

QUALITY AND RELEVANCE OF ILLUSTRATIONS IN APPROVED PRIMARY SCHOOL TEXTBOOKS

Beatrice J. Kipsat

<https://orcid.org/0000-0002-9996-2351>
Moi University, Kenya
kipsatjebet@yahoo.com

Daniel C. Rotich

<https://orcid.org/0000-0003-0974-2329>
Moi University, Kenya
dcrotich@hotmail.com

Duncan O. Omanga

<https://orcid.org/0000-0001-6010-1602>
Moi University, Kenya
ankodani@hayoo.com

ABSTRACT

Quality and relevant illustrations in primary school textbooks aid pupils' learning experiences. However, some approved primary school textbooks in Kenya might contain low quality and irrelevant illustrations that inhibit their use. This study sought to evaluate the quality and relevance of illustrations in approved textbooks in Uasin Gishu County in Kenya so as to recommend strategies for determining their preparation and production. The objectives of the study were to establish the criteria for determining the quality and relevance of illustrations, to determine factors contributing to the quality and relevance of illustrations, and to examine challenges faced while dealing with illustrations. The study was guided by the gatekeeping theory. The researchers adopted an exploratory survey design involving 191 respondents. Questionnaires and interviews were used to collect data. The findings established that specific criteria for determining the quality and relevance of illustrations were lacking, and that expertise, time, technology, and printing materials were factors that contributed to the quality and relevance of illustrations. The results revealed that primary schools experienced user-related challenges, and that publishers experienced preparation and production challenges. Vetting and approving authorities' challenges emanated from the preparation of the illustrations. Important recommendations include that adequate criteria for determining the quality and relevance of illustrations be formulated by the vetting authorities, that the preparation and production of illustrations be given professional attention by the publishers, and that government support textbook development and involvement of subject teachers from all regions in the evaluation panels. The study has implications for decolonising teaching and learning.

Keywords: approved primary school textbooks; evaluation; illustrations; Kenya; quality and relevance



INTRODUCTION

This study is a revised version of a paper that was presented at the 18th Information Studies (IS) Conference, held in Richards Bay, KwaZulu-Natal, South Africa, in September 2017.

Quality and relevant illustrations play crucial roles in pupils' learning experiences and teachers' delivery of content. Therefore most pupils take advantage of the naturally occurring events in the classroom and the home environment to enable them solve problems like counting, sorting, matching words, letters, pictures and communication. Segun (1998, 27) states that a small child is sensitive to pictures even before learning to speak. This sensitivity of children to visual stimuli has led publishers to incorporate illustrations in textbooks.

According to Ikoja-Odongo (2010), textbooks are created through manuscript preparation that entails editing, illustrating, typesetting, designing, printing and distributing to the readers. Illustrators and designers in publishing houses are responsible for the integration of illustrations. Illustrations explain and depict information locked inside the imagination and make a page come alive. Therefore, for written communication, children require the use of quality and relevant illustrations to understand what is contained inside.

Sursock (2001, 81) defines quality of a textbook as "its fitness for the purpose", while UNESCO, as cited by Simam, Rotich and Kemoni (2012) defines the quality of a textbook as being determined by variables such as methodology, exercise and testing, variety, and appropriateness of language and illustrations or artwork. These studies in bringing out quality definitions of textbooks were too general; they gave brief criteria on variables determining the quality and relevance of illustrations and focused on entire textbooks' quality omitting relevant information.

The introduction of free primary education in Kenya in 2003 resulted in increased pupil enrolment and a bigger demand for textbooks. However, information in the textbooks would be best conveyed and understood if words are complemented by relevant and quality illustrations. This is more crucial in primary schools where the learners are at their earlier stages of learning. Rotich (2014) stated that primary education in Kenya is the second level of education and caters for children aged between 6 and 13 years.

The demand for textbooks by primary schools in Kenya needs coordination between the Ministry of Education (MOE) and the publishing industry where approval procedures and guidelines for all textbooks are adopted. Rotich (2014) added that over 50 per cent of the textbooks approved by the MOE and used in schools in Kenya are published by six major publishing houses, namely The Jomo Kenyatta Foundation (JKF), the

Kenya Literature Bureau (KLB), East African Educational Publishers (EAEP), Oxford University Press (OUP), Longhorn and Macmillan Kenya.

In Kenya, the MOE acts as a policymaker pertaining to education matters while the Kenya Institute of Curriculum Development (KICD) implements these policies by developing curricula and formulating guidelines supplied to publishers on textbook development, submission, and evaluation and approval procedures for both print and digital media. The Kenya Publishers Association (KPA) through the MOE publishes a list of all approved textbooks contained in the “Orange book”, which primary schools use to select from.

The change of the educational system from 7-3-2-3 to 8-4-4 in 1984/85 affected educational publishing in Kenya. This possibly implies that apart from the change of education system other factors existed that contributed to the quality and relevance of illustrations which this study seeks to establish. The change of the education system demanded new textbooks but because of the hurried changing of the system with little coordination between the MOE and the publishing industry, some inexperienced publishers produced poor quality titles which were distributed to all primary schools, including those in Uasin Gishu County (UGC).

The purpose of this study was to evaluate the quality and relevance of illustrations in approved textbooks in UGC in Kenya to recommend strategies for determining their preparation and production. The study sought to establish the challenges experienced by the users, namely primary school pupils and teachers, producers of illustrations, publishers and the vetting authorities. This study chose UGC as the area of study because it had a cosmopolitan population distributed in urban and rural areas. The distribution of public and private primary schools in all the sub-counties with accessibility by roads and available communication facilities in turn sped up the process of data collection.

PROBLEM AND PURPOSE OF THE STUDY

Quality and relevant illustrations in school textbooks aid in pupils’ learning experiences and teachers’ delivery of content. Therefore, publishers, vetting and approving authorities should consider the quality and relevance of illustrations in school textbooks in Kenya. School textbooks in Kenya are approved after thorough vetting by education experts to ascertain that they provide the required content and are presented in a way that is easily understood by the target learners.

In spite of guidelines set by the MOE, the researchers’ observations and interactions with pupils and teachers indicate that some approved primary school textbooks in Kenya contain poor quality and irrelevant illustrations. This consequently can negatively affect how children relate text to illustrations in approved books. For example, the presence

of a wrong colour which does not match the illustrations inhibits pupils in relating to the natural environment and teachers' delivery of content. This could be attributed by two factors, namely the inadequacy of evaluation criteria on quality and relevance of illustrations and the inability of publishers and vetting approving bodies to follow the guidelines.

A few studies have been done on the quality of approved school textbooks in Kenya. For instance, a study by Rotich and Musakali (2006, 349) established that, despite the vetting and evaluation process undertaken, poor quality textbooks still found their way to schools in Kenya. This study was limited to vetting authorities being the major contributors to the poor quality of textbooks. Few studies done on primary school textbooks in Kenya have generally focused on contents, syllabus coverage, exercises and activities, binding, durability, clarity, suitability, colour and variety in the illustrations, paper used, and technical and physical attributes.

From the foregoing, it is evident that there is insufficient academic research on the quality and relevance of illustrations based on the producers, assessors and users of approved primary school textbooks in Kenya. To bridge these knowledge gaps, this study sought to evaluate the quality and relevance of illustrations in approved textbooks in UGC in Kenya and to recommend strategies for determining their preparation and production.

The study attempts to answer the following questions:

1. What criteria are used to determine the quality and relevance of illustrations in textbooks for primary schools in Kenya?
2. What factors contribute to the quality and relevance of illustrations in approved primary school textbooks?
3. What challenges do primary school pupils and subject teachers, publishers, vetting coordinators and MOE officials face when dealing with the quality and relevance of illustrations in approved textbooks?

SIGNIFICANCE OF THE STUDY

This study has proposed guidelines and criteria for determining quality and relevance issues in illustrations of 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.

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, thus will help the pupils enjoy the full benefit of good illustrations. The results of this study

are expected to guide publishers in preparing and producing quality and relevant illustrations. 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 education.

CONCEPTUALISATION AND LITERATURE REVIEW

This study was guided by the gatekeeping theory, which was introduced by an Austrian psychologist, Kurt Lewin, in 1943 (Rogers 1994). Lewin was 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. He noted that there were gates governed 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).

The model shows how information flows from the source through channels that act as gatekeepers and which filter information that reaches the audience. The model has the source of news items, the news items, selected news items, discarded news items, the gate and the audience. According to this study, publishers are the source of illustrations, which include drawings, pictures, photographs or charts and which, according to gatekeeping, are news items. Selected items, according to this study, are illustrations that fit the quality and relevance criteria while discarded ones do not meet the set criteria by the KICD.

For the case of the study, the preparation and production of illustrations are done in accordance with the set guidelines which form part of the quality and relevance criteria. Relating to the gatekeeping theory, the criteria are the rules in the gates that determine which news items to show to the audience. The KICD evaluates, vets and approves textbooks for use by primary school teachers and learners who are the audience in the gatekeeping model. The MOE and the KICD decide which textbooks will be used in primary schools and which textbooks will be rejected based on the set guidelines and procedures. In the gatekeeping theory, at the gate there are factors that contribute to news items reaching the audience. This study sought to establish factors contributing to quality and relevance of illustrations in approved primary school textbooks.

In the gatekeeping theory there are challenges in deciding which news item should be passed to the audience and which call for the news editor to take informed decisions based on set criteria. In this study, publishers, vetting authorities and primary schools experience challenges while dealing with the quality and relevance of illustrations, which the study sought to establish.

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 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. Thus, the theory is relevant to this study as it appreciates the relationship between illustrations, the users and the gatekeepers of illustrations.

CRITERIA FOR DETERMINING QUALITY AND RELEVANCE OF ILLUSTRATIONS

The foundation of many illustrations in book designs is based on the framework of principles and elements. Design arrangements that are balanced, well proportioned, and unified by a harmonious combination of elements are visually aesthetic in terms of quality. Brainard (1998, 92) describes design principles as “laws of designing anything including preparing illustrations”. Thus, for one to have a good design, these laws must be complied with as they act as guidelines that govern the organisation, for example the use of balance, emphasis and rhythm.

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 (Evans and Thomas 2004, 4) Therefore, the proper use of design elements determines the illustration quality while the appropriate use of design principles enhances illustration relevance. The few academic studies do not clearly show the criteria for determining the quality and relevance of illustrations. From this study, the guidelines provided as criteria for vetting books might not adequately cover these elements and principles and if they do they might not be followed by the assessors and publishers.

FACTORS CONTRIBUTING TO QUALITY AND RELEVANCE OF ILLUSTRATIONS

The quality and relevance of illustrations mainly lie in their preparation and production which largely depend on the producers and vetting authorities of textbooks. The quality of the original copy determines the final result of printed illustrations. Therefore, the preparation of illustrations is directly proportional to production quality. Lea (2012) commented that fine dot patterns and very rough dot patterns should be avoided in line copy as when reduced they become difficult to hold. Thus, the fine dot patterns tend to drop or disappear. This impairs the usefulness of the copy and consequently affects the overall quality of illustrations.

Kipphan (2001) stated that there are three main stages of print production which contribute to the quality and relevance of illustrations: pre-press, press and post-press.

Pre-press production starts from the work acceptance where illustrations are supplied with the project until when ready for printing. Press is where printing of illustrations and other book content takes place. Post-press is where all works after press are undertaken to produce the complete work to the customer.

According to Kipphan (2001), the number, sizes and forms in which illustrations are supplied should be included in the pre-press sheet. Illustrations can be supplied in the form of transparencies, flat or reflective art or high-resolution files. Illustrations can include silhouettes, drop shadows, bleeds, composites, or involve duotones, tritones or quadtones. All these elements should be indicated in the pre-press sheet for cases where illustrations are supplied by the client or those bought from galleries as they determine the final print quality.

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

Other operations done in pre-press which contribute to print quality include colour separation, screening, plate-making and colour management. The pre-press stage affects print quality in relation to colour, image sharpness, and contrast. In press, the quality of illustrations is affected by the ink weight, image sharpness, gradation of tone and value range. Lastly is the post-press stage where the print is determined by various finishing processes such as coating and varnishing of the printing material (Kipphan 2001). From the Kenyan perspective, personnel expertise in pre-press operations will ensure the use of modern technological gadgets such as high resolution scanners, computers and print machines which improve quality.

CHALLENGES IN DEALING WITH QUALITY AND RELEVANCE OF ILLUSTRATIONS IN SCHOOL TEXTBOOKS

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. Some literacy educators are concerned that illustrious pictures may distract children's attention from print, thus hindering their word identification and acquisition of the written language. However, the contributions of illustrations to the overall development of children's literate behaviour seem to be overwhelmingly greater than their potential dangers (Elster and Simons 1995, 148).

The physical features of a country, animals or plants, and machines or tools are better explained by the use of illustrations which visually supports authors' ideas expressed on paper. UNESCO (2009) points out 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. Therefore, poor quality and irrelevant illustrations distract attention, and limit the retention of information, understanding of information and creation of context among primary school pupils.

Illustrations have affective functions over children like enhancing enjoyment, and affecting emotions and attitudes. Segun (1998, 27) found out that illustrated texts were rated more enjoyable than non-illustrated texts. Primary schoolchildren preferred illustrated word diagrams with colour drawings to block-word diagrams without illustrations. The use of poor quality and irrelevant illustrations denies the primary schoolchild these benefits.

Illustrations facilitate learning information in the text by improving the comprehension and retention of information. Tomlinson and Lynch-Brown (1986) acknowledged that the cognitive function concerns how illustrations provide information beyond what is stated verbally. Thus, poor quality and irrelevant illustrations make it a challenge to achieve this. For example, the set-up of weather presentations to children providing a table of cloud type images organised according to cloud classification scheme aids in retention. Drawing a diagram illustrating the processes in the formation of a particular cloud type will help explain these processes for increased understanding.

METHODOLOGY

This study adopted an exploratory survey design with a mixed-methods approach. A survey was used in this study as it is relatively cheap and flexible in administering it. Both qualitative and quantitative approaches were used as certain aspects of the data such as demographic information of pupils and subject teachers required a quantitative approach.

The study population comprised 772 primary schools in UGC, which in turn comprised 428 public and 344 private schools (Uasin Gishu County Education 2015), and key informants from the KICD, the MOE and three publishing houses. The research targeted 69 220 Classes 5 to 7 pupils, and 4 632 English and Science subject teachers in UGC. The key informants consisted of three publishing managers, three production managers, three subject editors drawn from the Kenya Literature Bureau (KLB), Longhorn Publishers and Oxford University Press (OUP), Kenya publishing firms, one KICD vetting coordinator, and one MOE quality assurance and standards officer.

The researchers randomly selected twelve primary schools from UGC with one public and one private primary school chosen from each of the six sub-counties in UGC. Using random sampling based on class lists, 108 pupils were selected in each sampled school. Random sampling was also used to select 72 English and Science subject teachers within the School Instructional Materials Selection Committee (SIMSC). Based on purposive sampling, nine key informants from publishing firms, one from

the KICD and another from the MOE were selected. Table 1 summarises the study population and sample size.

Table 1: Study population and 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 official	1	1
Total	73 863	191

Source: Uasin Gishu County Education 2015.

Questionnaires were used to collect data from primary school pupils and subject teachers. Questionnaires helped capture a wide range of data, and the data collected were standardised and this contributed to objective data collection that eased data analysis. Face-to-face and telephonic interviews were used to collect data from key informants. This allowed interrogation of respondents and clarification of issues with them, and also guarded against confusion of questions. The data derived from questionnaires were tabulated with the aid of Excel spreadsheets and analysed as guided by the questions and presented in tables and narrative explanations. Data from interviews were transcribed at the end of every interview verbatim on paper and the data were presented as themes.

FINDINGS

The findings present the evaluation of the quality and relevance of illustrations in approved primary school textbooks in Kenya. The study was predominantly qualitative with some aspects of quantitative data where lived experiences in the creation, quality control and use of illustrations were identified.

Criteria for Determining Quality and Relevance of Illustrations in Approved Primary School Textbooks

Findings on the criteria that guided the quality and relevance of illustrations were obtained from the producers of illustrations, policymakers, quality gatekeepers and considerations from the users. Respondents from publishing firms comprised publishing managers, production managers and the editors.

Publishing managers indicated that they regarded the level, age, location and cultural values of learners as criteria. Production managers indicated colour consistency, image registration, clarity of the image, and ink spreading in the illustrations as criteria. The editors' criteria were based on design elements and principles like colour, shape, line, texture, type and value for quality, however, design principles include balance, emphasis, unity, variety and space. To attain relevance, subject editors responded that they adhered to the specifications indicated in the KICD.

Publishing managers indicated that although they try to restrict themselves to KICD guidelines they considered them inadequate. Production managers reported that most of the illustrations they received were of 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, and ink spreading.

The KICD vetting coordinator reported that their quality and relevance criteria were contained in the guidelines and procedures which they supply to every interested publisher. These criteria covered clarity, suitability, colour and variety in the illustrations, while the MOE considered subject specific objectives, variety of illustrations, adequacy and colour use.

The results of the pupils' considerations on quality and relevance are summarised in Tables 2 and 3 respectively based on design elements and principles.

Table 2: Considerations for determining quality of illustrations by pupils

Elements	Frequency and percentages of respondents								
	Gender		Age (years)			Class level			
		Male	Female	9–11	12–14	Over 14	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	–	–	–	–	–	–	–	–

Table 2 shows that all the pupils 88 (100%) regarded colour, value and text as criteria for determining quality. A total of 28 (72%) male and 42 (86%) female pupils regarded shape and line as criteria for determining quality in illustrations, while 21 (54%) male and 28 (57%) female pupils regarded texture as criteria for determining quality in illustrations.

Table 3: Consideration for determining relevance on illustrations by pupils

Principles	Frequency and percentages of respondents								
	Gender			Age (years)			Class level		
		Male	Female	9–11	12–14	Over 14	Std 5	Std 6	Std7
Space	Y	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	N	–	–	–	–	–	–	–	–
Balance	Y	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	N	–	–	–	–	–	–	–	–
Emphasis	Y	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	N	–	–	–	–	–	–	–	–
Variety	Y	39(100%)	49(100%)	40(100%)	44(100%)	4(100%)	25(100%)	30(100%)	33(100%)
	N	–	–	–	–	–	–	–	–
Unity	Y	28(72%)	42(86%)	23(58%)	42(95%)	4(100%)	12(48%)	27(90)	33(100%)
	N	11(28%)	7(14%)	17(42%)	2(5%)	–	13(52%)	3(10%)	–

Table 3 shows that space, balance, emphasis, and variety were regarded by all pupils as criteria for determining relevance in illustrations in textbooks while 12 (48%) pupils in Class 5 and 27 (90%) pupils in Class 6 regarded unity as criteria for determining relevance.

All the subject teachers regarded colour, shape and type as criteria for determining quality and textbook procurement qualities which include the age of learners, if the illustration represents what is in the syllabus, clarity, variety in illustrations, and the geographical representation of illustrations. As regards the criteria for determining relevance, they considered balance, emphasis, variety space and unity.

Factors that Contribute to Quality and Relevance of Illustrations

The factors contributing to quality and relevance were handled by publishers, the MOE quality assurance and standards officer and the KICD vetting coordinator. The publishers indicated that the editorial and production departments largely contributed to the quality and relevance of illustrations. These include personnel expertise, preparation and production time, technology, printing paper, inks and printing machines, original artwork quality, and the type of illustration.

The MOE indicated that transparency among the head teachers, market research and pretesting of manuscripts undertaken by publishers' marketers contributed to the quality and relevance of illustrations. On the other hand, the 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.

Challenges Experienced while Dealing with 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.

Table 4: Quality and relevance challenges faced by primary school pupils

Frequency and percentages of respondents over quality and relevance challenges								
Gender			Age (years)			Class level		
	Male	Female	9–11	12–14	Over 14	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%)

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

Concerning the 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.

Other challenges experienced by pupils include the text not matching the illustrations, thus confusing pupils and interfering with the intended message, a lack of unity which affected certain elements in illustrations including line, shape, colour, value and texture, a lack of harmony relating to proportion, colouring, the use of captions and numbers which made individual elements in the illustration unnoticed, poor shapes, poorly spaced illustrations that distracted pupils' attention making them forget easily

what they read, and finally, dull illustrations that made pupils lose interest in reading textbooks.

Findings showed that subject teachers experienced challenges relating to the incorrect use of colours, poor shapes, ragged edges in illustrations as a result of poor use of lines, presence of dark images and the use of small illustrations which are crowded, a lack of balance and unity, poorly labelled and incorrectly used illustrations, especially in science textbooks.

The publishers reported two major challenges relating to the quality and relevance in respect of pre-press and press stages, namely preparation and production challenges. The publishing manager indicated a lack of expertise, biasness among the evaluators, the 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, and piracy and plagiarism. The production challenges that were pointed out were the supply of poor quality paper and inks, print quality problems like hickey, dot gain, dot loss and low image resolution. Other challenges that were mentioned include the lack of a defined calendar and inadequate modern machines and software for illustration preparation experienced especially by illustrators.

The MOE's quality assurance and standards officer expressed the challenges in relation to the lack of universality of illustration, and piracy and corruption among publishers. The KICD vetting coordinator pointed out challenges relating to poor use of design elements and principles, the high costs of the evaluation process, and identifying the right evaluators, advertisements and report writing that is time consuming.

DISCUSSION

The study sought to evaluate the quality and relevance of illustrations in approved primary school textbooks in Uasin Gishu County, Kenya.

Criteria for Determining Quality and Relevance of Illustrations

Publishers based their criteria on the users of illustrations, KICD guidelines, final print illustrations, and the creation and design of the illustrations. This may be attributed to their role in the preparation and production of illustrations where users are crucial and guidelines must be followed. Kipphan (2001) argues that the quality of prints is determined in the three stages of printing, namely pre-press, press and post-press. However, this study established that there were no other specific criteria as contained in the KICD guidelines. Kipphan's findings majorly considered the print quality, excluding the users of illustrations, which is crucial to this study.

The MOE and the KICD indicated their criteria incorporated in the textbook development, submission, evaluation and approval guidelines. This may be because of their role as policymakers and implementers of all educational matters. From the study these guidelines were too general with inadequate details for quality and relevance, and potentially relevant information on design elements and principles were omitted. These findings explain the reason behind poor quality textbooks containing irrelevant illustrations in some Kenyan primary schools as cited by Rotich and Musakali (2006).

Primary school pupils and teachers regarded all the design elements and principles as their criteria and this may possibly mean that they considered their daily uses of textbooks and subject teachers' involvement in the textbook procurement process which made them familiar with illustrations, hence their knowledge of criteria used in determining the relevance of illustrations. In comparing the primary school pupils and the subject teachers' views, the publishers' criteria were based on the purpose of illustration and the users while pupils and the teachers' criteria were based on their daily interaction with the illustrations. The major similarity was that both regarded the use of design elements and principles as quality and relevance criteria.

Factors that Contribute to Quality and Relevance of Illustrations

Personnel expertise, preparation and production time, technology, printing paper, inks and printing machines, original artwork quality, and the type of illustration were regarded by publishers as contributing factors to the quality and relevance of illustrations. As pointed out by publishers, all these factors revolved around the preparation and production of the illustration. Transparency among the head teachers, market research and pretesting of manuscripts undertaken by publishers' marketers were cited by the KICD, which indicated that they seemed confident of their role of vetting and evaluation since all the cited factors were pointing to the publishers and head teachers, and which was not true according to the study.

These findings support a study by Rotich and Musakali (2006) who pointed out the presence of some poor quality textbooks in schools in Kenya, meaning that the MOE had factors that directly contributed to poor quality and irrelevant illustrations. Expertise of the evaluation panel, their understanding of the evaluation and vetting procedures and guidelines as cited by the KICD showed that they were genuine in their responses as they had a part to play in contributing to the quality and relevance of illustrations in approved textbooks.

Challenges Experienced while Dealing with Quality and Relevance of Illustrations

Older pupils experienced fewer 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. The majority of the cited challenges by the pupils were regarding the poor use of design elements and principles, and this could be as a result of their frequent interaction with illustrations in their daily lives. The teachers had challenges similar to those of the pupils, the only difference being the purpose. The pupils faced challenges that affected learning, while the subject teachers had challenges with regard to content delivery. These findings disapprove of Elster and Simons' (1995) concerns that illustrious pictures may distract children's attention. From the study it was established that the majority of the cited challenges as regards quality and relevance revolved around the use of design elements and principles.

Publishers focused their challenges on the preparation and production of illustrations which originated from the pre-press and press section. These challenges were in relation to human resources, materials and vetting and approving authorities. It is possible that publishers did not want to portray that they contribute to the challenges in which, according to the study, they partly contributed to the challenges they experience. On the other hand, the MOE and the KICD experienced similar challenges with illustrations. This may be because their roles all revolve around educational matter; the MOE is the policymaker while the KICD is the policy implementer.

Rotich and Musakali (2006) pointed out the presence of some poor quality textbooks in primary schools in Kenya, which meant that challenges were experienced by these schools. These authors' conceptualisation of the quality of a textbook is too general by just giving brief criteria on variables determining the quality and relevance of illustrations. Thus, their focus is on the quality of the entire textbook.

CONCLUSION

In spite of the provisions of vetting and evaluating guidelines from the MOE, it is evident from the results of this study that specific criteria for determining the quality and relevance of illustrations in the approved primary school textbooks in Kenya are inadequate, thus may be an indicator of the poor quality and irrelevant illustrations as supported by Rotich and Musakali's (2006) findings that despite the vetting and evaluation process undertaken, poor quality textbooks still find their way to schools.

From this study it emerged that the majority of the factors contributing to illustrations' quality and relevance in approved primary school textbooks focused on the preparation, production, vetting, evaluation and approval processes. These factors may have affected the way pupils learn and teacher's content delivery. Other findings from

this study majored largely on the quality of the original illustration as which disapproves Lea (2012) who argued that a dirty original could be erased to remove unnecessary lines on the actual drawing paper and retraced onto a fresh sheet of paper.

Challenges experienced by the various players who handle illustrations indicated the evidence of poor quality and irrelevant illustrations. Primary school pupils and teachers experienced similar challenges relating to design elements and principles which are user-related. Publishers as creators of illustrations faced challenges relating to the preparation and production in the pre-press, press and post-press as described by Kipphan (2001).

This study has strengths, weaknesses and limitations which emanate from the authors, and the study itself in data collection analysis and presentation.

This study's strengths included the researchers' long experience in dealing with illustrations as graphic designers and having worked with users of illustrations and publishers. In addition, the co-authors are experts in the publishing and communication industry. This expertise is an excellent complement to the paper's success. The major weaknesses of the study are that some of the data interpretation is discussed in generalities, little information has been published in this area of the quality and relevance of illustrations, and there is no or little current literature for review. The major limitation of the study is that owing to the sensitive nature of the information collected, some publishers were suspicious and declined to be interviewed. Therefore, purposive sampling based on the key informants' 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.

This paper has practical implications to vetting authorities, educational publishers and the government.

The study established that there were no specific criteria for determining the quality and relevance of illustrations, and that what existed in the textbook development guidelines was inadequate. Therefore, the study recommends to vetting authorities to formulate specific adequate criteria for determining the quality and relevance of illustrations in addition to what is in the textbook development guidelines. Consequently, publishers would benefit as it will save time of preparing and producing illustrations because of the elaborate specific guidelines.

Findings showed that factors ranging from the original illustration, preparation and production, personnel's expertise, printing machines, and transparency between the head teachers and publishers contributed to the quality and relevance of illustrations. This study therefore recommends that publishers recruit and use personnel with the relevant expertise, and allocate the appropriate preparation time for illustrations. Other recommendations include the use of appropriate technology, considering keenly the type of illustrations, printing paper, printing machines, the quality of inks, the nature of

colour-separated illustrations, and the transparency to exist among the primary schools and publishers.

This study established that pupils and teachers, publishers and vetting authorities faced challenges while handling illustrations. It is recommended that the vetting authorities involve pupils and teachers in decision-making as relating to the quality and relevance of illustrations thus their opinions would help in dealing with challenges relating to quality and relevance.

The study further recommends that government provides support by removing taxation on printing machines and materials, and helps in fighting corruption and piracy by taking just legal actions against those breaching the law. The study established that the KICD experience challenges relating to the lack of universality in illustrations. It is therefore recommended that the KICD involve all subject teachers' representatives from all the counties to ensure that textbooks used contain illustrations which are universal to all Kenyan pupils.

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