than the sum of its parts; the design is seen as a whole first, before the individual elements of the illustration are noticed. Bevlin (1994) argued that unity is created when the mind simplify and organize information. It does this by grouping elements in the illustration together to create new wholes Thus; unity of an illustration determines whether the illustration is relevant or irrelevant.

Unified perception of illustration's elements in children's textbooks books increases children's interest because of its relevancy by understanding how the mind groups elements based on proximity, similarity, alignment and continuation. Arntson (1998) argue that proximity is based on grouping by closeness. Hence, the closer illustrations are to each other, the more likely primary school pupils see them as a group. This is one of the easiest ways to achieve unity.

Arntson (1998) further says that every human brain tends to fill in missing information when it perceives an illustration is missing some of its pieces to create shape. Repetition also enhance unity achieved by grouping similar elements of the illustration which primary school pupils can visually view and perceive to be related. Any element can be repeated like line, shape, colour, value or texture as well other things such as direction angle or size. Repetition helps unify a design by creating similar elements. It is one of the most effective ways to unify a design, hence promoting relevancy of illustration in textbooks.

Findings from researcher's study showed some pupils and teachers did not consider unity as their criteria for determining relevance of illustration. It can be argued that the low responses from both the teachers and pupils regarding unity were due to the much mental involvement unity presents to them.

2.6.2.2 Variety

Variety means to change the character of an element to make it different. Variety is the complement to unity and is needed to create visual interest in an illustration (Brainard, 1998). Without unity, an illustration is chaotic and irrelevant and without variety it is dull and uninteresting. A good design is achieved through the balance of unity and variety; the elements need to be alike enough so we perceive them as belonging together and different enough to be interesting (Lauer & Pentak, 1995).

Brainard (1998) argues that an effective way to integrate unity and variety is by creating variations on a theme. Just as a composer can repeat and vary a musical theme throughout a composition, a designer can repeat and vary an element in an illustration throughout a design variety. From the researcher's view, past studies don't fully cover the variety principle in relation illustrations' relevance in textbooks for primary school pupils. Therefore, this study intended to research on the same and brings out its influence in determining illustration's relevance in primary school textbooks.

2.6.2.3 Emphasis

Emphasis is what catches the eye and makes the viewer stop and look at an illustration and it is created by contrast. Without getting the viewer to look at the image means communication cannot occur (Stewart, 2002). Emphasis brings attention to what is most important and creates a focal point in a design hence determining its relevance. Any of the elements of design, can be contrasted. For example, a line that's curved in the midst of straight lines; for shape a circle in a field of squares; for colour one red dot on a

background of Grays and blacks; value a light or dark area in the middle of its opposite these enhance relevancy when appropriately used.

Contrast can also be created by contrasting orientation in space; horizontal, vertical or diagonal style, a geometric shape in an otherwise naturalistic illustration and size. An anomaly or something that departs from the norm also stands out and grabs attention (Lauer & Pentak, 1995). Implied lines all directed toward the same place can create a focal point there. Further, isolating an element from the others by its position in space can also create emphasis.

In children's books, text that are large and bold, illustrations in bright colours always stand out grabbing the children's attention. It is important for an illustrator to know how to control the attention of the children viewing their artwork. Emphasis is about highlighting or giving prominence to elements in illustrations. This can be done using other related principles and elements like dominance, subordination, contrast, colour, value, size and shape. Therefore, emphasis used appropriately can enhance relevance determination in illustrations used in primary school textbooks as supported by the researcher's finding that showed that all the pupils and teacher's considered emphasis as a criteria for determining relevance,

2.6.2.4 Balance

Lauer and Pentak, (1995) argue that balance involve equal distribution of visual weight in an illustration or design. Visual balance occurs around a vertical axis; eyes require the visual weight to be equal on the two sides of the axis. Bilateral creatures and our sense of balance are innate. When elements in an illustration are not balanced around a vertical axis, the effect is disturbing and uncomfortable. For the case of primary school

pupils, it becomes very difficult to comprehend what's being read in printed books. This makes the illustrations irrelevant to the target audience.

Several kinds of balance exist. Symmetrical or formal balance also known as bilateral symmetry is created by repeating the reverse of a design on the opposite side of the vertical axis. Therefore, each side in essence becomes the mirror image of the other. Symmetrical balance is considered formal, ordered, and stable and quiet which can make an illustration be boring. Symmetrical balance is often used in architecture. While symmetry achieves balance through repetition, asymmetry achieves balance through contrast (Lauer & Pentak, 1995).

Asymmetrical or informal balance involves different elements that have equal visual weight. The weight is equal but the elements in the illustration are not identical. Lauer and Pentak (1995) states that visual weight can influenced by four factors; first, position. The further out an element is from the centre, the heavier it will feel, a large object placed near the centre can be balanced by a smaller object placed near the edge; second, texture. An element with more complex texture is heavier visually than one with a simple texture or no texture at all; third, shape. Elements that have more complex shapes feel heavier than those with simple shapes. Finally, colour. The brighter and more intense its colour, the heavier the element will feel.

In relating to the quality and relevance of illustrations in primary school textbooks, the researcher observed that that asymmetrical balance is casual, interesting and more dynamic than symmetrical balance. The reviewed literature fits well into symmetry as a determination principle of illustrations' relevance. This is because well-balanced illustrations in textbooks allow pupils to identify well with what is in their environment.

2.6.2.5 Space

Space, in 2-Dimensional illustrations is essentially flat as it has height and width, but no depth. There are certain visual cues, however, that can create the illusion of space in the mind of the viewer. Using these cues, artists and designers can create images that are interpreted as 3-Dimensional (Zelanski & Fisher, 1996). Size is one of the easiest ways to create the illusion of space. A larger image will appear closer than a smaller one because as observed objects appear to become smaller as they get farther.

Zelanski &Fisher (1996) further says that overlapping is another easy way to suggest depth in an illustration since when an object overlap each other, the viewer perceives the one that is covering parts of the other to be in front and the one that is covered to be in the back. The bottom is seen as the foreground, the part of the image that is nearest the viewer and the top as the background, the part farthest from the viewer. The higher an object place is in the image, the farther back it is perceived to be and determines the illustrations relevancy.

Lauer and Pentak (1995) argue that atmospheric perspective uses value, contrast and colour to give the illusion of space and is based on the fact that the further something is away from us, the more the atmospheric haze may obscure our view of it. Lightening the value, lowering the value contrast, softening the edges, decreasing detail and muting the colour, mimics the effect of atmospheric haze and create the illusion of increasing distance. Increasing the bluish cast of an image also creates a sense of depth because cool colours recede and warm colours come forward. This enables the pupil relate with the illustration hence allow relevancy when appropriately used.

From the researcher's view, linear perspective in illustrations is based on the visual phenomenon that as parallel lines recede into space, they appear to converge at a distant.

Line use not only evokes a feeling of great depth but it also creates a strong focal point at the place where the lines converge and by using it strengthens the illusion of depth.

2.7 Preparation and production of illustrations for textbooks

Preparation of illustrations starts from the original copy in that the quality of the original copy determines the final result of printed illustrations. Therefore, preparation of the illustration is directly proportional to the production quality. Preparation of the illustration is dependent on the type of illustration being used. Line illustrations should be designed for a reduction from the actual size. Oversize illustrations have a greater chance of being damaged and damaged illustrations do not satisfactorily produce a good quality printed result. Lea (ibid) comments that fine dot patterns and very stippling should be avoided in line copy as when reduced they become difficult to hold as a result they tend to drop or disappear; this impairs the usefulness of the copy thus affecting the overall quality of the illustration.

Halftone illustrations entail an original glossy photo or wash drawing normally mounted on a board which allows a margin of one-half to one inch around the illustration. The quality of the tones is dependent on the quality of the original. In preparation, pen and paper marks on the back of the photograph should be avoided. The pressure on the back of the photograph may leave an impression on the front of the photo. This effect is called 'show through'. Lea (2012) notes that paper clips and staple marks, excessive handling with figure prints and face to face placing of photographs can damage on indent the emulsion or cause an abrasion on the front of the photograph.

The first step to creating illustrations is concept development. This is the broad principle affecting the theme of the work. Most illustrated textbooks require highly creative minds to examine the imagination of readers. Every artist hypothetically has a

different picture of each story. This concedes for free expression by the artist. Some of the techniques for developing illustrations include: scan and colour technique, vector tracing with sketches, vector tracing with photographs and bitmap painting with tablet and mouse.

Lea (2012) explains that, vectors as mathematical objects that define shapes or curves and are resolution-independent giving vector illustrations. This means that they can be scaled to any size, edited or transformed to infinite amount of times without any deterioration of clarity or loss of detail. Hence, the overall quality of the illustration produced from vectors is not affected by scaling. Sketches and photos put onto the workspace via scanners and digital cameras appear in form of raster. This is because they are made up of picture elements (pixels) that embody the whole data.

Illustration development involves creation of both vector and bitmap graphics digitally using an editing software like Photoshop which is a very flexible technique by the draw and paint mode. This technique involves applying digital colours direct on the layout with the sketches on it. The tools required include swatches, art brushes, feathering and layering properties. Concept development in this technique requires scribbling on papers, bumpy and tangling sketches. This is done by pencils to allow ease in erasing in case of a mistake. Laybourne (1998) argues that it is much less time-consuming either to erase superfluous lines on the actual drawing paper or even better to return to the light table and retrace the drawing onto a fresh sheet of paper than to attempt clean up using a computer graphics application.

Sketched graphics is scanned onto Photoshop layout using a scanner, ensuring the best resolution for scanning drawings is used. To eliminate dirt, pencil marks and unwanted tones, the drawing is scanned as black and white, and then it's converted it to gray scale

by changing the image mode. This gives colour spaces of RGB (Red, Green, and Blue) or CMYK (Cyan, Magenta, Yellow and Black) mode.

After this, the work is saved in a specified folder after establishing the right colour mode. Leaks in the drawing which did not join with other lines in the drawing are repaired by use of the pencil tool (Lea, 2012). The leaks are always tiny. Therefore, tiny point pencils are required for this. The purpose of leaks' repair is to enhance enclosure of the open space in the diagram. This gives a proper definition of each shape and colour when the spaces are filled with colours.

After repairing the leaks, a copy of the drawing on the layer is duplicated pencil to give two images of the drawing and renamed. Base colours or wash colour are to fill up and unwanted white space are deleted this is useful when there is need for image superimposing against a different background or two. The base colour of the drawing is filled up and the dark tones are marked. Hence determining the direction where light falls on the illustration and applying the highlights part of the illustration.

Depending on the theme of what is being discussed in the text, the use of design elements like texture and colour should be skilfully utilized to ensure a visual communication of the theme. As soon as the foreground illustration is ready, the next step is superimposing it against a background. When the final illustration is achieved, the document is saved in Photoshop file format. The image is compressed from megabytes to bytes to allow for easy upload and download of images.

Kipphan (2001) states that there are three main stages of print production; - prepress, press and post press. Pre-press production starts from the work acceptance where illustrations are supplied with the work until when ready for printing, press is where printing of illustrations and other book content takes place and post-press where all

works after press are undertaken to produce the complete work to the customer. In the pre-press stage, preparation of illustrations starts from origination. Input is done through scanning, digital camera and image setting then manipulation to desired image quality is done by use of computer graphic software.

Kiphan (2001) states that illustration number, sizes involved, the form supplied either transparencies, flat or reflective art or high-resolution files, and whether they include silhouettes, drop shadows, bleeds, composites, or involve duotones, tritones or quad tones should be indicated in the pre-press sheet for cases where illustrations are supplied by the client or those bought from galleries.

Other operations done in pre-press include colour separation, screening, plate making and colour management. The pre-press stage affects the print quality in relation to colour, image sharpness, contrast. In the press, illustrations' quality consideration is in the ink weight, image sharpness, gradation of tone and value range. Finally, the post press stage where the print is determined by various finishing processes like coating and varnishing of the printing material (Kipphan, 2001).

For quality preparation and production of illustrations for textbooks, all the print production stages plays key roles; prepress enhance more on the preparation of the original illustration which determines the press and post press quality of final illustration. Therefore to achieve the right quality every phase of production requires keen attention.

2.8 Illustrations and the primary school pupil

Not only are illustrations integral to the text in books but they are also important to the primary school pupil in a number of ways. Despite reasonable concerns among some literacy educators that illustrious pictures may distract children's attention from print,

thus hindering their word identification and acquisition of written language, the contributions of illustrations to the overall development of children's literate behaviour seem to be overwhelmingly greater than its potential dangers (Elster and simons, 1985).

Elster and Simons (1985) adds that illustrations in textbooks entice children to read and interact with text. They motivate young readers to find and name hidden objects or characters and even predict what is going to happen next. Primary school pupils love to play hide and seek game, and thus look for hidden objects in illustrations. Lukens (1990) comments that the 'excitement of good textbooks is the constant tension between the moments isolated by illustrations and flow of words that join these moments together'.

Illustrations encourage primary school pupils to search for and identify the design elements in the illustrations. The artist may camouflage the illustration so well that children must carefully look for it. Lukens (1990) states that children would miss a great deal of potential enjoyment if an adult read text without encouraging them to find and identify illustrations in the textbook.

Lukens (1990) encourages children to make predictions as textbooks allow the primary school pupil to peep through a hole and see a portion of the photograph found on the following page. Children can relate what they think the picture is and why before turning the page to see if their prediction was correct. Textbooks can serve as an effective tool to stimulate and promote children's creativity. By reading illustrated textbooks without too much linguistic text, children learn to use their active imagination to interpret and create a mental representation of the story.

Anderson & Pearson (1984) states that pupils often associate illustrations with their life experiences or familiar images, construct meaning based on their existing schemas or

schemata. Children often come up with unique and creative interpretation of the plot, settings, and characters when they read textbooks. For example, a primary school pupil and adult reader may like textbooks that use a very limited number of words to provide readers a time frame and the pupils use their own imagination and judgment to predict and interpret what is going on in the story.

Illustrations are important as they provide mental scaffolds for the child reader, thus facilitate their understanding of the written text. The short attention spans of the young child coupled with their limited vocabulary, syntax and world knowledge, place special demands on illustrations to help develop plots and characters so that fewer words and less complex syntax can be used. Reading comprehension has been characterized as a constructive process in which the reader uses what is already known to help interpret the new information in the text (Anderson & Pearson, 1984).

Schallert (1980) explains that as first-order symbols, pictures represent relatively concrete, familiar experience, something young readers can easily identify with. As second-order symbols, words are more abstract and detached from immediate experience. Thus, by putting together the more familiar and concrete with the more abstract semiotic symbols, textbooks maximize text comprehensibility. He further elaborates that without pictures, the text is de-contextualized. Further, illustrations in textbooks prompt an active elaboration of the printed text, thus facilitating learning by inducing the primary school pupils to form mental images of the information.

Johnson (1993) speculates that primary school pupils need illustrations in books because they find them easier to understand than words and need pictorial information to guide their response to verbal information. Illustrations in textbooks foster children's aesthetic appreciation of art and beauty. Broudy (1977) affirms that aesthetic sensitivity

to art and beauty is important because it is a primary source of experience on which all cognition, judgment, and action depend and furnishes the raw material for concepts and ideas, for creating a world of possibility.

Johnson (1993) considers aesthetic experiences basic in children's education and calls for fostering both children's linguistic and visual literacy. Aesthetic appreciation can be developed in part by consistent exposure to a wide variety of artworks that are coupled with pleasing stories in today's textbooks. Jacobs & Tunnell (1996) illustrates that as a perfect vehicle for opening a child's eyes to the beauty and power of illustrations in textbooks allow young readers not only to become aware of the variety of artistic styles and media that artists employ but also develop a sense of judging the quality and relevance.

Dickinson et al (1995) state that many parents and teachers take the opportunity to comment on the artwork as they share textbooks with children ranging from what they like about an illustration to calling attention to how artistic styles in different textbooks vary and which of the varying styles the children prefer and why. Children's taste and appreciation can be cultivated and expanded as they are exposed to more textbooks. Illustrations in textbooks foster children's language and literacy development. The combination of text, art, and topics found in textbooks feed children with ideas, stimulates their imagination and curiosity, and provides them with a rich vocabulary to use in book-related questions and discussions (Tomlinson & Lynch-Brown, 1996).

Johnson (1993) notes that in textbooks, primary school pupils enter the dual-meaning environment and extract from it an enhanced understanding of linguistic language. In his explanation he used a textbook called *McCloskey's Time of Wonder* (1957) which describes a family's experience on an island in Maine. The story's natural setting being

established through illustrations brought a context that helped children better understand concepts thus encouraging them to expand their vocabularies.

The story's vivid language and figures of speech, coupled with illustrations, acquaint children with new ways of experiencing and describing what they see and hear in the world around them: rustling leaves, heavy stillness. Slamming rain and gentle wind soft as a as a lullaby. As choppy waves indicate the approaching storm, Mccloskey affords the primary school pupil many opportunities to observe the sharp contrast in nature (Nodelman, 1996).

Findings from study clearly showed that pupils enjoyed using illustrated text books because of their cognition, attention and attraction benefits. Quality and relevant illustration enable the primary school pupil appreciate the textbook as a textbook without illustration do not bring any life to the page being read by the pupil. A response from MOE official quotes illustration roles; "as a picture represents even up to a thousand words and illustrations consolidate and crystallize a body of information and enhance creative thinking"

2.9 Role of illustrations in children's books

One of the factors that have contributed to the evolution of primary school textbooks over the last decades is the use of illustrations. Textbook illustrations have very particular objectives which differ from those of images in books for leisure or those of a purely aesthetic or informative nature addressed to the general public. The physical features of a country, animals or plants, machines or tools are better explained by use of illustrations which visually supports the author' ideas expressed on paper.

Illustrations are useful in parts of a text giving information about items or events which are not encountered in the pupils' daily life or in the school setting, the region or even

the country (UNESCO, 2009). Before children can read words, they are often able to recognize labels, signs, and other forms of environmental print which these constitute illustrations. Children demonstrate their ability to derive the meaning of text within context.

Bodmer (1992) affirms that illustrations serve to expand, interpret, or decorate a written text. They perform certain functions that may differ from those of gallery paintings. Artwork in textbooks is most often concerned with storytelling. Therefore, the role of illustrations in books for children include: drawing of attention, aiding in retention of information, enhancing understanding of information and creation of context.

2.9.1 Attention functions

Illustrations attract attention to print and digital materials, and then direct attention within the materials. In attracting attention, a print with pictures will attract readers it would not get without pictures. Zhihui (1996) opines that it would probably be useless to expect younger children to study books without pictures. Illustrations make texts more attractive and appealing to children by doing things such as providing relief on a page. However, in one study with older learners, Bodmer (1992) found out that college students would be significantly more likely to purchase a psychology text if it contained illustrations.

In directing attention, illustrations serve to attract attention to illustrated material. Children look at the text that is related to the pictures and at all other aspects of the text depending on the situation and the child's motivations for looking. For example, a mature person browsing through a publication in a waiting room might look only at the illustrations or might be stimulated to read only when the illustration accompany text. In a situation approximating free reading of a textbook, Keller (2009) found out that subjects who believed they were helping evaluate the appearance of a forthcoming book

learned more printed information if it was adjacent to drawings of strange-looking animals than if it was near drawings of familiar animals. Thus, the "curiosity arousing" pictures appeared to have directed attention selectively to certain portions of the text.

 Other examples in relation to attention to children are showing a photo of a dramatically beautiful cloud image at the opening of a presentation on climate does more to attract attention than explain the content. Anderson and Pearson,(1984) states that short attention spans of the young child coupled with their limited vocabulary, syntax and world knowledge, place special demands on illustrations to help develop plots and characters so that fewer words and less complex syntax can be used. Reading comprehension has been characterized as a constructive process in which the reader uses what is already known to help interpret the new information in the text

2.9.2 Affective Function

Illustrations have affective functions over children like enhancing enjoyment, affecting emotions and attitudes. Illustrations enhance reader enjoyment. Bodmer (1992) asked second graders to read stories with colour drawings, with black and white drawings or with no drawings. Stories with drawings were much preferred to stories without drawings, and those with colour drawings were liked best. With college students, Segun, (1998) found out that illustrated texts were rated more enjoyable than non-illustrated texts and that primary school child preferred illustrated word diagrams with colour drawings to block-word diagrams without illustrations.

Holliday, et al (1977) comments that in affecting emotions and attitudes, citing that researchers studying the persuasive effects of appeals to fear have shown that vivid pictures of horrible accidents and incurable diseases can indeed arouse strong emotions of horror and panic. On the other hand, emotional impact of humorous treatment of

illustrations arouses the interest of children, arouse happiness, easily moves children to laughter and able to make others laugh even among all audience not only children

Illustrations can alter attitudes and beliefs in areas of social concern such as racism and injustice Textbook publishers are aware of such problems and many have guidelines concerning the portrayal of minorities and women in illustrations. The researcher's view of illustration and the Kenyan scenarios where in most textbooks have illustrations that revolve around the family set-up, the main communal activities like farming and animal husbandry, teacher child-relationship in terms of respect; all this impact on the children attitudes towards family and school hence enhance moral development in children.

Segun (1998) says in support of illustration in relation to attitude altering that good illustrations also help to correct wrong notions. For example, they can counteract the negative effects of unwholesome advertising by the print and electronic media, and through the use of billboards. Every day, children are bombarded with television images which cannot be said to be uplifting. He further comments that it is the duty of the illustrator, working closely with the author and the editor, to endeavour to give children more positive images and uplift them emotionally, spiritually, and intellectually. The best textbooks are those that join together to convey a distinct message

2.9.3 Cognitive Functions

Illustrations functions in facilitating learning information in the text by improving the comprehension and improving the retention information. Tomlinson and Lynch-Brown, (1996) says that cognitive function concerns how illustrations provide information beyond what is stated verbally. For example the set-up of weather presentation to children providing a table of cloud type images organized according to the cloud classification scheme aid in retention and drawing a diagram illustrating the processes

in the formation of a particular cloud type will help explain these processes for increased understanding.

In an exam, children might score poorly because they either did not understand the information in the first place or originally had understood the information but simply forgot what they had learned. However, illustrations enhance memory in readers. Illustrations have at least a modest positive effect on comprehension as supported by Johnson (1993). Given that some pictures might serve to enhance comprehension, illustrations' function is to provide a context for understanding the text material.

Segun (1998) affirms that good illustrations can contribute to the overall development of the child by stimulating his or her imagination, arousing his or her perception, and developing his or her potential. Art can help a young child to discover his or her own identity and cultural heritage. This is particularly important in countries which have suffered from the effects of colonialism and cultural imperialism.

Through illustrations, it is possible to convey to children very clearly the events and situations in the past the kind of clothes that other children or people who lived long ago wore, the kinds of houses they lived in, the kinds of food they ate and the types of kitchens and utensils that produced such food, the sort of games they played, and the occupations of people in ancient times (Segun,1998) These facts are best comprehended when text books are suitably illustrated

2.10A critique of related studies

A critique of related studies helps to give a viewpoint to the current research in terms of area of investigation, the methodologies used and the emerging issues.

A study conducted by Holliday (1981) on textbook illustrations revealed that publishers determine the quality, placement, size, colour and relevance in their view of illustrations

and that illustrations are useful in supporting, classifying and showing what text is describing. However, in explaining of quality and relevance criteria, Holiday focuses mostly on design elements which forms the quality determination attributes, omitting the criteria for determining relevance which this study has explored.

Holliday's study explains that illustrations draw attention to important information in textbooks, makes texts attractive and add motivating elements of excitement. Holliday's research on impact of illustrations is limited only to the positive impact of quality and relevant illustrations excluding the negative effects of poor quality and irrelevant illustrations over the users which this current study has been able to explore.

Holliday's (1981) recommends that publishers should use modern facilities like desk-top computers with modern software's to produce high quality and relevant illustrations popular to the teacher and the pupils. He recommends that publishers should create a large number or small number of illustrations on a page that are of high quality and relevant on each page without affecting the production cost of a full-colour text. Holliday's recommendations to publishers are one sided as they focused majorly on technology in the line of Computer Aided Design(CAD) excluding recommendations pertaining to the production of illustrations and the expertise of the publishing players which greatly contribute to the quality and relevance of illustrations.

Holliday (1981) recommends that teachers responsible for textbook selection must select textbooks with numerous, elaborative and summarizing illustrations, avoid textbooks with motivating or decorative illustrations occupying exceptionally high space proportion to text space. Further, Holliday recommended that in book selection, science teachers should make considerations on the topic and judge the relative quality

and illustrations quality in relation to the impact it has on the pupils which according to this study is narrowly focused,

MacCann and Richard (1973) study on assessing the children's books acknowledged the design elements and principles as the generally accepted tools which the illustrator works with. They noted that no single element exists apart from the others in any used illustration and that the illustrator will use principles of composition to unify elements on each page and succeeding pages. Their establishment of design elements and principles focused on publishers' views excluding users' consideration of these design tools and use in textbooks. However, this current study has been able to explore and establish the views of users, namely pupils and teachers as regards to their consideration on the design tools.

The study by MacCann and Richard (1973) recommended that in illustrations' preparation, harmony of text and illustrations should be ensured and right choices in assessing the illustrations for children's books should be made. However, their recommendations were based on one side of the design tools that is design principles with design elements not considered. MacCann and Richard's research concluded that quality of illustrations gives rise to the deepest response on all parts of textbook readers who include teachers and pupils. In their conclusion, very important details on positive impact of quality and relevant illustrations have not been explored which this present study has been able to come up with.

2.11 Summary of the Chapter

In this chapter, the literature reviewed relevant to the area of study is presented. Gate keeping theory a communication theory as related to publishing is discussed. The literature review examines areas such as origin of illustrations, types of illustrations, book design and illustrations, determining the quality and relevance of illustrations, design elements and principles and critique of related studies have also been presented.

These literature reviews examines the various views from other scholars and establishes their findings, how it's related and relevant to the problem of inquiry and cover knowledge related to the theoretical, methodological and the practical dimensions. Illustrations dates back to the cave painting before the invention of writing and Illustrations fall in two major categories depending on how they are prepared; line and half-tone illustrations. Reviews showed that book design involves the art of incorporating content, style, format and sequence of the various components into a coherent whole (Hendel, 1998).

In determining the quality and relevance of illustration, the foundational base book designs was reviewed that's base upon the framework of principles and elements. The elements and principles of design were thoroughly discussed and this helped in establishing the pupils and teachers consideration of the quality and relevance. Cognitive, attention and attraction roles were discussed in the study as the major roles in the study and this guided in assessing the impacts of illustrations on use by primary schools

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research design, study area, study population, sampling procedures, sample size, methods of data collection, preliminary research strategies, reliability and validity of research tools and ethical considerations

3.2 Research Design

This study adopted exploratory survey design which aims at discovering ideas and insights from the people with practical experience with the problem (Kothari, 2004). This design was suitable for this study because it was relatively cheap, flexible in administering and the secrecy of surveys allowed respondents to answer with more honest and appropriate answers.

The study adopted qualitative and quantitative approaches in order to capture creators, quality controllers and users of illustration criteria, perceptions and challenges experienced in dealing with illustrations' quality and relevance. This study used qualitative approach to generate data from key informants, pupils and subject teachers. Certain aspects of the data, for example, demographic information of pupils and subject teachers like their age, class level, gender of pupils, years of experience of the teachers and the extent to which pupils and teachers considered the quality and relevant illustrations required a quantitative approach.

Quantitative approach includes designs, techniques and measures that produce discreet, numerical or quantifiable data while qualitative approach seeks to understand a given research problem from the perspective of population and helps to obtain views, opinions of participants in-depth (Creswell, 2007).

3.3 Study Area

The study was conducted in Uasin Gishu County. The county borders Kakamega County to the North West, Nandi County to South West, Kericho County to the South, Trans Nzoia County to the North, Elgeyo Marakwet County to the East and Baringo County to South East. The county headquarters is in Eldoret Town. The county consists of 6 sub-counties namely: Anaibkoi, Moiben, Turbo, Soy, Kapseret and Kesses (KNBS, 2010). Its main economic activity is farming. According to the county statistics (2015) the total pupils' enrolment in the county was 184,586 pupils.

Uasin Gishu County was selected for study because of the following reasons. First, it has a cosmopolitan population distributed in urban and rural areas. Second, the county has various primary schools which are public and private in all the sub-counties. This distribution formed the base of establishing the sample size. Lastly, the county is accessible by roads with available communication facilities that in turn sped up the process of data collection.

3.4 Study Population

The study targeted all the public and private primary schools in Uasin Gishu County and key informants from KICD, MOE and three selected publishing houses. The county has 772 primary schools comprising of 428 public and 344 private ones (Schools Net Kenya, 2013). All class five to seven 69, 220 pupils and their 4,632 English and Science subject teachers in the county, three (3) publishing managers, three (3) production managers, three (3) subject editors, one (1) KICD vetting coordinator and one (1) MOE quality assurance and standards officer formed the study population.

Primary school pupils in standard five, six and seven in addition to their English and science subject teachers from both private and public were selected because of their conversance with illustrations and their frequent use of textbooks with illustrations.

Thus, were able to distinguish what was relevant and quality in illustrations. Second, they were able to relate illustrations they come across in the textbooks with what they see in their environments and they mostly internalize faster what they see from illustrations and learn from the textbooks.

Publishing managers, production managers and Editors were chosen because of their role in making decisions on contents of the design brief and allocation of assignments to illustrators and designers. Key informants from MOE and KICD were selected because of their key role in vetting, evaluation and approval of the textbooks. English and Science text books were selected because they have many illustrations containing natural features that pupils can relate with.

Textbooks from the three publishers;- Kenya Literature Bureau(KLB) English textbooks like ;"*lets learn English"*, Oxford University Press(OUP) "*New progressive primary English*" and Longhorn Publishers Ltd include; "*key note English".* (Orange book, 2013) are widely used in most primary schools in Kenya and for purpose of comparison in the kind of illustrations they use.

3.5 Sampling Procedures and Sample Size

The study used simple random sampling techniques to select the primary schools, pupils, subject teachers and purposive sampling to select key informants from publishing houses, KICD and MOE. Simple random sampling technique was chosen because it represented the entire population, free from bias and was simple to use. Purposive sampling was chosen because it was flexible, easy to get respondents with specific characteristics and helped select participants based on the purpose of the study.

3.5.1 Sampling Procedures

A list of all primary schools in Uasin Gishu County was obtained from the County Education Office (CED). Thus, this list was used as the sampling frame for primary

schools. Creswell (2007) describe a sample as a portion or a sub-set of the target population selected to participate in a study, representing the research population. Primary schools were selected from Uasin Gishu County basing on the six Sub-Counties: Anaibkoi, Moiben, Turbo, Soy, Kapseret and Kesses.

Random sampling was used to draw a sample of two (2) schools from each Sub-County this was ensure a representation of all primary school categories that is public and private schools; - this yielded a total of twelve (12) primary schools. The average number of pupils per class from the sampled primary schools was thirty (30).

Table 3.1: List of sampled primary schools in Uasin Gishu, Sub counties

S/No.	Name of school	Status of School	Sub-county
1.	G.K Prison Pri	Public	Moiben
2.	Excel Academy Pri Sch	Private	Moiben
3.	Uasin Gishu Pri Sch	Public	Turbo
4.	Huruma Baptist Pri	Private	Turbo
5.	Cheplaskei pri	Public	Kesses
6.	Outspan pri	Private	Kesses
7.	Kiambaa Pri	Public	Kapsaret
8.	PCEA Academy Langas Pri	Private	Kapsaret
9.	Kapchumba Pri Sch	Public	Soy
10.	The Eagle Pri	Private	Soy
11.	Kapsoya Pri Sch	Public	Ainabkoi
12.	Little Lambs Pri Sch	Private	Ainabkoi

Source: Uasin Gishu County Education Office (2015)

A cross section of class five, six and seven pupils were randomly selected from the class lists for each class in each school sampled. Thus, class list was used as sampling frame. The researcher selected, three (3) pupils representing each class from class five

to class seven; the reason for the choice of three pupils per class was because of the virtue of the approach of administering the questionnaires which was researcher administered that require time in explaining and clarifying questions to pupil giving a sample size of 108 pupils.

English and Science subject teachers were randomly selected from School Instructional Materials Selection Committee (SIMSC's) members. Thus, SIMSC members list was used as sampling frame. Two (2) subject teachers representing each class from class five to class seven were selected from the same schools giving a sample size of 72 subject teachers

The key informants from Kenya Literature Bureau (KLB), Oxford University Press (OUP) and Longhorn publishers, KICD vetting coordinator, MOE quality assurance and standards officer were selected using purposive sampling. Textbook publishers were categorized according to ownership; KLB (government), Longhorn Publishers ltd (local) and OUP (foreign owned).

From every category, a publishing manager, production manager and editor were selected giving a total of nine (9) individuals. The vetting coordinator from KICD and quality assurance officer from MOE was also selected. Therefore, the sample size of key informants was eleven individuals. The research adopted purposive sampling because of its ability to select participants subjectively as well as its nature to seek and investigate information rich cases that needed to be studied in depth.

3.5.2 Sample size

The sample size of this study was 191 individuals comprising of 108 pupils in class five to seven, 72 English and Science teachers sampled from 12 primary schools in Uasin Gishu County and 11 key informants drawn from three selected publishing firms, KICD

and MOE. These key informants were: three (3) publishing managers, three (3) production managers and three (3) editors, one (1) KICD Vetting Coordinator and one (1) Quality Assurance and Standards Officer from MOE. Table 1 summarizes the sample size distribution.

Table 3.2: Sample size

Category	Study Population	Sample Size
Pupils	69,220	108
Teachers	4,632	72
Publishing Managers	3	3
Production Managers	3	3
Editors	3	3
KICD coordinator	1	1
MOE Officials	1	1
Total	73,863	**191**

3.6 Methods of Data collection

Semi-structured questionnaires were used to collect data from primary school pupils and subject teachers. Unstructured interview schedules were used to collect data from key informants.

3.6.1 Questionnaires

Data gathered from primary pupils were done using researcher-administered questionnaires (Appendix 3) while for subject teachers was done using self-administered questionnaires (Appendix 4). The questionnaires had four major sections; Section A - contained background information of the respondents, Section B – The respondent's consideration of the quality and relevance; Section C – the respondent's perception of the quality and relevance and impacts of their use and Section D – challenges experienced by respondents while using illustrations.

Questionnaires were suitable for this study as they helped capture a wide range of data on a respondent's perceptions on the quality and relevance of illustrations in approved textbooks within a short time. The data gathered through questionnaires were standardized and this contributed to objective data collection and ease of data analysis.

3.6.2 Interviews

Un-structured interview schedule (Appendix 5, 6, 7 & 8) were used to collect data from the key informants from publishing houses; KICD and MOE. The questions in these schedules entailed; - the criteria considered when determining the quality and relevance of illustrations, factors that determined the quality and relevance of illustrations, the challenges experience in preparing and producing illustrations and the strategies for addressing the identified challenges.

Interviews were found to be ideal for these respondents as they enabled the researcher to interrogate respondents and clarify issues with them and guard against confusion of questions in regard to the quality and relevance of illustrations in approved textbooks. Publishing managers, production managers and subject editors from two publishing firms, KICD vetting coordinator and MOE Quality Assurance and Standards Officer were interviewed through telephone while key informants from one publishing firm was interviewed face to face.

Note taking and automatic phone-recording of the responses was done and after each interview the researcher transcribed the data. The key informants were contacted through telephone prior to the interviews and a copy of the interview questions were emailed to them to facilitate preparation and maximize on the interview time. The researcher introduced herself, stated the study objectives and sought permission to conduct the interview.

3.7 Preliminary research strategies

Before conducting data collection, the requirements for conducting research in Kenya were complied with; data collection tools were checked thoroughly to ensure that they gave the required responses and the research assistant was selected and trained.

3.7.1 Permission to conduct research

A research permit was obtained from the Ministry of Education Science and Technology (MOEST) as required to conduct the research in Kenya (Appendix 10 & 11). A copy of the letter was forwarded to County commissioner and County Director of Education (CDE), Uasin Gishu County and in return was issued a written permission from the schools and county government to conduct the study (Appendix 10).

3.7.2 The Pilot Study

A pilot study was conducted to test the validity, adequacy and effectiveness of the questionnaires and interview schedules. Two primary schools were selected and semi-structured questionnaires pre-tested and piloted on twelve (12) pupils and 6 subject teachers who were not part of the sampled group within Uasin Gishu County.

Pre-test was done again after two weeks using the same participants. From the pre-testing and pilot study feedback, adjustments were made to the questionnaire to improve its accuracy, language clarity and functionality. A pilot study was conducted with participants having similar interests with the key informants and this helped to remove flaws in the interview schedules. Thus, necessary revisions were made prior to implementation of the actual study.

A few cases can help illustrate the significance of the pilot study. In the pupil's questionnaire, there was the following question: *Are illustrations in Science and English textbooks quality and relevant?* Some pupils did not understand what the words

"*illustrations*" and "*relevance*" meant. Therefore, the question was rephrased where the word illustration was replaced with the definition of illustrations *"pictures, drawings, charts or photographs"* and the word *"relevance"* replaced with *"suitability".* Among the key informants, production managers' pre-field interview schedule had a question on: *What factors do you think contribute to the quality and relevance of illustration?* The respondent felt that it could be well handled if the word *"print quality"* was used instead of the word *"quality"* alone.

3.7. 3 Training of the research assistant

A research assistant was identified based on her knowledge in conducting research, her background as a graduate of BSc. printing technology and by virtue of being employed in an academic institution where research is conducted. The assistant was inducted on the requirements of the research especially probing interviewees for deeper insights.

3.*8* Validity and Reliability of Research Tools

Validity of the tools was determined by consulting with experts in the department of Publishing and Media Studies at Moi University. They determined whether questions in the questionnaires and interview schedules measured what they were supposed to measure.

The suggestions given helped in omission of certain questions and necessary changes were made. Secondly, piloting was done where the responses of the participants were measured against the objectives of the study. Reliability of the tools was determined by test and retest technique. The tools were administered to the same participants after a period of two weeks. Polit and Hungler (1999) states that, reliability determines the degree of consistency or accuracy in which an instrument measures the attribute it is designed to measure.

3.9 Data Analysis and presentation

Data analysis is a process of inspecting, cleaning, transforming and modelling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making.

3.9.1 Analysis and presentation of quantitative data

First, data derived from questionnaires were thoroughly read for familiarization, edited and cleaned up in the process of organizing the data. Secondly categories and their relationships were established and this was done manually; the list of primary schools sampled and given questionnaires was assigned serial numbers to denote the primary schools represented by the pupils and subject teachers which helped to establish the response rate of the participants.

The data derived from questionnaires were tabulated, bar graph and tables established with the aid of excel package. The frequencies from the collected data were converted to percentages to show relative levels of opinions from the respondents.

3.9.2 Analysis and presentation of qualitative data

First, the call recorded data from telephone and face to face interview were transcribed on paper at the end of every interview. The transcribed notes were labelled and assigned serial numbers which were used later to denote the key informants in protecting confidentiality of the information.

In analysing the raw data, the study identified, named, categorised and described the collected data from the transcribed. The call recorded interviews were transcribed at the end of each interview verbatim on paper. Question-answer format was done on the transcriptions for the nine (9) interviews for both face to face and telephone interviews. Categorise that emerged were related to each other and a core category and sub-

categories that helped in writing up the findings was chosen to bring out the responses of the key informants then the data were presented as categories.

The study adopted triangulation convergence method which involved analysing the quantitative and qualitative data separately but merging them during data interpretation so that the quantitative data complemented were by the qualitative data.

3.10 Ethical considerations

The study involved administering questionnaires to primary school pupils and subject teachers and interviews for key informants. Permission was sought from the head teachers and consent from key informants was sought before collecting data. Respondents' were assured of confidentiality and privacy of the collected data. A research authorization permit and clearance letter was obtained from MOEST and this helped to build trust with the respondents. Permission to be recorded was sought from interviewees.

The researcher ensured that there were no plagiarism by acknowledging the authors and the sources of the information well illustrated in the list of references. The researcher ensured that results were free of any fabrication and finally the study results will be disseminated through depositing final copies of the thesis at Moi University Library.

3.11 Summary of the Chapter

This chapter discussed research design, data collection and data analysis methods. The choices of the study area, population, sample size, sampling methods and procedures are discussed. Preliminary research strategies like permission to conduct the research, pilot of the tools, research assistant training are described. Ethical issues in the study are also explained.

The study adopted exploratory survey research design where qualitative and quantitative approaches were used to achieve its objectives.this study was conducted in Uasin Gishu County with a total population was 772 Primary schools in UGC, key informants from KICD, MOE and three publishing housesfrom which a sample size of 191 respondents was picked, Simple random sampling and purposive sampling techniques were used in sampling the respondents. Questionnaire and Interview schedules were used as instruments for data collection

A pilot study was conducted using questionnaires and interviews to establish validity and reliability of the instruments. Analysis was done both qualitative and quantitative based on the research objectives; Data was edited & cleaned-up to ensure correctness accuracy, completeness, and consistency. Descriptions and themes (qualitative data) and statistical methods such as tables and bar graphs (quantitative data) were used to analyse and present data based on the research objectives

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter analyses and presents data from primary school pupils and subject teachers, and key informants based on the objectives of the study (see pg 7, section 1.4)

4.2 Response Rate

Respondents in this study were primary school pupils in class five, six and seven and their English and Science subject teachers from Uasin Gishu County, while key informants were publishing managers, production managers and editors from selected publishing firms, Quality Assurance & Standards Officer from MOE and Vetting Coordinator from KICD (Table 4.1)

Table 4.1: Participants Responses

Institution	Participants	Sample size	Responses	Percentage%
Primary Schools	Pupils Subject teachers	108 72	88 66	81 92
Publishers	Publishing Managers Production Managers Subject Editors	3 3 3	2 2 3	67 67 100
KICD	Vetting Coordinator	1	1	100
MOE	Quality assurance &standards officer	1	1	100
Total		**191**	**163**	**85**

Table 4.1 shows that 88 primary school pupils and 66 subject teachers completed and returned their questionnaires and thus registering 81 % and 92 % response rate. This high response rate was due to the fact that the researcher administered the questionnaires personally and collected them on the same day of administering. From the responses, 20 questionnaires from the pupils were spoiled; ten(10) had duplicated

responses and the rest had some an answered questions, the six(6) questionnaires from the subject teachers were returned not fully filled in.

All the questionnaire copies completed were used in data analysis. The response rate of the interviews from subject editors, Vetting Coordinator and the Quality Assurance and Standards Officer was 100%. The table shows that two (2) publishing two (2) production managers had same response rate of 67%. Each interview took approximately one hour and this was done at different days and times. The overall interview responses were good and this was contributed by the purposive sampling employed by the researcher and the choice of few respondents and this meant that the desired in-depth information was achieved.

4.3 Background Information of Respondents

This section presents the background information of primary school pupils and subject teachers who participated in the study.

4.3.1 Primary school pupils

In Table 4.2, it can be seen that out of 88 respondents 39 (44%) were male and 49 (56%) were female pupils. Since the sample was random the gender disparity was solely due to the level of participation between the male and the female pupils. A total of 40 (45%) respondents were aged 9 – 11 years, 44 (50%) were aged 12 –14 years, and 4 (4%) were over 14 years.

Based on these findings, the mean age of pupil respondents was 11.7 years. The age range of pupil respondents was 12-14 years. Most pupils join primary schools at the age of six (6) years as per the Kenya's Basic Education Act (2015). As such with the study focusing on classes' five, six and seven and with 44 (50%) pupils reporting aged 12-14 years such range is acceptable.

Table 4.2: Background information on pupils

Background	Labels	Number of pupils	Percentage (%)
Gender	Male	39	44
	Female	49	56
Age	9-11 years	40	45
	12-14 years	44	50
	Over 14 years	4	5
Class level	Standard 5	25	28
	Standard 6	30	34
	Standard 7	33	38

Table 4.2 further shows that 25 (28%) of the respondents were in class five, 30 (34%) were in class six while 33(38%) were in class seven.

4.3.2 Primary school subject teachers

This section presents the background information of subject teachers in terms of their professional qualifications, designation and years of service. Table 4.3 shows that 40 (61%) subject teachers had college certificate, 14 (21%) had diploma and 12 (18%) had bachelor's degree. The large number of subject teachers having certificate qualification was expected since the minimum qualification for primary school teachers is a college certificate.

A total of 46 (70%) subject teachers had worked for over 10 years while 20 (30%) had worked for less than 10 years. Thus, majority of the subject teachers had used textbooks with illustrations during their long time of service.

Table 4.3: Background Information on subject teachers

Background	Labels	Number of teachers	Percentage (%)
Qualification	Certificate	40	61
	Diploma	14	21
	Degree	12	18
Years of service	Over 10 years	46	70
	Below 10 years	20	30

4.4 Criteria for determining the quality and relevance of illustrations

Criteria used to determine the quality and relevance of illustrations in primary schools textbooks was very important to this study. Findings on the criteria that guided the quality and relevance of illustrations was obtained from the producers of illustrations, policy makers, quality gate keepers and considerations from the users were factored in. These respondents were from publishing firms, MOE, KICD and primary schools in Uasin Gishu.

4.4.1 Publishers' criteria for determining the quality and relevance of illustrations

Respondents from publishing firms comprised of publishing managers, production managers and the editors. These respondents were asked if they had established criteria for determining the quality and relevance of illustrations in textbooks for primary schools in Kenya. The publishing managers reported that they responded to the specifications indicated in KICD guidelines. These respondents indicated that, although they try to restrict themselves to KICD guidelines, they considered them inadequate. The typical responses from each chosen publishing manager are seen in the following statements:

> What is indicated in the specifications as pertaining to illustrations' quality is inadequate, we go beyond what they provide, and we don't have specific criteria for determining the quality and relevance of illustrations but is integrated in the guidelines. *(**Interview No. 1, Nairobi, 10.15 a.m., February 2, 2016**)*

Further probing of publishing managers showed that they based their criteria on the level of learners, age, location of users and their cultural values as echoed in the following expressions.

> For lower class, high quality, full colour, captivating illustrations is needed when considering quality. On location, let's say North Eastern or Turkana illustrating with a fridge will be irrelevant as the gadget is

not widely found there*(Interview No. 2, Nairobi, 2.15 p.m, February 2, 2016)*

On cultural values and illustrations, illustrating a Muslims book or on Islamic region, it is irrelevant to illustrate with animals like pigs. This is being culturally insensitive as this invokes a lot of animosity to the parents and the children themselves *(Interview No. 2, Nairobi, 2.15 p.m, February 2, 2016)*

The production managers reported that most of the illustrations they received were quality and ready for reproduction. They indicated that the quality and relevance determination was done during printing and after printing in which they considered issues like colour consistency, image registration, clarity of the image, ink spreading as explained by one of the production managers in the following response:

"We check colour consistency, in some cases colour may vary as a result of paper failing to register or the operator failing to maintain ink metering, for us to say a print illustration is quality the image should be clear and inks must have spread evenly**. (Interview No. 3, Nairobi, 10.00 a.m, February 18, 2016)**

Kipphan (2001) argues that quality of prints is determined in the three stages of printing namely: production, pre-press, press and post press. However, this study established that print quality and relevance criteria were determined at press and post-press stage. It was noted that quality criteria were defined by the prints produced.

The role of subject editors in textbook production is crucial. They liaise with the publishing manager, authors and production team. Subject editors also give instructions to illustrators and graphic designers based on the quality and relevance criteria on the learners' needs, design elements and principles. On the quality and relevance criteria for illustrations in textbooks, one of editors had the following to say:

We consider the learners' needs, in the syllabus, content guides us on what to illustrate. We prepare illustrations basing on design elements and principles like colour, shapes, lines, text, variety, emphasis, unity and balance.*(Interview No. 5, Nairobi, 11.00a.m, February 7, 2016)*

These findings revealed that editors' criteria were too general, inadequate and important information like learners' level and age omitted. A past study by Rotich and Musakali (2005) established that poor quality textbooks found their way to schools possibly due to inadequate details on the guidelines pertaining to the quality and relevance. In comparing primary school pupils and subject teachers' views, the publishers' criteria were based on the purpose of illustration, level and age of learners, preparation and production while pupils and the teachers' criteria were based on their daily interaction with the illustration. The major similarity was that both considered the use of design elements and principles as the quality and relevance criteria.

4.4.2 MOE and KICD criteria

MOE acts as the policy maker on matters pertaining to education in Kenya. On the other hand, KICD is the agency that develops curriculum and syllabi. MOE Quality Assurance & Standards Officer said that the major role of the ministry in determining the quality and relevance of illustrations is checking that textbooks for approval in primary schools meet the standards as stated in the vetting and evaluation guidelines and procedures. The MOE officer said:

> Our major role is to approve textbooks to be used in primary schools. When determining the quality and relevance of illustrations, we base our criteria on the textbook development guidelines which for case of illustrations we consider clarity, suitability, colour and variety in the illustration. *(Interview No. 8, Eldoret, 2.30 p.m, March 3, 2016)*

Further probing of the MOE respondent on supplementary criteria for textbook development revealed that book contents, syllabus coverage, exercise, binding, durability, paper used, technical and physical specification were taken into consideration. These findings revealed that there were no specific criteria for determining the quality and relevance of illustrations but the criteria that existed in the vetting and evaluation guidelines was inadequate.

The KICD Vetting Coordinator who is in-charge of the vetting and evaluation process reported that their quality and relevance criteria were contained in the guidelines and procedures which they supply to every interested publisher. His views on criteria for the quality and relevance are expressed in the following response:

> We are the agency of MOE that handles the national curriculum and textbooks which we term them as curriculum support materials, curriculums are first developed then the syllabus. We have textbook development guidelines and procedures in which illustrations are inclusive. On illustrations we check; clarity, aesthetics and suitability of the illustration. *(Interview No. 9, Nairobi, 11.30a.m, March 3, 2016)*

On determining relevance in illustration, the vetting coordinator stated that they considered the subject specific objectives, variety of illustration, adequacy and colour use as summarised in the following expression;

When we talk of relevance criteria, we talk of subject specific objectives, talk of variety and the interpretation by the learner in reference to colour. *(Interview No. 9, Nairobi, 11.30 a.m, March 3, 2016)*

Views from MOE and KICD on criteria for determining the quality and relevance of illustrations showed that since illustrations were the integral part of the textbooks and could not be separated, textbook development guiding criteria were sufficient. However, these criteria were too general and relevant information on design elements and principles were omitted. Their views on criteria were inadequate as compared to those of the primary school pupils and subject teachers.

4.4.3 Primary school Pupils' and subject teacher's considerations of the quality and relevance in textbooks

Primary school pupils and teachers were the main users of illustrations in this study and their consideration for determining the quality and relevance of illustrations was very significant to the study.

4.4.3.1 Pupils' Considerations of quality

Responses from pupils on their considerations of quality of illustrations in approved primary textbooks are summarized in Table 4.4. Table 4.4 indicates that all the pupils 88 (100%) considered colour, value and text as criteria for determining quality. This shows that these elements were very familiar to pupils while handling illustrations. A total of 28 (72%) male and 42 (86%) female pupils considered shape and line as criteria for determining quality in illustrations while 21(54%) male and 28(57%) female pupils considered texture as criteria for determining quality in illustrations.

Table 4.4: Considerations for determining quality of illustrations by pupils

Elements		Frequency & percentages of respondents							
		Gender		**Age(years)**			**Class level**		
		Male	**Female**	**9-11 yrs**	**12-14 yrs**	**Over 14 yrs**	**Std 5**	**Std 6**	**Std7**
Colour	Yes	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	No	-	-	-	-	-	-	-	-
Shape	Yes	28(72%)	42(86%)	23(58%)	42(95%)	4(100%)	12(48%)	27(90%)	33(100%)
	No	11(28%)	7(14%)	17(42%)	2(5%)	-	13(52%)	3(10%)	-
Texture	Yes	21(54%)	28(57%)	20(50%)	42(95%)	3(75%)	24(96%)	27(90%)	33(100%)
	No	18(28%)	18(14%)	20(50%)	2(5%)	1(25%)	1 (4%)	3(10%)	-
Value (Bright or Dark)	Yes	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	No	-	-	-	-	-	-	-	-
Line	Yes	28(72%)	42(86%)	23(58%)	42(95%)	4(100%)	12(48%)	27(90%)	33(100%)
	No	11(28%)	7(14%)	17(42%)	2(5%)	-	13(52%)	3(10%)	-
Text	Yes	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	No	-	-	-	-	-	-	-	-

Faimon and Weigand (2004) argued that design elements when put together skilfully create effective visual communication which was confirmed by this study. Other issues that pupils indicated as their quality consideration were; clarity, nature and distribution of gender in illustrations used in textbooks.

4.4.3.2 Extent to which quality considerations were important to pupils

The study sought to establish the extent to which the criteria for determining quality were important to pupils. As presented in Figure 4.1, all the pupils considered colour, shape and type as very important, 47(53%) considered the use of line and value as very important, while 44 (50%) considered texture very important.

This shows that pupil's criteria on these elements were based on their daily use of illustrations; 31(35%) pupils considered line and value important, while29 (33%) considered texture as important. On the other hand, 12 (15%) considered line, value and texture not important. It is possible that line, value and texture were not able to communicate visually to the pupils thus poor quality illustrations

Figure 4.1: Extent to which quality considerations were important to pupils
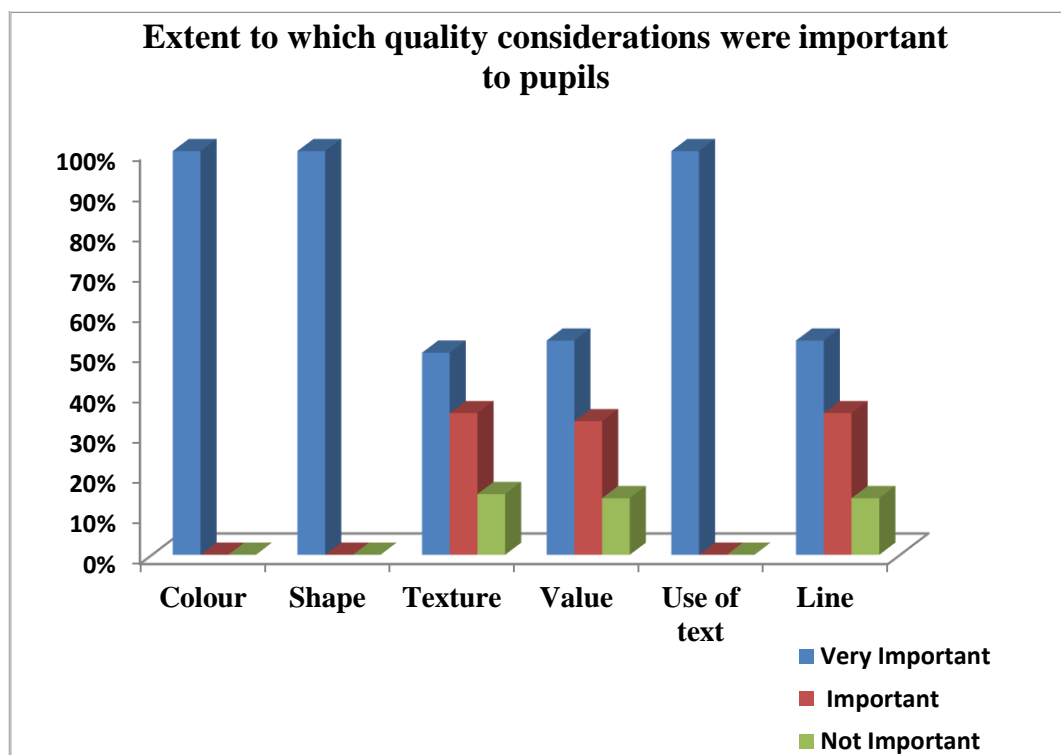
4.4.3.3 Pupils' Considerations of relevance of illustrations in approved Primary textbooks

Relevance means suitability of the illustrations to the target readership who in this case are pupils. Pupils' views on what they considered as relevant in illustrations was very important to the study and their responses are presented in Table 4.5.

The responses show that space, balance, emphasis, variety were considered by all pupils as criteria for determining relevance in illustrations in textbooks while 12 (48%) pupils in class 5 and 27 (90%) pupils considered unity as criteria for determining relevance. It is possible that the application of unity in illustrations presented irrelevant illustrations to pupils. The findings show that despite pupils having no knowledge of graphic design they know exactly what makes illustrations relevant.

Table 4.5: Consideration for determining relevance on illustrations by pupils

Principles		Frequency & percentages of respondents							
		Gender		Age(years)			Class level		
		Male	**Female**	**9-11 yrs**	**12-14 yrs**	**Over 14 yrs**	**Std 5**	**Std 6**	**Std7**
Space	Yes	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	No	-	-	-	-	-	-	-	-
Balance	Yes	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	No	-	-	-	-	-	-	-	-
Emphasis	Yes	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	No	-	-	-	-	-	-	-	-
Variety	Yes	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	No	-	-	-	-	-	-	-	-
Unity	Yes	28(72%)	42(86%)	23(58%)	42(95%)	4(100%)	12(48%)	27(90%)	33(100%)
	No	11(28%)	7(14%)	17(42%)	2(5%)	-	13(52%)	3(10%)	-

4.4.3.4 Extent to which relevance considerations were important to pupils

Figure 4.2 shows that all pupils considered emphasis, balance and variety very important, 44(50 %) considered space very important and 39(44%) considered unity very important for illustrations in textbooks. Further, 26 (30%) pupils considered unity important and 33 (37%) where is considered space important. On the other hand, 23 (26 %) pupils considered unity not important while 11(13%) considered space not important. It is therefore possible that pupils often use textbooks with illustrations thus they were able to distinguish what consisted of relevant and irrelevant illustrations

Figure 4.2: Extent to which relevance criteria is important to pupils
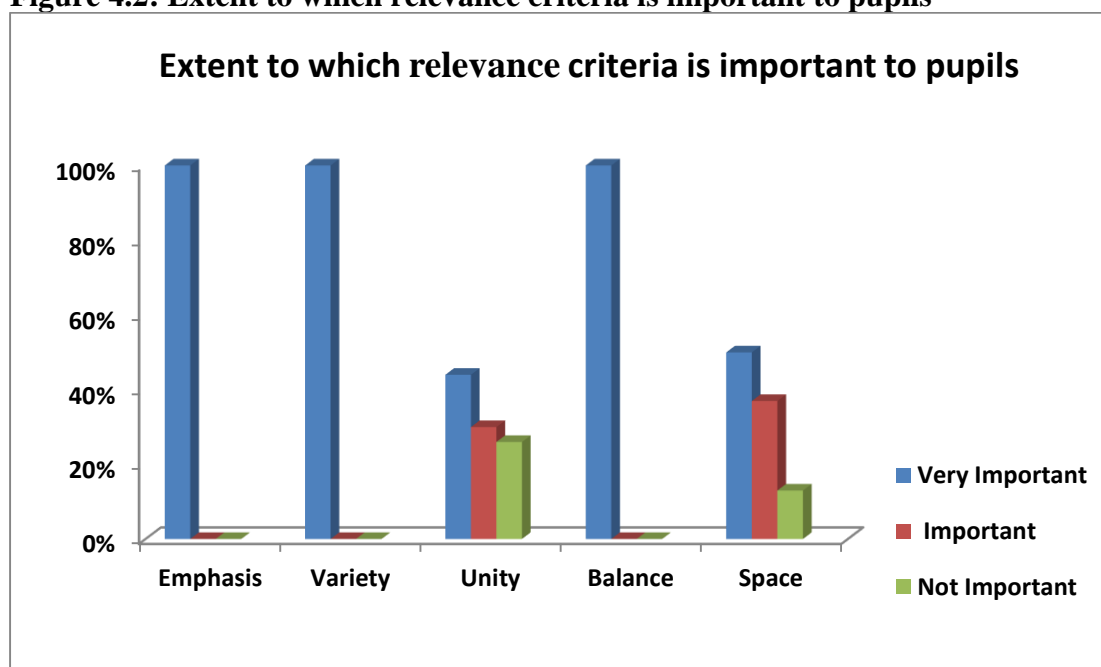
4.4.4 Subject teachers' Considerations of the quality and relevance on illustrations in approved primary school textbooks

Subject teachers often use textbooks with illustrations while teaching. Therefore, the study sought to establish their views on what they considered as criteria for determining the quality and relevance of illustrations in approved textbooks.

4.4.4.1 Subject teachers' considerations of quality on illustrations in approved primary school textbooks

Subject teachers' views on determining quality of illustrations were considered to be of importance to this study. Findings on this issue are presented in Table 4.6.

Table 4.6: Considerations for determining quality of illustrations by subject teachers

Criteria	Response	Number of teachers	Percentage (%)
Colour	Yes	66	100
	No	-	-
Shape	Yes	66	100
	No	-	-
Texture	Yes	56	85
	No	10	15
Value	Yes	60	91
	No	6	9
Line	Yes	56	85
	No	10	15
Type	Yes	66	100%
	No	-	-

Table 4.6 indicates that all the subject teachers considered colour, shape and type as criteria for determining quality. A total of 56 (85%) considered texture and line as criteria for determining quality, while 10 (15%) did not consider them as criteria for assessing textbook illustrations. A sum of 60 (91%) subject teachers considered value as criteria for determining illustrations in textbooks as compared to 6 (9%) who did not recognize.

The findings show that like pupils, subject teachers considered colour, shape, text, line, value and texture as criteria for determining quality of illustrations in textbooks. There was no major difference between the views of subject teachers and pupils in that over 80 percent of the subject teachers considered colour, shape and type as criteria while all the pupils considered them criteria for determining quality. This could be due to the fact that the subject teachers had similarly handled textbooks with illustrations frequently as the pupils.

4.4.4.2 Subject teachers' considerations of relevance

Subject teachers use illustrated textbooks while teaching. This study considered their views on relevance of illustrations in determining their importance. Balance, emphasis and variety were considered by all the subject teachers as a consideration for determining relevance, while 58(88%) considered space and unity as criteria (Table 4.7). These findings show that subject teachers' involvement in the textbook procurement process made them familiar with illustrations hence their knowledge of determining relevance in illustrations. This is evidenced by over 58 (88 %) of the subject teachers considering all the design principles as criteria.

Table 4.7: Consideration for determining relevance of illustrations by subject teachers

Criteria	Response	Number of teachers	Percentage (%)
Space	Yes	58	88
	No	8	12
Balance	Yes	66	100
	No	-	-
Emphasis	Yes	66	100
	No	-	-
Variety	Yes	66	100
	No	-	-
Unity	Yes	58	88
	No	8	12

In comparison to pupils' responses, teachers' views had very little difference with regard to rating on space. All the pupils considered space a criterion while few teachers disagreed. Bevlin (1994) argues that unity is created in the mind by simplification and organization of information which is achieved by grouping elements in the illustration together to create new wholes. It can be argued that the low responses from both the teachers and pupils regarding unity were due to the much mental involvement unity presents to them.

As a supplementary question, the subject teachers were asked of their consideration when procuring textbooks. They reported that they considered age of pupils, level of pupils, content, and clarity of illustration, price, cover design, paper quality and binding. These findings revealed that subject teachers consider all the aspects of quality textbook development indicated in the guidelines supplied by KICD to publishers that govern book production.

4.5 Perceptions of illustration's quality and relevance and their impacts on use

Pupils and subject teachers are the major textbook users and their perception of the quality and relevance in illustration and how they impact them was very significant to the study

4.5.1 Pupils' perceptions and how illustrations impact their learning

All the pupils enjoyed reading textbooks, contrary to Clark and Douglas (2011) who argues that girls enjoy reading textbooks more than boys he stated that boys have negative attitudes towards reading and their behaviours made them not to enjoy reading. The major reasons boys gave for enjoying reading textbooks were because of the presence of quality and relevant illustrations.

4.5.1.1 Extent to which pupils rate the quality and relevance of illustrations

Table 4.8 shows that all the pupils indicated that the textbooks they used had illustrations. A sum of 21 (84%) pupils in class 5, 22 (73%) in class 6 and 27 (82%) in class 7 considered the quality and relevance of illustrations good. A total of 3 (12%) pupils in Standard 5, 6 (20%) pupils in Standard 6 and 4 (12%) pupils in Standard 7 considered the quality and relevance of illustrations average.

Table 4.8: Extent to which pupils rate the quality and relevance of illustrations

Item	Respondent	Frequency & percentages of respondents		
		Good	**Average**	**Poor**
Gender	Male	28(71%)	8(21%)	3(8%)
	Female	42(86%)	5(10%)	2(4%)
Age	9-11 years	37(93%)	2(5%)	1(2%)
	12-14 years	30(68%)	10(23%)	4(9%)
	Over 14 years	3(75%)	1(25%)	-
Class level	Standard 5	21(84%)	3(12%)	1(4%)
	Standard 6	22(73)	6(20%)	2(7%)
	Standard 7	27(82%)	4(12%)	2(6%)

From **Table 4.8** it can also be observed that 1 (4%) pupil in Standard 5, 2 (7%) pupils in Standard 6 and 2(6%) pupils in Standard 7 considered the quality and relevance of illustrations poor. Despite a high number of pupils indicating the quality and relevance being good and average, the few who indicated poor showed evidence of poor quality and irrelevant illustration in the approved textbooks.

Rotich and Musakali (2005) were concerned about quality of textbooks. However, their concerns were made before the establishment of KICD in 2013. KICD has since formulated and enforced guidelines on the quality and relevance of educational materials. Even though most pupils were of the view that illustrations were of good quality and relevant. A few who considered them of poor quality and irrelevant meant that there was still concern with regard to the quality and relevance of illustrations.

4.5.1.2 Impact of illustrations' quality and relevance on pupils learning

All pupils were of the view that the quality and relevance of illustrations in approved textbooks affected their learning positively and negatively. They stated that good quality and relevant illustrations in textbooks helped them in enhancing cognitive,

affective and attention purposes. A sum of 60 (68%) pupils stated that the quality and relevance of illustrations in approved textbooks helped them to achieve cognitive, affective and attention purposes.

A total of 28 (32%) pupils said the quality and relevance of illustration in textbooks they used did not help them to achieve the desired purpose. UNESCO (2009) states that illustrations are useful in parts of a text giving information about items or events which are not encountered in the pupils' daily life or in the school setting, the region or even the country. However, the quality and relevance of illustrations in certain cases do not help achieve the desired roles.

Other roles that pupils cited concerning contribution of quality and relevant illustrations in approved books to their learning include: easier understanding, making reading realistic, enhancing meaning, clarifying text and making them creative, especially composing and writing essays.

A sum of 28 (32%) pupils indicated that the quality and relevance of illustrations in the approved textbooks they used did not help them achieve the desired expectations. This is because poor quality and irrelevant illustrations in the books made them confused in relating with the environment, made their textbook reading boring, distracted their attention as they studied and did not help them remember what they learned in class.

4.5.2. Subject teachers' perceptions of the quality and relevance of illustrations

Subject teachers are responsible for identifying textbooks required for use by pupils. Thus, they form part of MCVC. Since they are users of textbooks, the quality and relevance of illustrations have impacts on their teaching. Their perceptions are presented in Table 4.9

Table 4.9: Teachers' perceptions of the quality and relevance in illustrations

Item	Respondents	Frequency & percentages of respondents		
		Good	Average	Poor
Quality	Subject Teachers	55(83%)	7(11%)	4(6%)
Relevance	Subject Teachers	11(17%)	45(68%)	10(15%)

In Table 4.9 it can be seen that 55 (83%) subject teachers said the illustrations in approved textbooks were of good quality, 7 (11%) of them considered them as average and 4 (6%) said that their quality was poor. A sum of 11 (17%) subject teachers considered relevance of illustrations in approved textbooks as good, 45 (68%) considered their relevance as average, while 10 (15%) considered them poor. These findings show that textbooks still have poor quality and irrelevant illustrations. This corroborates the study by Rotich and Musakali (2005) which noted that despite the evaluating and vetting educational materials, poor quality textbooks still found their way to schools in Kenya.

Subject teachers had clear perceptions of illustrations' quality and relevance in textbooks and this contrasted significantly with those of pupils. In explaining the quality and relevance, subject teachers stated that most approved textbooks looked good in terms of colour use, shape, texture, their lightness and darkness. However, certain textbooks' illustrations were crowded while in others they were scattered or showed no sense of unity, not eye catching or lacked balance. Both pupils and subject teachers provided evidence of poor quality and irrelevant illustrations in approved textbooks they use.

4.5.2.1 Impacts of the quality and relevance of illustrations on teaching

The results of this study showed that all approved textbooks had illustrations. This was expected since for effective delivery of content use of illustration in textbooks was one of the guidelines in textbook vetting and evaluations process in Kenya. In total, 48

(68%) subject teachers indicated that the quality and relevance of illustrations in textbooks helped them to achieve cognitive, affective and attention roles. A sum of 22 (32%) teachers indicated that the state of the quality and relevance of illustrations in approved textbooks in Kenya did not help them achieve the desired objectives.

Apart from cognition, affection and attention roles played by quality and relevant illustrations in textbooks, teachers contacted further indicated that illustrations made abstract ideas clearer; made teaching lively as they enhanced life in a page with writing; saved their time in explaining issues and concepts and helped them explain facts to slow learner pupils. The teachers also noted that illustrations enhanced their teaching by supporting text and promoted interest while teaching, as well as making teaching real by explaining conceptual objects.

Those who indicated that the quality and relevance of illustrations in books did not help them achieve the desired goals explained that poor quality and irrelevant illustrations made their explanation of concepts difficult. These respondents also noted that such illustrations made pupils lose interest in learning hence hindering them in the delivery of content and making it difficult for them in dealing with slow learner pupils.

4.5.3 Key informant's perceptions on impacts of the quality and relevance of illustrations on learning and teaching

According to gate keeping theory adopted in this study and presented in Chapter Two of this study, publishers are the source of illustrations; MOE and KICD are the major gate keepers while primary school pupils and subject teachers are consumers of textbooks with illustrations. Therefore, the perceptions of creators, producers and gate keepers were considered very significant to the study.

4.5.3.1 Publishers Perceptions of the quality and relevance of illustrations on learning and teaching

Publishers as creators and producers of illustrations expressed their views with regard to the quality and relevance of illustrations in approved textbooks and their impact on learning and teaching. This impact includes acquisition of desired skill, help in visualizing abstract phenomenon, aid in recall and memory. Their views were based on design elements and principles. Three subject editors had these to say;

> When teachers want to teach about internal body parts, for a child to visualize parts like intestines, digestion; illustrations drawn will actually help the pupil visualize *(Interview No. 5, Nairobi, 11.00 a.m, Feb 7, 2016)*

> Illustrations aid in understanding of concepts as it impacts on memory and recall, for example a child may see an illustration of the heart. After some time the same child is able to recall and draw a similar illustration *(Interview No. 6, Nairobi, 11.15 am, February 12, 2016)*

> When we consider impacts we look at colour, texture, shapes, line, type and texture, of the illustration. Colour affects psychology, used for symbolism enabling pupils compare and identify with the environment *(Interview No. 7, Nairobi, 11.00 a.m, December 21, 2015)*

Other impact points illustrated by editors that illustrations in textbooks were aiding in attention, affecting mood, bringing enjoyment of what is being read and communicating carefulness for example when pupils are crossing roads use of line on road signs help pupils communicate carefulness as they cross roads

From the findings it can be noted editors based the impact views on the quality and relevance of textbook illustrations were based on the importance of design elements. This is in agreement with Benz and James (1986) who argue that many illustrations in books are based on design elements and principles.

In comparison to the pupils and subject teachers' views, editors failed to give specific aspects of negative impacts as they relate to poor quality and irrelevance of illustrations to the users. Thus, editors concentrated only on the positive effects of quality and relevant illustrations in approved textbooks. This may mean that they considered the illustrations that they create and prepare in primary textbooks to be satisfactory to the users which do not match the views of pupils and subject teachers.

4.5.3.2 MOE and KICD Perceptions of the quality and relevance of textbook illustrations and their impacts on learning and teaching

Findings from the MOE quality assurance & standards officer and vetting coordinator perception's on impacts of the quality and relevance of illustrations on learning and teaching were very important to the study. MOE role is to prepare guidelines for publishers in producing appropriate textbooks and recommend textbooks for use by schools stated that most of the textbooks they recommend for use by primary schools were quality and relevant. However, during the inspection of textbooks in primary schools there were instances of poor quality illustrations in textbooks.

It was also reported that quality illustrations in textbooks were very critical in early learning. For example, for pre-school everything is in pictures and in lower primary schools every page must have an illustration. For middle class, illustrations must be as common as possible and for upper primary illustrations were used when introducing new concepts and skills to learners. The response of MOE Quality Assurance & Standards Officer is as expressed below:

> Quality illustrations portray pictorial presentation in a process; facilitate teaching, as popularly said 'a picture represents even up to a thousand words'. Illustrations consolidate and crystallize a body of information and enhance creative thinking; a teacher can use one illustration instead of explaining pages and pages (***Interview No. 8, Eldoret, 2.30 p.m, March 3, 2016***)

KICD has a role in preparing the curriculum and syllabus for schools in Kenya and give copies to interested publishers. KICD also vets and evaluates printed primary textbooks submitted to them by publishers to ensure meeting of set standards. KICD Vetting Coordinator stated as follows:

> Quality and relevant illustrations break monotony, explain, show and elaborate all forms of text. They help pupils internalize what they read and enable teachers in content delivery. *(Nairobi, 11.30a.m, March 3, 2016)*

This response reveals that the Vetting Coordinator focused on the positive impact of quality and relevant illustrations in textbooks, hence omitting the negative impact of poor quality and irrelevant illustrations in approved textbooks.

Findings from key informants' from MOE and KICD support UNESCO's (2009) in explaining the major roles of illustrations as being useful in giving information about items or events which are not encountered in the pupils' daily life or in the school setting, the region or even the country. However, their views focused only on the positive effects of quality and relevant illustrations to pupils and subject teachers using approved primary school textbooks.

4.6 Factors that contribute to the quality and relevance of illustrations

The key informants' role include decision making pertaining to preparation and production of illustrations. Therefore, factors contributing to the quality and relevance were handled by publishers, MOE quality assurance & standards officer and KICD vetting coordinator.

4.6.1 Publishers views on factors that contribute to the quality and relevance of illustrations

Publishers indicated two major departments that determined the quality and relevance of illustrations as being editorial and production. Publishing managers were asked on

their views regarding factors contributing to the quality and relevance of illustrations in textbooks. Among the discussed factors included expertise, preparation and production time. Their responses were represented by the following statements:

> Illustrations needs people who are experts, naturally talented at drawing fine art by hand or geometric by use of Computer Assisted Drawing (CAD), skilled and trained. Getting such people ensures that the quality and relevance is attained (*Interview No. 1, Nairobi, 10.15 a.m, February 2, 2016*)

> Time factor is key in the quality and relevance of illustrations, I can have very good, skilled and experienced illustrators but given very short datelines will result to poor quality and irrelevant illustrations as work will be done hurriedly *(Interview No. 2, Nairobi, 2.15 p.m, February 2, 2016)*

Further probing of publishing managers showed that at every stage and phase of illustration preparation and reproduction, technology contributed to the quality and relevance of illustrations. A response towards this was expressed in the following statement:

> In this industry, technology is changing very fast. Quality and relevance is affected by technology; for example having modern technological gadgets like high resolution scanners, computers and print machines improve quality *(Interview No. 2, February 21, 2016).*

Production managers reported that so many factors contributed to the quality and relevance of illustrations in textbooks. Most of these factors revolved around the production department in publishing houses and included printing paper, inks and printing machines. Their feelings are expressed in the following statements:

> Paper quality contributes to quality of illustration. For example, glossy paper have light reflective features and shiny appearance on final print, while the matte paper absorbs light creating a non-reflective surface that is easier to read by pupils therefore when the quality of paper is good it will give good quality printed illustration*(Interview No. 4, Nairobi, 11.15 a.m, February 14, 2016).*

> The kind of printing machines, quality of inks and operators expertise contribute greatly to quality of illustrations. High resolution machines give high quality prints and good quality inks rhyming with paper always gives best quality prints *(Interview No. 3, Nairobi, 10.00 a.m, February 18, 2016)*

The nature of colour separating illustrations was established to contribute to final quality. This is because lower primary schools' illustrations were heavily illustrated and full colour offset printing which requires colour separation. This is a process where colours like CMYK are separated to give individual colours. Therefore, the mode in which the original scanned illustration is separated is of great importance. An illustrations supplied in RGB mode when separated appear as black and white rather than building colour out of CMYK as a result muddy colours appear when printed.

In the editorial department, editors pointed out factors relating to technology, original illustrations and time as contributing to quality; "Technological changes contribute greatly to the quality and relevance of illustration, initially generation of illustrations was done manually where quality was low as compared to the current generation by computers and high capability software", *(Interview No. 7, Nairobi, 11.00 a.m, December 21, 2015)*

On technology, the editors reported that the commonly used software for illustration generation were of the Adobe family. This include Adobe illustrator suited for drawing and line illustrations, Adobe Photoshop best suited to scanning and editing, Quark-express and In-Design programs best for page layout. Therefore, use of wrong programs can affect the desired quality of illustrations to be achieved.

One of the editors said that original artwork quality determined the final quality of illustrations. This disapproves Lea (2012) who argues that a dirty original could be

erased to remove unnecessary lines on the actual drawing paper and retraced onto a fresh sheet of paper. The editor's response is captured by the following expression:

> Clean, professionally prepared, pencil free, pen marks free, fingerprints and paper clip free illustrations produce quality output while computer clean-up of dirty illustrations do not produce fine quality as compared to a clean original*(Interview No. 6, Nairobi, 11.15 am, February 12, 2016)*

Editors contacted pointed out two kinds of illustrations which determine the quality and relevance of illustrations, namely: line and halftone. Line illustrations can allow scaling of the original without affecting the final output quality. Halftone illustrations with a slight scaling on the original could affect the quality of the final print illustration as expressed by one of the editor's response:

> Line illustrations are not affected by any form of scaling as they don't have any tonal ranges but half-tone illustrations are affected by scaling. Reducing it obscures details affect tonal qualities while enlarging results to pixilation hence deterioration of clarity. *(Interview No. 5, Nairobi, 11.00 a.m, Feb 7, 2016)*

These responses on line illustrations do not support Lea (2012) who commented that scaling of line illustrations affects its quality.

4.6.2 MOE and KICD views factors contributing to the quality and relevance of illustrations

MOE Quality Assurance & Standards Officer and KICD Vetting and Evaluation Coordinator were asked about their views on the factors that determine the quality and relevance of illustrations in vetting and approval of textbooks. MOE respondent gave views pertaining to the level of transparency among the head teachers and the level of market research undertaken by the publishers. His feelings are expressed in the following statement:

> Well researched and pre-tested manuscripts meet the set quality standards and needs of the users. Integrity and transparency among head teachers in the procurement process is very critical to quality. The more transparent they are avoids purchase of poor quality pirated textbooks *(Interview No. 8, Eldoret, 2.30 p.m, March 3, 2016)*

Though the editors in consultation with the illustrator determine where illustrations are positioned and also check their quality, MOE Quality Assurance and Standards Officer indicated that publishers and editors should use the syllabus and guidelines with the supplied manuscript to intensify their research.

KICD which is the MOE agency in evaluating and vetting textbooks for use by schools in Kenya views were very important to the study. KICD Vetting Coordinator stated that expertise of the evaluation panel was one of the factors contributing to quality of illustrations. It was established that each subject panel consisted of seven (7) members.

The panel comprises of a moderator, University trainer or College tutor, MOE Quality Assurance and Standards Officer, member from the national exams council, curriculum centre specialist and a teacher in the specific subject. Therefore, their level of understanding the evaluation and vetting procedure and guidelines was a great factor contributing to the quality and relevance as represented by this response:

> We train our panellist before given the materials to evaluate using a scoring system. Their level of understanding so much matters to quality. Evaluation knowledge and practice determine the quality of the illustration. *(Interview No. 9, Nairobi, 11.30a.m, March 3, 2016)*

4.7 Challenges experienced while dealing with the quality and relevance of illustrations

The quality and relevance of illustrations poses challenges to users, producers and evaluators. This study sought the views of primary school pupils and subject teachers,

publishers and KICD Vetting Coordinators to establish the challenges relating to the quality and relevance of illustrations in approved primary school textbooks.

4.7.1 Challenges faced by primary school pupils in regards to the quality and relevance of illustrations

The challenges experienced by primary school pupils on the quality and relevance of illustrations in textbooks are presented in Table 4.10.

Table 4.10: Quality and relevance challenges faced by primary school pupils

	Frequency & percentages of respondents over the quality and relevance challenges							
	Gender		**Age(years)**			**Class level**		
	Male	**Female**	**9-11 yrs**	**12-14 yrs**	**Over 14 yrs**	**Std 5**	**Std 6**	**Std7**
Yes	19(49%)	22(45%)	21(53%)	20(45%)	-	16(64%)	15(50%)	10(30%)
No	20(51%)	27(55%)	19(47%)	24(55%)	4(100%)	7(36%)	15(50%)	23(70%)

A sum of 19 (49%) male and 22(45%) female pupils had challenges with the quality and relevance of illustrations in textbooks while 20 (51%) male and 27 (55%) female pupils said that they did not experience any challenges. The small difference in the number of male and female pupils experiencing challenges implied that both genders experience challenges with illustrations.

As regards to age, the results revealed that 21 (53%) pupils aged 9 – 11 years and 20 (45%) aged 12- 14 years faced challenges with the quality and relevance of illustrations in approved books. In total 19 (47%) pupils aged 9 – 11 years, 24 (45%) aged 12- 14 year and 4 (100%) pupils over 14 years said that they did not experience any challenge in the illustrations contained in the approved books.

These findings indicate that as children advance in age they concentrate more on the text rather than images as concentration increases with age. Anderson and Pearson (1984) argue that young children have short attention spans of concentration, thus require illustrations in their books to attract attention than explain the content. These findings affirm Anderson and Pearson's (1984) results that revealed majority of pupils aged over 12 years who did not have any challenge relating to the quality and relevance of illustrations in textbooks.

Concerning pupils class levels, results revealed that 16 (64%) pupils in Class 5, 15 (50%) in Class 6 and 10(30%) in Class 7 reported that they experienced challenges while using illustrations. A total of 7(36%) pupils in Class 5, 15 (50%) in Class 6 and 23 (70%) in Class 7 reported not experiencing any challenges. Therefore, it was clear that pupils who experienced challenges with the quality and relevance of illustrations were young pupils. The pupils were also asked about the major challenges they experienced while dealing with illustrations and their findings are discussed in the following subsequent sections.

4.7.1.1 Illustration not matching with text

Pupils reported that certain texts did not match with the illustrations, thus confusing them and interfering with the intended message. Others reported that small size types used to describe illustrations discouraged them from reading textbooks. One pupil cited an example of illustrations of a man in a farm of less than ten coffee trees, while the text caption indicates 'man in coffee plantation'

4.7.1.2 Lack of unity in the illustration

Unity is the ability of the mind to organize elements in an illustration to form a unified whole. The primary school pupils indicated that certain illustrations in the textbooks lacked harmony in terms of proportion, colouring, use of captions and numbering. As

a result most pupils lose interest in the illustrations. In explaining proportion, some pupils gave examples where in a page the child is bigger than the parent, the village house is taller than the trees.

Other pupils reported that some illustrations lacked alignment since some of them looked as though they are just dropped on a page haphazardly. The lack of repetition in illustration elements was one of the challenges noted by the pupils. The pupils indicated that certain elements including line, shape, colour, value or texture did not bring the sense of unity thus similarity in the elements was not established.

4.7.1.3 Crowded illustrations

Pupils indicated that in some English textbooks' illustrations were overlapping and crowded. This made them not enjoy reading despite the humorous cartoons in the textbooks. Other pupils indicated that lack of space distracted their attention. This made them easily forget what they read and subsequently affecting their school performance.

Segun (1998) argues that in an exam, children might score poorly because they either did not understand the information in the first place or originally had understood the information but simply forgot what they had learned. The presence of illustrations helps poor readers by avoiding the effect of forgetting. The main shortcoming of this text is the author's reliance on personal opinion rather than practical data. For example, this study established that illustration spacing affected pupils' performance

4.7.1.4 Dull and not-eye catching Illustrations

The primary school pupils reported some science textbooks as having dull illustrations which were not-eye catching, thus making them loose interest in reading. The dullness of illustrations was due to use of dark colours which did not reflect any light nor evoke any emotional feeling, no life in the page and attracted no attention.

Segun (1998) states that pictorial language is literature in its own right and children understand the language and the message better when there are quality and relevant illustrations. These findings show that primary school pupils did not receive the message due to poor quality of illustrations, consequently the illustrations acted as a barrier.

4.7.1.5 Poor use of shape

Pupils reported that some illustrations were poorly drawn so they did not really represent what was described by the text. The rural family setting of most pupils enabled them to frequently interact with natural experiences. Pupils explained that they were not able to relate what they read and illustrated with what was present in the natural environment.

These findings helped to compare with a previous study by Gromov (2009). The research by Gromov found out that children take advantage of naturally occurring events in the classroom and at home to enable them observe, compare, classify, measure and communicate. These findings clearly show that illustrations with poor shapes disadvantaged pupils.

4.7.2 Challenges faced by primary school subject teachers

The primary school subject teachers gave their views on the challenges they experienced relating to the quality and relevance of illustrations while using textbooks. A total of 50 (75%) subject teachers did not report experiencing any challenges while using illustrations in approved textbooks ac compared 16(15%) who faced challenges.

These findings support findings by Rotich and Musakali (2005) who pointed out presence of some poor quality textbooks in schools in Kenya. In establishing the

challenges, the subject teachers indicated wrong use of colours, poor shapes, ragged

edges in illustrations as a result of poor use of lines, presence of dark images and use

of small illustrations which are crowded, lack of balance and unity, poorly labelled and

wrongly used illustrations especially in science textbooks.

The findings of the pupils and those of subject teachers on challenges were similar. The

only difference was on the purpose. Pupils indicated facing challenges in regard to

learning while the subject teachers had challenges relating to content delivery in

relating to the message conveyed by the illustrations. Gate keeping theory relates the

subject teachers and the pupils as the audience or consumers who are the main textbook

users with illustrations whose major impacts included: cognitive, affective and attention

roles. This implies that the identified challenges hindered them from enjoying the

benefits of illustrations.

Table 4.11: Quality and relevance challenges faced by primary school subject teachers

Response	Number of teachers	Percentage (%)
Yes	16	15
No	50	75

4.7.3 Challenges faced by publishers in regards to the quality and relevance of illustrations

The publishers reported two major challenges relating to the quality and relevance in

respect of pre-press and press stages. Publishing managers gave views on production

staff inadequate, biasness among the evaluators and cost challenges. Their responses

are echoed in the following statements:

> Illustrations preparation is a specialised area, we need talented people to draw, design and able to analyse a brief and generate illustration that address what is needed which we a times fail to get them and sometimes evaluators have vested interests making the entire process biased*(Interview No. 1, Nairobi, 10.15 a.m, February 2, 2016).*

> The costs of generating illustrations are very high, certain textbooks like for Pre-school are heavily illustrated and the cost of just doing one is too high making it expensive *(Interview No. 2, Nairobi, 2.15 p.m, February 2, 2016)*

It was noted that other costs related to paper, inks and chemicals which was a very big challenge the production of illustrations. Publishing managers reported that government accruing tax on paper made it very expensive. Paying for textbooks to be evaluated was expensive and as such small publishers are put off especially when their titles are rejected.

The publishing managers further indicated that in the evaluation process they were required to give clear records of their finances which most of them required quality time to come up with especially for newly-established publishing firms (starters). Further probing of the publishing managers regarding datelines, piracy and inadequacy of criteria for determining the quality and relevance of illustrations yielded the following responses:

> We sometimes get short datelines to deliver textbooks for evaluation and we are forced to give our illustrators and machine operators' very short time to prepare and print illustrations ending up with poor quality and irrelevant illustrations. Evaluations also take too long and for small publisher without other revenue they suffer *(Interview No. 1, Nairobi, 10.15 a.m, February 2, 2016).*

> There is inadequate the quality and relevance criteria in the supplied KICD guidelines, piracy and plagiarism is also common, our illustrators take time to come up with an illustration and after production three, four months down the line you find it having been pirated or plagiarised.*(Interview No. 2, Nairobi, 2.15 p.m, February 2, 2016)*

Production managers pointed out challenges on quality of illustrations as relating to paper supply, quality of paper, quality of inks, machines and print quality challenges such as hickey, show through, ink show through and colour variation. Their views are echoed in the following expressions

Paper supply and quality is a big challenge. A times, the supply chain manager supply us poor quality paper. Paper by nature is hydroscopic, absorbs moisture thus swells and running it on machine becomes difficult, as a result miss-registration, colour variation do occur giving us a lot of wastages*(Interview No. 3, Nairobi, 10.00 a.m, February 18, 2016)*

We experience challenges of delayed drying of illustrations due to poor quality fountain solution affecting the ink-water balance. Inks normally dry through oxidation, penetration and evaporation and poor drying affects colour consistency *(Interview No. 4, Nairobi, 11.15 a.m, February 14, 2016).*

Production managers emphasized that their work majorly was to reproduce textbooks in mass after approval by KICD and their challenges pertaining to quality of illustrations were basically emanating from printing problems as a result of machines, paper and inks which include hickeys (an effect caused by dry ink's skin being transferred from plate to paper). Other contributing factors were dot gain and dot loss that came as a result of poor exposure of the plate and effect of image resolution as a result of illustrations' transfer from one platform to another. For example, transfer of image from Computer to Plate (CTP) or Computer to film (CTF).

Editors' feelings on the challenges were closely similar to what were stated by the publishing managers such as inadequacy of experienced illustrators, high costs of commissioning illustrators, plagiarism and short datelines to submit textbooks for evaluation. Among other challenges felt by the editors are captured in the following expressions

When we are handling so many illustrations, we normally outsource to freelance illustrators which is very expensive. Plagiarism is another challenge though rare our illustrators prepare good illustrations to be found later outside. We do not also have a defined calendar which is favourable and flexible for our illustrators *(Interview No. 5, Nairobi, 11.00 a.m, Feb 7, 2016)*

We have inadequate modern machines and software for illustration preparation like scanners and computers. The resolution produced by some of our machines is low thus we get poor quality illustrations. We still use old software for our preparation which in most cases slows our

work of illustration preparation and integration *(Interview No. 7, Nairobi, 11.00 a.m, December 21, 2015)*

In comparing these results with the primary school pupils and subject teachers, it was noted that the publishers' challenges were based on preparation, production and managerial aspects of book publishing. Challenges of primary school pupils and teachers were user- based.

4.7.4 Challenges faced by MOE and KICD regarding the quality and relevance of illustrations in approved textbooks

Ministry of Education (MOE) quality assurance and standards officer expressed the challenges in relation to lack of universality of illustration, piracy and corruption among publishers. His feelings are captured in the following statements;

> Most textbooks represent a narrow geographical area, they are not universal to all Kenyan pupils, and for example, urban illustrations disadvantage a rural child, presenting domestic animals or buildings of one kind disadvantage pupils who do not identify with the various environments. *(Interview No. 8, Eldoret, 2.30 p.m, March 3, 2016)*

It was established that MOE after approving and recommending textbooks for use, school heads in certain schools collaborate with pirates and purchase textbooks at low prices which have very poor print quality especially on illustrations. Further probing on evidence of corruption in the ministry showed it did not exist, but commented that it was evident among some publishers as echoed in the following statement;

> We have no corruption issues in the ministry as pertaining to textbooks. Evaluation process is dealt by panels which curbs the vice. We have had corruption cases from certain publishers. Once we have approved and recommended textbooks for use by schools, sometimes during our inspection, certain primary schools have textbooks of poor quality and irrelevant illustrations *(Interview No. 8, Eldoret, 2.30 p.m, March 3, 2016)*

These findings may mean that publishers after submitting good quality books to KICD go ahead to reproduce copies without amending the changes recommended in the evaluation and vetting process. On the other hand, KICD Vetting Coordinator pointed out challenges relating to poor use of design elements and relevance, costs of evaluation as expressed in the following statement:

> Some illustrations are limited in elaborating concepts, ideas and skills in terms of variety, adequacy and exaggerated colour use for example; a cow coloured in blue. Some illustrated pages are not numbered hence hard to cross reference, some labelling use arrows which is not supposed to. *(Interview No. 8, Eldoret, 2.30 p.m, March 3, 2016)*

On issues pertaining to costs, the Vetting Coordinator stated that the evaluation process was very expensive as time was required to identify the right evaluators, do the advertisements, and evaluation, and writing of the report made it more expensive. It was established that training of the each of the subject panellists was done away from the institute adding even to the cost. The Vetting Coordinator had the following to say: "For the whole exercise to yield best results monetary investment is mandatory; and this is our major challenge."*(Interview No. 9, Nairobi, 11.30 a.m, March 3, 2016)*

These responses may be the reason behind poor quality textbooks having poor quality and irrelevant illustrations released to schools as argued by Rotich and Musakali (2005). The findings from the primary school pupils, subject teachers and the publishers show that primary school pupils and subject teachers cited challenges on illustration related to users; those cited by publishers relate to creation and production, while those of MOE and KICD were managerial issues.

4.8 Strategies for addressing the identified challenges

Strategies for addressing identified challenges formed an important objective for this study. Therefore, pupils, subject teachers, publishers, MOE and KICD respondents were very important in giving their views on addressing the identified challenges.

4.8.1 Strategies recommended by pupils and subject teachers to publishers

The primary school pupils and subject teachers faced common challenges as pertaining to use illustrations. For example, use of design elements like colour, shape, lines, spacing and use of design principles like spacing, variety, emphasis, unity, clarity of illustrations and disharmony between text and the illustrations.

The pupils recommended to publishers to use suitable colours that could enable them identify with what they see in their surroundings. Colour helps them distinguish important and unimportant elements in the environment and exaggerated use of colour should be avoided, for example 'a blue cow' in an illustration'. Further, pupils suggested use of a variety of illustrations in textbooks they used as this reduced boredom and improved their understanding of concepts explained in the textbooks. Other recommendations made were on use of clear illustrations and shapes that would enable them relate with the environments.

Subject teachers on the other hand recommended to publishers to have illustrations in full colour. They indicated that full colour illustrations gave life to illustrations and made it easy for pupils to recognize and relate objects, thus making teachers work easy in delivering content. They noted that certain textbooks were printed with poor quality paper which when exposed to environment make illustrations unattractive and discoloured. Therefore, they recommended the use of good quality paper to maintain and enhance quality in the illustrations.

Other recommendations from teachers were the use of actual photographs rather than drawn illustrations, ensuring that illustrations are well spaced and balanced on the pages and getting them to be involved in giving their views in relation illustrations' quality. They reported that this will enable the publishers' prepare and produce illustrations that meet their needs and those of the pupils. They further recommended use of illustrations that are universal covering all geographical regions.

4.8.2 Strategies recommended by subject teachers to MOE and KICD

Subject teachers are responsible for textbook procurement and therefore their recommendations to KICD and MOE were very significant. They recommended to MOE to ensure that all the approved textbooks printed in the orange book and distributed to schools are confirmed of illustrations' quality and relevance. To KICD, subject teachers recommended that the vetting and approval process should be done by experts allowing the vetting process to go beyond set guidelines. For example, checking unethical illustrations especially those which are offensive to pupils and ensuring that they include subject panellists covering the entire nation.

Finally, the teachers recommended to KICD and MOE to increase the number of textbooks per subject approved from individual publishers to enable the pupils choose what best suits them. Normally, six different titles of course books by different publishers are approved for each subject in each class to ensure coverage of the required content. Therefore, teachers saw a need to increasing the number of titles per subject. These findings indicate that subject teachers found it a challenge to use few approved titles.

4.8.3 Strategies recommended by publishers

Publishers are the creators and producers of illustrations. Strategies for addressing the identified challenges mentioned included training, government support in textbook development, use of current technological gadgets, having clearly defined briefs and a defined calendar for creation and production of illustrations, signing of contracts with vetted illustrators to reduce cost of illustration generation. Publishing managers' responses are echoed in the following statements:

Training can address some of these challenges. By this, I mean all the appropriate relevant personnel like illustrators and machine operators should be trained to acquire relevant skills and expertise. Government should also address very actively the issue of piracy *(Interview No. 1, Nairobi, 10.15 a.m, February 2, 2016)*

In addressing the issues relating to costs, the government should support us in book development by provision of funding, removal of taxes on paper as it used to be initially and introduce high quality technological gadgets like drum scanners and Macintosh computers. *(Interview No. 2, Nairobi, 2.15 p.m, February 2, 2016)*

In addressing the identified challenges, the production managers and the editors showed their concern on considering original illustrations, checking ink and paper quality, having an almanac that shows the events they are supposed to perform in creation and production of the illustrations. Editors added that all interested publishers should ensure that their editors have clear defined design briefs for their illustrators as this could help the illustrators conceptualize as per every manuscript, consider the target audience and how best to communicate. All their feelings are represented by one of the production managers' expression:

Paper and ink suppliers should be thoroughly vetted for us to get quality prints. We also advocate use of high quality original illustrations, which gives best resolutions avoiding issues like pixilation and distortion of tonal ranges and finally, supplied proof should be checked thoroughly with the final print, colours, presence of bleeds, spacing and number of colours in the supplied print proof. *(Interview No. 3, Nairobi, 10.00 a.m, February 18, 2016)*

4.8.4 Strategies recommended by MOE and KICD

MOE and KICD had most of the challenges emanating from publishers, head teachers and administrative issues. MOE Quality Assurance and Standards Officer recommended appointment of teacher panellists covering the entire nation to ensure universality of the illustrations and the government to support in fighting vices like piracy and corruption. MOE expressed the following; "Corruption is a serious threat to good governance. The ministry with support from the government will ensure that those

guilty of piracy and corruption will be strictly dealt with by law". *(Interview No. 8,*

Eldoret, 2.30 p.m, March 3, 2016)

On the other hand KICD vetting coordinator noted as indicated below;-

> As a vetting and evaluating body, we will ensure that the evaluation panel has all regions represented by giving teachers from all parts of the country a chance to participate in the vetting process to ensure universality of illustrations. *(Interview No. 9, Nairobi, 11.30 a.m, March 3, 2016)*

The KICD Vetting Coordinator recommended support and more funding from the government to gather for costs related to evaluation, training of the panellists.

4.9 Summary of the Chapter

This first part of the chapter presents the response rate and the background information of primary school teachers and pupils. The study targeted a total of 191 respondents Out of this sample size, a total of 163 respondents (85%) participated in the study. On analysing the criteria for determining the quality and relevance it was noted that illustrations criteria determination were integrated in the KICD guidelines however there were inadequate.

Pupils and subject teachers indicated that the approved textbooks they used had illustrations, enjoyed using them but some of them had poor quality and irrelevant illustrations which impacted them negatively. The study revealed that the approved textbooks used by primary school pupils had evidence of poor quality and irrelevant illustrations which impacted them negatively.

The study also showed that certain factors contributed to the quality and relevance of illustrations this being from publishers, MOE and KICD.Publishers indicated that editorial and production departments largely contributed, MOE indicated transparency among the head teachers, market research and pre-testing of manuscripts while KICD respondent pointed out that the expertise of the evaluation panel,

Regarding challenges posed by poor quality and irrelevant illustrations, primary schools, publishers and vetting authorities experienced challenges while handling illustrations. To address the identified challenges, recommendations made were directed to publishers and vetting authorities. These data were presented in tables and narrative explanations.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings, conclusion drawn from results and recommendations based on the study objectives. The data were analysed to establish the criteria used to determine the quality and relevance of illustrations, asses the perceptions of primary school pupils and subject teachers on the quality and relevance of illustrations and their impacts on use, determine factors contributing to the quality and relevance of illustrations, examine challenges faced when dealing with the quality and relevance of illustrations and propose strategies for addressing the identified challenges.

5.2 Summary of the findings

This section summarized the findings from the study based on study objectives

5.2.1Criteria for determining the quality and relevance of illustrations in approved primary school textbooks

In establishing the criteria for determining the quality and relevance of illustrations it was necessary to consider the publishers, MOE and KICD views, pupils and subject teachers' considerations. The criteria established for determining the quality and relevance deduced from data analysis process are summarised as follows:

Responses from publishers showed that criteria for determining the quality and relevance of illustrations was integrated inked guidelines for quality textbook development concerning illustrations but were inadequate. Publishing managers singled out; level, age, location and cultural values of learners as criteria for determining the quality and relevance in addition to quality illustrations criteria specified in the KICD guidelines.

Production managers reported that they considered the quality and relevance of illustrations after the printing process. What was deduced from their responses included colour consistency, registration, ink distribution and clarity of the printed illustration. The editors on the hand based their criteria on design elements and principles. Design elements includes; colour, shape, line, texture, type and value while design principles includes; balance, emphasis, unity, variety and space.

These findings from the publishers showed that; publishing managers based their criteria on the users of illustrations and KICD guidelines, production managers based their criteria on the final print illustration. While, the editors considered their criteria from creation and design of the illustration,

MOE being the policy maker on educational matters and KICD, the agency that develops curriculum and syllabus as per MOE directives, had their criteria incorporated in the textbook development, submission, evaluation and approval guidelines. These covered: clarity, suitability, colour and variety in the illustrations.

The overall guidelines and procedures for textbook development reported by KICD Vetting Coordinator were: book contents, syllabus coverage, exercises and activities, binding, durability, paper used, technical and physical specification. MOE Quality Assurance and Standards Officer reported that they considered: subject specific objectives, variety of illustrations, adequacy and colour use. The study established that MOE and KICD criteria were too general with inadequate details for the quality and relevance assessment of illustrations where potentially relevant information on design elements and principles were omitted.

All pupils considered colour, shape, texture, value, text and line as the criteria for determining quality of illustrations based on their daily uses of textbooks. Other criteria considered by pupils in determining quality include: clarity, type of illustrations and

distribution of gender in the illustrations. All pupils said colour, value and text had greatest influence on their learning, closely followed by shape and line, while texture proved not important to some pupils. This is possibly due tithe inability of line, value and texture to communicate visually to the pupils

As regards to relevance, it was established that space, balance, emphasis, variety and unity were considered as important criteria that determine relevance of illustrations. All the pupils considered space, balance, emphasis and variety as very important criteria, followed by space which was considered by half of the pupils while few pupils considered unity as a criterion. It is possible that the use of unity in illustrations presented irrelevant illustrations to pupils.

All subject teachers considered colour, shape and type as criteria for determining quality in illustrations followed by texture and line, while few considered value as a criterion. Findings on relevance showed that all teachers considered balance, emphasis and variety as criteria for determining relevance of illustrations, followed by space and unity. The results were attributed to the subject teachers' involvement in the textbook procurement process that made them familiar with illustrations hence their knowledge of criteria used in determining relevance of illustrations

Other issues that teachers mentioned to consider in determining the quality and relevance were their textbook procurement qualities which include: age of learners, illustration representation in the syllabus, clarity, variety in illustrations and the geographical representation of illustrations. These findings showed great similarity with the editors' responses. This possibly is due to the fact that all subject editors must have specialized in education course for them to qualify to work as editors in any publishing firm in Kenya.

Both teachers and pupils considered colour, shape, text, line, value and texture as criteria for determining quality of illustrations in textbooks. The major difference was that majority of subject teachers considered these elements compared to few responses from pupils. This could be due to the fact that subject teachers had a better understanding of the criteria because of their long working experience.

5.2.2 Perceptions of the quality and relevance of illustrations and impacts of their use in textbooks

Perceptions of users, creators and vetting authorities as regards to the quality and relevance of illustrations and impacts of their use on users were very important for this study.

Pupils and subject teachers were the major textbook users and their perceptions of the quality and relevance on illustrations and how they impact their use in approved textbooks was very significant to the study. All the pupils stated that textbooks they used had illustrations. This was in contrast to Clark and Douglas (2011) who established that girls enjoyed reading textbooks more than boys. The views of male pupils in the current study considered the illustrations presented in textbooks as good and relevant in terms of colours, shapes and organization.

Most pupils considered the quality and relevance of illustrations in textbooks as being good. The pupils who had positive views stated that quality and relevant illustrations helped them in enhancing cognitive, affective and attention purposes. Other positive roles that pupils cited concerning contribution of quality and relevant illustrations to learning include: easier understanding, making reading realistic, enhancing meaning, clarifying text and making them creative especially in composing and writing essays.

Those pupils who considered illustrations as being of poor quality and irrelevant cited that the illustrations; confused them when they related to the natural environment, made their textbook reading boring, distracted their attention as they studied and did not help them remember what they learned in class.

Most teachers considered quality in illustrations good as compared to relevance. This showed that subject teachers had clear understanding of illustrations' quality and relevance. Majority of the teachers indicating the quality and relevance of illustrations in approved textbooks as being good. However, overall findings showed that poor quality and irrelevant illustrations still exist in approved school textbooks, thus supporting the results in a past study by Rotich and Musakali (2005) that despite evaluating and vetting educational material, poor quality textbooks still found their way to schools.

It was established that illustrations affected subject teachers and pupils both positively and negatively. Apart from cognition, affection and attention roles played by quality and relevant illustrations, such illustrations made abstract ideas clearer and teaching lively as they enhanced life on a page with writing. Illustrations also saved teachers' time in explaining concepts and issues, helped teachers in explaining facts to slow learners, teaching by supporting text and enhancing interest while teaching. Illustrations were also useful in making teaching real by explaining conceptual objects.

Subject teachers who stated that illustrations did not help them achieve the desired goals advanced various reasons. They noted that poor quality and irrelevant illustrations made their explanation of concepts difficult and contributed to pupils losing interest in learning. Consequently, hindering them in the delivery of content and making it difficult for them in dealing with slow learners

Publishers were positive on the state of the quality and relevance of illustrations in the textbooks they produced. The impacts expressed by the publishers were based on design elements and principles. Editors stated that quality and relevant illustrations helped pupils acquire desired skills, visualize abstract phenomenon and aid in recall. For example, colour as a design element enhances communication, psychology and symbolism, elicits emotions and reactions in pupils.

Colour also helps pupils identify with their surrounding and gives distinction of elements in the environment. The design element of line gives edges, connects elements in illustrations and indicates borders in illustrations, thus evoking mood. These findings revealed that publishers failed to give specific aspects of negative impacts of poor quality and irrelevant illustrations. This possibly means that they considered what they created and prepared to be satisfactory to the users.

MOE Quality Assurance and Standards Officer pointed out that the quality and relevance of illustrations in some textbooks were not good. On their impact, he stated that quality and relevant illustrations help portray pictorial presentations in a process, facilitate teaching, consolidate and crystallize a body of information and enhance creative thinking.

KICD Vetting Coordinator stated that quality and relevant illustrations break monotony in textbooks, explain phenomenon, show and elaborate all forms of text, help pupils internalize what they read in class and enable teachers in content delivery. The Vetting Coordinator focused on guidelines and the syllabus omitting views of publishers. These responses from MOE and KICD lacked information on the impact of poor quality and irrelevant illustrations on the users.

5.2.3 Factors that contribute to the quality and relevance of illustrations

The factors considered as contributing to quality relevance of illustrations emanate from preparation, production, vetting and evaluation and approval process. Publishers stated that that editorial and production department determine the quality and relevance of illustrations. It was established that personnel expertise, preparation time, technology and type of illustrations contributed to the quality and relevance in textbooks' illustrations. Other factors that were considered as important contributors of the quality and relevance of textbooks' illustrations are: quality of printing paper, printing machines, quality of inks and the nature of colour separated illustrations.

MOE respondent stated that transparency among the head teachers, market research and pre-testing of manuscripts undertaken by publishers' marketers were contributors to the quality and relevance of illustrations. It was also established that integrity and transparency among the head teachers and publishers would help curb corruption which was a serious threat to good governance. On the other hand, KICD respondent pointed out that the expertise of the evaluation panel, their understanding of the evaluation and vetting procedures and guidelines was a great factor contributing to the quality and relevance in illustrations in approved textbooks.

5.2.4 Challenges experienced while dealing with the quality and relevance of illustrations

The study established that pupils encounter challenges relating to the quality and relevance of illustrations while using textbooks. Older pupils experienced few challenges compared to younger children. This could be attributed to the fact that younger children had short attention spans thus the need for illustrations to attract attention. Older pupils concentrated more on contents of the books.

Pupils cited the challenge of text not matching with illustrations thus confusing pupils and interfering with the intended message. Other notable challenges were: lack of unity which affected certain elements in illustrations including line, shape, colour, value and texture; lack of harmony relating to proportion, colouring, use of captions and numbers which made individual elements in the illustration unnoticed. Other challenges experienced include poor shapes, poorly spaced illustrations that distract pupils' attention making them forget easily what they have read, and finally dull illustrations that make pupils lose interest in reading textbooks.

Findings showed that subject teachers experienced challenges relating to content delivery while using textbooks. These challenges include wrong use of colours, poor shapes, ragged edges in illustrations as a result of poor use of lines, presence of dark images and use of small illustrations which are crowded. Also cited were challenges on lack of balance and unity, poorly labelled and wrongly used illustrations especially in science textbooks. Teachers had challenges similar to those of pupils, the only difference being the purpose. Pupils faced challenges that affected learning, while the subject teachers had challenges with regard to content delivery.

The study established that publishers experienced challenges originating from pre-press and press section. The challenges stated were lack of expertise, biasness among the evaluators, high cost of: paper, inks, chemicals and evaluation, short datelines for submitting textbooks for evaluation, inadequate criteria for determining the quality and relevance of illustrations, piracy and plagiarism. The production challenges pointed out were supply of poor quality paper and inks, print quality problems like hickey, dot gain and dot loss and low image resolution. Other challenges mentioned include lack of a defined calendar and inadequate modern machines and software for illustration preparation experienced especially by illustrators.

MOE and KICD are authorised to evaluate, vet, approve and recommend textbooks for use in schools. However, these two bodies, experience similar challenges with illustrations. MOE respondent stated that the challenges they experienced include lack of universality of illustrations, piracy and corruption among publishers. KICD informant identified challenges related to poor use of design elements and principles and high cost of evaluation.

The study in comparing the challenges found out that pupils and subject teachers' challenges were user-based and were pointed to how publishers created and produced illustrations. Publishers' challenges were focused on creation and production, and some were pointed to KICD and MOE. Challenges of MOE and KICD were mainly management- centred, and others were pointed to publishers.

5.2.5 Strategies for addressing identified challenges

The study found out that pupils and subject teachers had similar challenges in relation to the quality and relevance of illustrations. These include issues relating to: shape, spacing, variety, unity, clarity of the illustration as well as disharmony between text and illustrations. Therefore, to address these challenges, pupils recommended that publishers avoid exaggeration of colours, use variety of illustrations, ensure clarity in illustrations and use shapes that they are able to relate to in their environment.

Subject teachers recommended that publishers use: full colour illustrations, quality paper and actual photographs not drawings; ensure illustrations are well spaced and balanced on a page; involve teachers as much as possible in decision making, seek their views on illustrations and prepare illustrations that are universal covering all geographical regions.

Subject teachers recommended that MOE should ensure that all approved and recommended textbooks printed in the Orange book should be confirmed for quality and relevance before distribution to schools. KICD should leave the evaluation and vetting process to experts and go beyond set guidelines;-for example, checking unethical illustrations especially those which are offensive to pupils. Finally, subject teachers recommended to KICD to increase the number of titles to be evaluated for every subject.

The publishers made the following recommendations relating to the identified challenges: training of the various personnel involved in illustration preparation and production, government support in textbook development; use of current technological gadgets; having clearly defined briefs and a defined calendar for creation and production of illustrations; signing of contracts with vetted illustrators to reduce the cost of generating illustrations.

Other recommendations by publishers were use of original and large size illustrations to enhance resolution while maintaining quality; checking ink and paper quality before producing illustrations; scrutinizing colour mode and resolution of the illustrations especially before colour separation; checking the print proof against the final print; ensuring proper ink metering and proper drying of paper.

MOE and KICD challenges emanated more from publishers, head teachers and administrative costs. Therefore, it was recommended that all regions be included in vetting and evaluation of textbooks by appointing subject teachers to be part of the panellists covering all geographical regions. This helps ensure universality of illustrations. Further, MOE and KICD respondents recommended to the government to support in fighting vices like piracy and corruption.

5.3 Conclusion

From the summary of findings, it emerged that there was evidence of poor quality and irrelevant illustrations in approved primary school textbooks in Kenya. There were no specific criteria for determining the quality and relevance of illustrations in the approved primary school textbooks in Kenya. However, publishers relied on criteria based on users' characteristics, final print illustrations, design elements and principles in addition to specified criteria in the KICD guidelines which were considered inadequate.

MOE and KICD incorporated illustrations' quality and relevance criteria in the textbook development, submission, evaluation and approval guidelines. However, these criteria were found to be inadequately detailed for facilitating and assessing the quality and relevance of illustrations in textbooks. To determine the quality of textbook illustrations, primary school pupils and subject teachers considered elements like colour, shape, line, value and texture.

On relevance of illustrations in approved textbooks, primary pupils and subject teachers used criteria established based on spacing, unity, balance, emphasis, variety and unity of the illustration to determine. Primary school pupils and subject teachers' use of these quality and relevance criteria could be contributed to their daily interaction with illustrated textbooks. Other aspects considered by pupils and teachers in assessing the quality and relevance of textbook illustrations focused on their clarity, type of illustrations used and distribution of gender images in the textbooks.

Primary school pupils and subject teachers enjoyed using textbooks with illustrations and there was evidence of poor quality and irrelevant illustrations in approved primary books. Illustrations' quality and relevance in approved textbooks impacted primary

school pupils and teachers both positively and negatively. Publishers perceived that the illustrations they produced in approved textbooks attained the quality and relevance. Thus, these illustrations impacted pupils and subject teachers positively by helping them acquire desired skills, visualize abstract phenomena and aided in recall.

MOE and KICD respondents on the other hand were not satisfied with the quality and relevance of certain illustrations in textbooks used in primary schools. However, they noted that good quality illustrations in textbooks helped pupils achieve cognitive, attention and affection benefits.

Contributing factors to illustrations' quality and relevance in approved primary school textbooks focused on the preparation, production, vetting and evaluation and approval processes. Factors contributing to the quality and relevance of illustrations were established as; personnel expertise, preparation time, technology and type of illustrations, printing paper, printing machines, quality of inks and the nature of colour separated illustrations. Additional factors were identified as: transparency of head teachers and publishers, quality of research and pre-testing of manuscripts undertaken by the publisher's marketers.

Primary school pupils and subject teachers while using illustrations in textbooks faced some challenges. The challenges faced by pupils and teachers affected their learning and content delivery respectively. Pupils' challenges include: text not matching with the illustrations, lack of unity, poor colouring, use of captions and numbers, shapes and spacing, and use of dull illustrations. Subject teachers' encounters were poor use of design elements and principles like colour, shapes, lack of balance and of unity, and poorly labelled illustrations.

Publishers' challenges originated from pre-press and press section and covered; inadequate criteria for determining the quality and relevance of illustrations and lack of expertise in illustration among publishing players. Publishers also identified cost challenges, short datelines from vetting authorities, piracy and plagiarism, use of poor quality machines, inks and paper. Ministry of Education (MOE) and KICD respondents indicated that they experienced challenges relating to lack of universality of illustrations, piracy, corruption among publishers, high costs of evaluation and poor use of design elements and principles.

To address the identified challenges, primary school pupils and subject teachers recommended to publishers to appropriately use design elements and principles. It was noted that there was need for teachers to be involved in decision making and their views on illustrations sought. KICD should ensure thorough scrutiny of the orange book list, check unethical illustrations and increase the number of titles evaluated per subject. It was further proposed that: MOE be timely and involve all stakeholders before coming up with policies; KICD to be predictable and provide publishers with an almanac; publishers to give preparation and production of illustrations professional attention and thorough scrutiny.

5.4 Recommendations

The recommendations made were based on the findings and conclusions from the study. These recommendations were guided by the study objectives with respect to assessing the quality and relevance of illustrations in approved primary school textbooks in Uasin Gishu County. Consequently, the study makes the following recommendations.

5.4.1 Vetting authorities to formulate adequate criteria for determining the quality and relevance of illustration in approved primary school textbooks

The study established that there were no specific criteria for determining the quality and relevance of illustration. There were inadequate criteria in the textbook development guidelines with respect to vetting the quality and relevance of illustrations that guided the panel members on the vetting process. Therefore, vetting authorities should formulate criteria for determining the quality and relevance of illustrations. This could be achieved by formulating specific adequate criteria in addition to what is in the textbook development guidelines.

The vetting authorities should involve pupils and teachers in decision making as relating to the quality and relevance of illustrations. Opinions from pupils and teachers would help in addressing challenges related to illustrations. Consequently, publishers would benefit as it will save time of preparing and producing illustrations because of the elaborate specific guidelines to be formulated.

5.4.2 Publishers to give preparation and production of illustrations professional attention

Findings showed that primary school pupils and subject teachers experienced challenges as a result of poor quality and irrelevant illustrations. These challenges were identified as originating from preparation and production of illustrations. The challenges include inappropriate use of design elements and principles like colours, shapes, variety and emphasis. Thus, limit pupils from cognitive, attention and affection benefits from the use of illustrations in textbooks. Pupils and subject teachers were not satisfied with the quality and relevance of illustrations in approved textbooks.

It is recommended that publishers should ensure all factors that contribute to quality and relevant illustrations are adhered to. Therefore, they should recruit and use personnel with relevant expertise, allocating appropriate preparation time for illustrations and using appropriate technology. Publishers should also pay attention to the type of illustrations, printing paper, printing machines, quality of inks and the nature of colour separated illustration. They should enhance transparency between themselves and head teachers undertake quality research and pre-testing of manuscripts.

5.4.3 Government support in textbook development

The study established that the quality and relevance of illustrations in approved textbooks affected pupils learning and teachers' delivery of content. For quality illustrations to be attained, publishers need to use quality materials like paper and inks, conditioned machines, suitable software, quality original illustrations and suitable computers.

The high costs of these materials, software and equipment are a challenge to publishers. Therefore, the study recommends that the government should provide support by reducing tax rates on printing machines and materials. This will give publishers an opportunity to invest in quality and relevant illustrations. Subsequently users of textbooks will enjoy the benefits of quality and relevant illustrations and cheap textbooks.

The study also recommends to the government to support in fighting corruption and piracy by taking just legal actions against those found violating the law. The government through MOE should promote introduction of short-term courses and frequent workshops. These would help in improving the expertise of various publishing players like designers, illustrators, machine operators and editors' knowledge and skills thus improving quality of illustrations.

5.4.4 Inclusion of subject teachers' representatives from all regions in Kenya in the evaluation panel

MOE and KICD are authorised to evaluate, vet, approve and recommend textbooks for use in schools in Kenya The study established that KICD experience challenges relating to lack of universality in illustrations as certain illustrations did not represent all the regions in Kenya. It is therefore recommended that KICD should involve all subject teachers' representatives from all the counties to ensure that textbooks used have illustrations which are universal to all Kenyan pupils.

Subject teachers' involvement will enable the publishers in the preparation and production of illustrations since they will prepare illustrations with knowledge of the users in mind. Subject teachers on the other hand will be able to peruse through the textbooks and be able to ask questions pertaining to the quality and relevance challenges they experience. From the study, evidence of poor quality and irrelevant illustrations in approved textbooks showed that subject teachers who form part of SIMSC are ignorant of the quality and relevance issues in textbook illustrations or may not be keen in textbook selection. However, such involvement will ensure that subject teachers will be able to select approved textbooks with knowledge.

5.4.5. KICD to concentrate on its role as vetting and evaluation body

The study established that KICD had vested interest in being writers at the same time being the vetting authority. This was cited by the publishers in the case of the laptop project where KICD had interest in providing content for the same. The study recommends that the vetting authority should restrict its activities to its main role to avoid conflict of interest with the publishers whose major role is textbook development.

5.5 Current framework on school textbook development process in Kenya

Figure 5.1 illustrate textbook development process in Kenya. MOE is the policy maker pertaining to educational matters. KICD acts as MOE agency that implements some of its policies and develops curricula to be used in schools. KICD also gives publishers guidelines on textbook development, submission, evaluation and approval procedures for print and digital media.

The agency conducts vetting and evaluation process to identify books to be used in primary schools in Kenya. Publishers develop books that reflect the syllabus as per the MOE guidelines. Finally, MOE in collaboration with Kenya Publisher's Association (KPA) prepare the 'Orange Book' where primary schools can select textbooks from. Authors are originators of ideas which are passed to the users through textbooks published by publishers. The publisher's first role is to look for publishable ideas that are from authors therefore a contract has to be entered between the two. Their other role is to market and distribute textbooks to primary school users.

Figure 5.1: Current Conceptual framework of school development process in Kenya
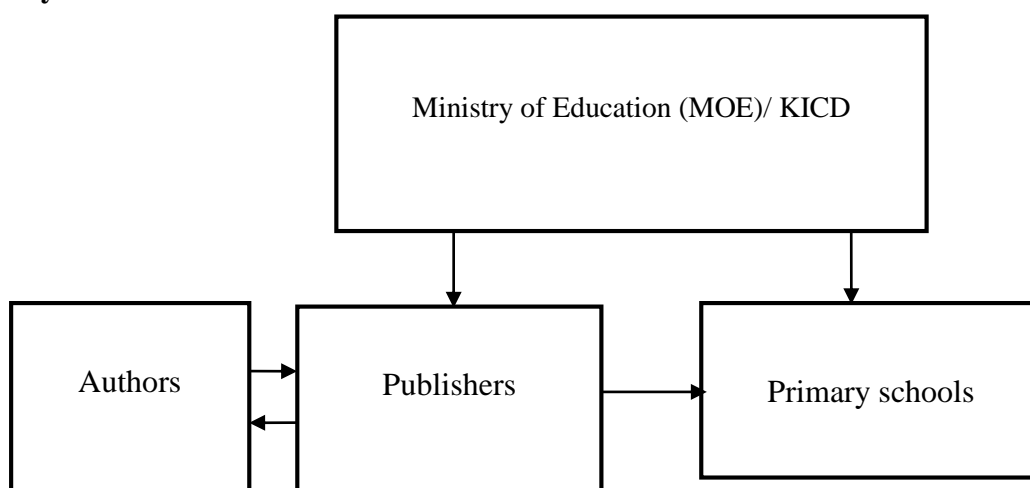
5.6. Proposed framework of all stakeholders inclusion in textbook development process in Kenya

The current framework shown in Figure 5.1 shows the one way interaction of the policy makers (MOE) and policy implementers (KICD) with the textbook producers (publishers) and users of textbooks (primary schools) and between textbook producers and users.

The difference between the current and the proposed framework is that the current one lacks involvement of all textbook stakeholders and lacks feedback. The proposed framework is expected to create a two-way interaction among various players. This enables it have feedback. This proposed conceptual framework presented in Figure 5.2 is also intended to allow involvement of all the players in decision making pertaining preparation and production of illustrations in approved primary school textbooks in Kenya.

The proposed framework has MOE and KICD officials whose major roles are to evaluate, vet, approve and recommend textbooks for use by primary schools, the authors who are the originators of publishable ideas who are either commissioned by publishers or in house, publishers in the framework are the book producers and they are also responsible for looking for authors and coordinates all the activities in the publishing house and finally the textbook users which in the context of this study are the primary school pupils and teachers, their role in this framework are consumers of the textbook content. The figure (5.2) below illustrates the interaction among the various players in the textbook development, submission and approval process.

Figure 5.2: Proposed framework of all stakeholders' inclusion in textbook development process in Kenya

	MOE (Policy Makers)/ KICD (Vetting Authority)	
Authors	TEXTBOOK PRODUCERS (PUBLISHERS)	TEXTBOOK USERS (PRIMARY

Key

MOE   Ministry of Education

KICD- Kenya Institute of Curriculum Development
       Two way interaction
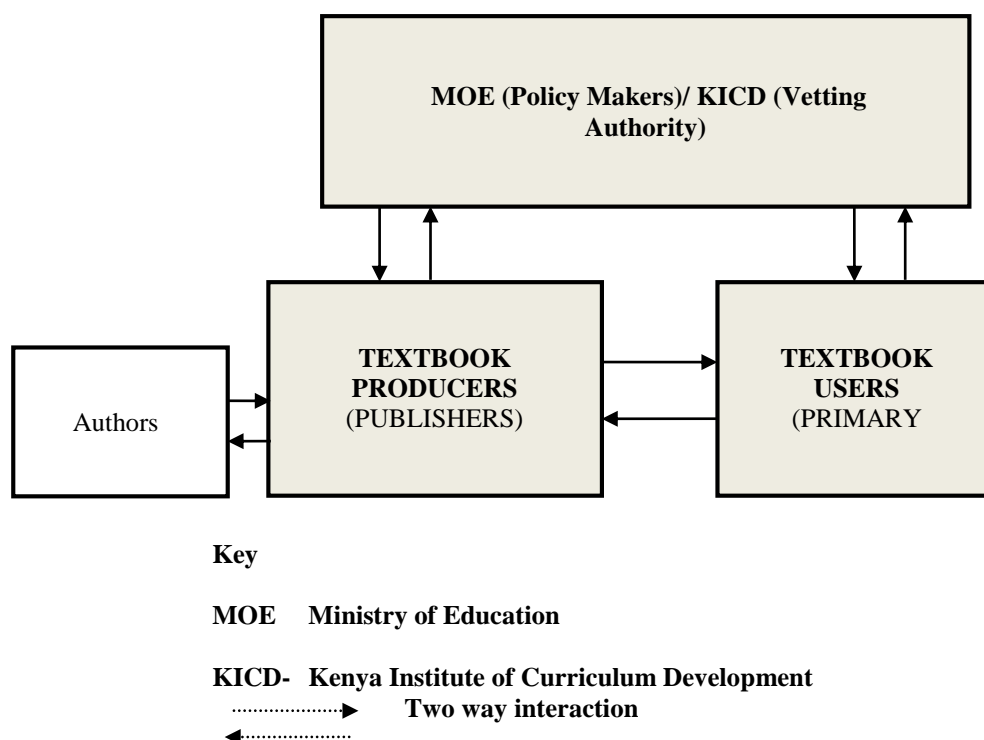
In relation to the quality and relevance of illustrations, the study established that there were no established criteria for determining the quality and relevance and that pupils and teachers experienced challenges while using illustrations, while the publishers experienced challenges relating to preparation and production of illustrations.

The proposed model gives provisions for interaction between the creators of illustrations and evaluators and vice versa: evaluators and users and between the creators and users vice versa. Publishers are able to engage in market research and market the titles to users.

On the other hand, users are able to express their challenges, complaints and grievances directly to the publishers and also give their opinions to vetting authorities on curriculum and syllabus considering the quality and relevance of illustrations. This may be possibly the reason behind poor quality and irrelevant illustrations in primary school textbooks as users' views are not considered in the preparation of illustrations.

5.7 Suggestions for immediate action plan

For immediate action plan, the researcher suggests that:

a) Reduction of tax rates on certain printing materials like printing paper as a way of promoting textbook development.

b) Primary school head teachers to organize frequent seminars or workshops through MOE to ensure that SIMSC members are trained and exposed to what are quality and relevant illustrations, and ensure that quality textbooks are purchased.

5.8 Suggestions for further research

The study limited itself to assessing the quality and relevance of illustrations in approved primary school textbooks in Uasin Gishu County, Kenya. Based on the findings of the research, the study suggests the following areas to be further researched:

(a) The role of textbook stake holders in textbook development with reference to the quality and relevance of illustrations

(b) Subject teacher's role in enhancing universality of illustrations in approved primary school textbooks in Kenya.

(c) The role of KICD in promoting the quality and relevance of illustrations in textbooks in Kenya.

(d) The role of the quality and relevance of illustrations in enhancing academic performance of primary school pupils in Kenya.

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Appendix1: List of Course Book Educational Publishers in Kenya

Government Publishers	Local publishers	Multi-National Publishers
1. Kenya Literature Bureau(KLB) 2. Jomo Kenyatta Foundation(JKF)	1. Longhorn Publishers Ltd 2. Dhillon Publishers Ltd 3. Moran Publishers 4. Focus Publishers 5. Malimu publishers Ltd.	1. Oxford University Press 2. Evans Brothers Kenya Ltd 3. East African Educational Publishers(EAEP) 4. Longman Kenya, Kenya

Source: MOE Orange book (2013)

Appendix 2: List of key informants interviewed

1. Publishing Manager Oxford University Press (OUP)

2. Production Manager OUP

3. Subject Editor OUP

4. Publishing Manager Kenya Literature Bureau (KLB)

5. Production Manager KLB

6. Subject Editor KLB

7. Subject Editor Longhorn Publishers Ltd

8. Vetting Coordinator, Kenya Institute of Curriculum Development (KICD)

9. MOE Quality Assurance & Standards Officer

Appendix 3: Questionnaires for Primary School Pupils in Class 5, 6 and 7

Dear respondent

I am a postgraduate student at Moi University pursuing a Master of Science Degree in publishing studies. I am undertaking a research on: '**Assessing the quality and relevance of illustrations in approved primary school textbooks: the case of Uasin Gishu County, Kenya"** as part of my degree requirements. All the information you will give for this questionnaire will be kept **CONFIDENTIAL** and will be only for the purpose of this research.

Do not write your name on the questionnaire

Thank you for your cooperation

Signature......................................

Please tick the appropriate box

SECTION A

BACKGROUND INFORMATION

1. Gender   Male [   ]   Female [   ]

2. Age   9 - 11 years [   ]   12 - 14 years [   ] Over14 years [   ]

3. Class   Standard five [   ]   Standard six [   ]   Standard seven [   ]

Section B: Pupils' consideration of the quality and relevance in illustrations

4a. (i)What do you consider in pictures, drawings, charts or photographs used in your Science and English textbooks that make you decide or say it is of good or bad quality?

Element	Yes	No
Colours	[ ]	[ ]
Shapes	[ ]	[ ]
Texture	[ ]	[ ]
Value	[ ]	[ ]
Use of Lines	[ ]	[ ]
Text used	[ ]	[ ]

(ii) What else do you check when considering quality in illustrations?

_____
_____
_____

(iii) How would you rate the importance of each of the following elements in relation to your choice of quality in illustrations? On scale of 1 to 3, (1-Very important, 2- Important, 3- Not important)

	Elements	1	2	3
1	Colour			
2	Shape			
3	Texture			
4	Value			
5	Use of text			
6	Value			

b. (i) What do you consider in pictures, drawings, charts or photographs used in your Science and English textbooks that make you decide or say it is suitable?

	Yes	No
Space	[ ]	[ ]
Balance	[ ]	[ ]
Emphasis	[ ]	[ ]
Variety	[ ]	[ ]
Unity	[ ]	[ ]
All of the above	[ ]	[ ]

(ii) What else do you consider in looking for relevance in pictures, drawings, charts or photographs? Please indicate

_____
_____
_____

(iii) How would you rate the importance of each of the following Principles in relation to your consideration of relevance in illustrations? On scale of 1 to 3, (1-Very important, 2- Important, 3- Not important)

	Principles	1	2	3
1	Space			
2	Balance			
3	Emphasis(catches the eye)			
4	Variety(different types)			
5	Unity(oneness)			
6	Value			

Section C: Perceptions of the quality and relevance of illustrations and its impacts on learning

5a. (i) Do you enjoy reading textbooks?

Yes   [   ]   No   [   ]

 (ii) Why do you enjoy or not enjoy
reading?_____
_____
_____
_____

b. (i) Do the illustrations you use have pictures, drawings, charts or photographs?
Yes [   ]   No [   ]

(ii)Are the pictures, drawings, charts or photographs used in Science and English textbooks suitable and quality?

Yes   [   ]   No   [   ]

(iii) How do you rate the quality and suitability of pictures, drawings, charts or photographs in the Science and English textbooks you read? *Tick in the suitable box)*

Good   [   ]   Average   [   ]   Poor   [   ]

 c. (i) Do Illustrations help in your learning? Yes [   ]   No   [   ]

   (ii) How do they help you or not help you in your learning?

	Yes	No
Cognition (helps to remember)	[ ]	[ ]
Affection (helps enjoy reading)	[ ]	[ ]
Attention (Attracts attention)	[ ]	[ ]

   (iii)How else do pictures, drawings, charts or photographs help you in learning?
_____
_____
_____

Section D: Challenges faced by pupils as regarding to the quality and relevance in illustrations

6a. (i) Do you have any problems with quality when using textbooks with pictures, drawings, charts or photographs?

   Yes   [   ]   No   [   ]
(ii) If yes what problems?
_____
_____
_____

b. (i) Do you have any problems with suitability (relevance) of pictures, drawings, charts or photographs when using textbooks?

            Yes   [ ]   No   [ ]

(ii) If yes what problems?

_____

_____

_____

(iii) What do you recommend to those who prepare books (Publishers)?

_____

_____

_____

Appendix 4: Questionnaires for Subject Teachers

Dear respondent;

I am a postgraduate student at Moi University pursuing a Master of Science Degree in publishing studies. I am conducting a research on: "**Assessing the quality and relevance of illustrations in approved primary school textbooks: the study of Uasin Gishu County, Kenya**" as part of my degree requirements. All the information you will give for this questionnaire will be kept **CONFIDENTIAL** and will be only for the purpose of this research.

Kindly don't write your name on the questionnaire

Thank you for your cooperation

Signature..

SECTION A

BACKGROUND INFORMATION

 Professional qualification…………………………………………………………

Years of service in teaching……………………………………………………….

SECTION B: Subject teachers consideration of the quality and relevance in illustration

5a. (i)What do you consider in pictures, drawings, charts or photographs used in the textbooks you use that make you decide or say it is of good or bad quality?

	Yes	No
Colours	[ ]	[ ]
Shape	[ ]	[ ]
Texture	[ ]	[ ]
Value	[ ]	[ ]
Line	[ ]	[ ]
Text	[ ]	[ ]

  (ii) What else do you consider in checking for quality in pictures, drawings, charts or photographs? Please indicate below

_____
_____
_____

b. (i) What do you consider in pictures, drawings, charts or photographs used in your Science and English textbooks that make you decide or say it is suitable?

	Yes	No
Space	[ ]	[ ]
Balance	[ ]	[ ]
Emphasis	[ ]	[ ]
Variety	[ ]	[ ]
Unity	[ ]	[ ]

(ii) What else do you consider in determining suitability in pictures, drawings, charts or photographs?

_____
_____
_____

(iii) A part from the quality and relevance of illustrations what other issues of do you consider when procuring textbooks for use by pupils?

_____
_____
_____

Section C: Perception of the quality and relevance on illustrations and its impacts on teaching

4a. (i) what is your view on the quality and relevance of illustrations on textbooks you use for teaching English /Science subjects?

	Yes	No
Good	[ ]	[ ]
Average	[ ]	[ ]
Poor	[ ]	[ ]

(ii) Do the textbooks you use have pictures, drawings, charts or photographs?
Yes [   ]   No   [   ]

(iii)What role do they play in your teaching?

	Yes	No
Cognition (helps pupils remember)	[ ]	[ ]
Affection (make pupils enjoy reading)	[ ]	[ ]
Attention (Attracts attention of pupils)	[ ]	[ ]

(iv)How else do pictures, drawings, charts or photographs help you in teaching?

_____
_____
_____

Section D: Challenges faced by subject teachers as regarding to the quality and relevance in illustrations

6 a. (i) Do you experience any challenges with pictures, drawings, charts or photographs while teaching pupils?

Yes   [   ]   No   [   ]

(ii) If yes what problems?

_____

 _____

_____

b (i) Do you have any problems with suitability of pictures, drawings, charts or photographs in the textbooks you use?

                    Yes   [   ]   No   [   ]

_____
_____
_____

(ii) What do you suggest to publishers?

_____
_____
_____

(iii) What do you suggest to MOE and KICD as regards to illustrations?

_____
_____
_____

Appendix 5: Interview Schedule for Publishing Managers

1. In your view, are there criteria for determining the quality and relevance of illustration in approved primary school textbooks?

2. What criteria do you use to determine the quality and relevance of illustration in approved primary school textbooks?

3. What factors do you think contribute to the quality and relevance of illustration in approved primary school textbook?

4. What challenges do you experience while preparing and producing illustration?

5. What do you recommend to address the identified challenges?

6. What do you propose to MOE and KICD on quality and relevant preparation and production of illustrations?

Appendix6 Interview Schedule for Production managers

1. How do you perceive the print quality and relevance (suitability) of produced illustration in primary school textbooks?

2. What criteria do you use when producing illustration to determine print quality & relevance in textbooks?

3. What factors do you think contribute to print quality and relevance of illustration print quality?

4. What challenges regarding to print quality and relevance do you face when printing illustrations?

5. What strategies do you recommend to address these challenges?

Appendix 7: Interview Schedule for editors

1. How do you perceive the quality and relevance (suitability) of designed illustration in primary school textbooks?

2. What impact do you think the quality and relevance of illustration have on pupils and teachers?

3. What criteria do you use to determine the quality and relevance when preparing illustration in textbook?

4. When drafting design briefs for the illustrator, what do you normally consider?

5. What factors do you think contribute to the quality and relevance of illustrations?

6. What challenges relating to quality &relevance do you face when preparing illustration?

7. What strategies do you recommend to address these identified challenges?

Appendix 8: Interview Schedule for Vetting Coordinator

1. What's your view on the quality and relevance of illustration used in primary schools?

2. What do you think are the impacts of the quality and relevance of illustration on pupils & teachers?

3. In your opinion do you have criteria for determining the quality and relevance of illustration during the vetting process

4. What criteria do you use to determine the quality and relevance of illustrations during the vetting process

5. What factors do you think contribute to the quality and relevance of illustrations

6. What challenges do you experience as regarding to the quality and relevance during the vetting process?

7. What strategies do you recommend to address the identified challenges?

Appendix 9: Interview Schedule for the MOE Quality Assurance Officer

1. What's your perception on the quality and relevance of illustration in recommended primary school textbooks?

2. What impacts do you think the quality and relevance of illustrations have on primary school education?

3. Do you have any criteria for determining the quality and relevance of illustrations?

4. What criteria do you use when recommending textbooks for primary schools considering the quality and relevance?

5. What factors do you think contribute to the quality and relevance of illustrations in textbooks?

6. What challenges relating to the quality and relevance of illustrations do you experience when recommending textbooks for use by primary school pupils?

7. What strategies do you recommend to address the identified challenges?

Appendix 10: Research Permit

THIS IS TO CERTIFY THAT:
MS. BEATRICE JEBET KIPSAT
of MOI UNIVERSITY, 4606-3100
eldoret,has been permitted to conduct
research in *Uasin-Gishu County*
on the topic: *EVALUATING QUALITY
AND RELEVANCE OF ILLUSTRATIONS IN
APPROVED PRIMARY SCHOOL
TEXTBOOKS: A STUDY OF UASIN GISHU
COUNTY, KENYA*

for the period ending:
8th December,2016

Permit No : NACOSTI/P/15/51409/8499
Date Of Issue : 8th December,2015
Fee Recieved :Ksh 1,000

....
*Applicant's
Signature*

....
*Director General
National Commission for Science,
Technology & Innovation*

CONDITIONS

1. **You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit**
2. **Government Officers will not be interviewed without prior appointment.**
3. **No questionnaire will be used unless it has been approved.**
4. **Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.**
5. **You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.**
6. **The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice**

REPUBLIC OF KENYA

NACOSTI

**National Commission for Science,
Technology and Innovation**

**RESEARCH CLEARANCE
PERMIT**

Serial No. A 7453

CONDITIONS: see back page

Appendix 11: Authorization Letter

**NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION**

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:

NACOSTI/P/15/51409/8499

8th December, 2015

Beatrice Jebet Kipsat
Moi University
P.O. Box 3900-30100
ELDORET.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Evaluating quality and relevance of illustrations in approved primary school textbooks: A study of Uasin Gishu County, Kenya,"* I am pleased to inform you that you have been authorized to undertake research in **Uasin Gishu County** for a period ending **8th December, 2016.**

You are advised to report to **the County Commissioner and the County Director of Education, Uasin Gishu County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. S. K. LANGAT, OGW
FOR: DIRECTOR GENERAL/CEO

Copy to:

The County Commissioner
Uasin Gishu County.

The County Director of Education
Uasin Gishu County.

COUNTY COMMISSIONER
UASIN GISHU COUNTY

17/12/15

National Commission for Science, Technology and Innovation is ISO 9001: 2008 Certified