

Preference for Mathematics Textbook Illustrations among Primary School Pupils in Ibadan: Implications for Counselling Psychology

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Abstract

The purpose of this study was to investigate the preference among primary school pupils in Ibadan in terms of mathematics textbook illustrations and its implications for counselling psychology. An ex post facto descriptive research design was used in the study. One hundred and three (103) respondents were selected from public primary school pupils in Ibadan, Oyo State, Nigeria. The respondents were measured with self-developed scales and the data obtained was analysed using the Pearson Product Moment Correlation Coefficient (PPMC) and Statistical Package for the Social Sciences (SPSS) software. Two (2) research questions were raised and answered in the study. The results show that there is a significant relationship between paper quality and preference for mathematics textbook illustrations ($r = .712$; $P < 0.05$), and there was a significant relationship between colours used in the book and mathematics textbook illustration preferences ($r = .841$; $P < 0.05$). In view of these findings, the study stresses that educational stakeholders and counsellors should intensify their effort to organise conferences on the implications of these factors (e.g., colour and paper quality, among others) relating to the pupils' preferences for textbooks, which invariably affect reading comprehension of the pupils.

Keywords: paper quality; colour illustration; mathematics textbook preference



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Introduction

Mathematics is one of the compulsory subjects that is taken seriously in the school system, irrespective of country or level of education. It has been described as a model of thinking that encourages learners to observe, reflect and reason logically about a problem and in communicating ideas, making it the central intellectual discipline and a vital tool in science, commerce and technology. Mathematics textbook illustrations for primary school pupils are not only important because of the literary value they provide young readers, but they are also an essential element in the reading development process. Illustrations are associated with the initial stages of reading, and one of their functions is to help primary school pupils understand that print has meaning before they can actually read (Haynes 1988). The main function of illustrations in pupils' mathematics textbooks, if the author has done his or her job correctly, is to illuminate the text (Herrera 2006). Without illustrations, today's emergent readers may have a more difficult time with the processes of learning how to decode text, developing recall and comprehension skills, and even vocabulary acquisition and development.

Primary school pupils who are exposed to text without other aids may indeed be missing an important step in learning how to read. After casual observation of pupils in environments where they are being read mathematics textbook, pupils' comments and reactions indicate they do not enjoy stories as much if the illustrations are not shared with them (Langerman 1990). It is important for parents, libraries, and secondary schools to stimulate young people to get involved in reading and to gauge how effective the efforts made by these agents are to stimulate reading. These issues form the central questions in this study. In theories of reading, it is implicitly or explicitly assumed that (early) childhood is the essential period to stimulate reading practices and reading for pleasure (Langerman 1990; Owoyele and Muraina 2016). Taking into account pupils' reading preferences means that both cognitive and motivational resources are strengthened through concrete activities or circumstances in social interaction, which foster primary school pupils' reading development. Many questions remain unanswered about the effectiveness of preferences for book reading activities.

A major disadvantage of such studies on reading preferences of pupils is that they tend to overestimate the effects of reading promotion policies. If we assume that reading promotion aims to foster people's preference for book reading, it is vital to assess its long-term effects. Book reading preferences and skills are not acquired by unique and non-recurrent introductions to literature or textbooks, but by intensive and lasting activation of available colour illustrations and quality of the text as well as the social environment (Owoyele and Muraina 2016). These conditions for reading socialisation, that is, recurrent instruction and experienced relevance of social interaction occur primarily in three institutions: the home environment, the library, and the school. In each of these institutions, meaningful people aim to transfer a preference for book reading to young people by recurrently exposing them to different textbooks or forms of literature.

Previous empirical research has demonstrated that a preference for book reading is especially important in choosing to read challenging literary works in school (Katz 1983; Kragler 2000). Reading competence is a life-long effort, but childhood in particular offers opportunities to stimulate the competence through reading socialisation. Book illustrations, as an integral aspect in the cognitive process, are a phenomenon that has attracted considerable attention, resulting in several studies conducted by various researchers. However, there remain some conflicting findings in the results of some of these studies, especially in the area of reader preference for illustrations. The approach of inquiry into the needs of the identified target audience is typical of marketing research where the consumer is usually the focus of study. The success of any textbooks will ultimately be measured by the perception of its end users, which are the pupils. Just as the marketing researcher makes inquiry into consumer perception of products and services, it is likewise important for publishers to identify preferences and perceptions of the target audience.

According to UNESCO (2015), 885 million adults worldwide lack basic reading and writing skills. The problem acutely affects sub-Saharan Africa, Southern Asia, and the Middle East, where literacy rates averaged below 60% in 2015. The negative impacts of illiteracy and semi-literacy are clearly evident in Nigeria today, affecting many aspects of the country's national life. These negative impacts manifest in all facets of Nigeria's national life, such as the national workforce, the health, education, and manufacturing/industrial sectors, religion, social and human relations—generally in all economic and political spheres. A carpenter that is well informed and constantly updates him/herself with present and relevant information in his/her field and applies such knowledge will surely have a much better output than an illiterate or semi-illiterate colleague.

Studies conducted by Silverman, Davids, and Andrews (cited in Rudman 1995) reported that pictures actually interfered with reading development of pupils who are poor. In recent years, however, research has been conducted in order to challenge those researchers whose work proposed that images, or pictures, included in the reading process presented a negative effect when considering the value and benefit of illustrations in reading materials. Significant current research supports the facilitation of reading and comprehension using pictures and illustrations when the pictures overlap (or have common characteristics and connections to the words) the process of learning how to read (Reutzel and Gali 1998). According to Timion (1992), colours help to aid classroom instruction in that they can cue actions, facilitate discrimination among objects, stress relationships between objects, and enhance interest in the given topic.

Following Kincade (1991), who investigated the nature of illustrations that elicited a greater response in primary school pupils, other researchers have conducted similar studies, including Owoyele and Muraina (2016), Muraina and Muazu (2017) and Hildreth (2006). The Nigerian publishing industry has metamorphosed to its present stage where publications and books employ illustrations of diverse styles, media,

colours, and quality. The same inquisitiveness and curiosity that provoked the questions these researchers sought to address are still active. In order to fill these gaps in the studies above, the present study investigates the preference among primary school pupils in Ibadan for illustrations in mathematics textbooks and its implications for counselling psychology.

Statement of the Problem

Matching pupils' reading level to appropriate reading material is a difficult problem for many teachers. This is because the principle that pupils read most successfully if the reading material they are given matches their reading level is easy to accept but hard to implement. The importance of reading materials, especially prescribed mathematics textbooks in the school system, cannot be overemphasised. This is because mathematics textbooks are a vital instrument for teaching and learning. At this level, one would expect that much emphasis would be given to the teaching of reading as a continuation of what was taught in the primary schools, but this is not the case. As a consequence of the inadequate preparation primary school pupils receive in reading in the primary school, they become poor readers at the junior secondary level. The unambiguous knowledge of the general preferences among primary school pupils with regard to specific variables in illustration such as the use of colours, general quality, including the quality of drawings and print quality, artistic styles such as realistic, cartoonish or abstract renditions and so on, will be helpful to provide a measure of direction to guide editors and illustrators in their tasks. In view of these, the present study investigates the preference among primary school pupils in Ibadan for mathematics textbook illustrations and its implications for counselling psychology.

Objective of the Study

The main objective of the study is to investigate the preference among primary school pupils in Ibadan for mathematics textbook illustrations and its implications for counselling psychology. Other specific objectives are to:

1. determine the relationship between paper quality and the preference among primary school pupils for mathematics textbook illustrations; and
2. establish the relationship between the colours used in the book and the preference among primary school pupils for mathematics textbook illustrations.

Research Questions

1. What is the relationship between paper quality and the preference among primary school pupils for mathematics textbook illustrations?
2. What is the relationship between the colours used in a book and the preference among primary school pupils for mathematics textbook illustrations?

Methodology

The study adopted a descriptive research design of an ex post facto type. Such an approach does not involve the manipulation of variables in the study. It is an after-the-fact study. It neither adds to nor subtracts from the existing fact. Instead, it carefully observes and records information as it naturally occurs at the time the study is conducted. The subjects for the study were all public primary school pupils in Ibadan, Oyo State, Nigeria. A multi-stage sampling technique was used in this study. Three (3) local government areas (LGAs) were randomly selected out of available local governments in Ibadan. In each randomly selected LGA, four (4) primary schools were selected. Also, 10 primary school pupils were randomly selected from each selected school. In total, 120 public primary school pupils were selected for this study. These consisted of both male and female pupils.

A self-developed questionnaire titled “Preference for Mathematics Textbook Illustrations among Primary School Pupils” (PMTIPSP) was created. The questionnaire consisted of two sections, Section A and Section B. Section A measured the demographic factors of the pupils, and Section B measured the illustration preferences based on paper quality and the use of colour in illustrations. The questionnaire consists of 30 items anchored to a four-point scale with the following responses: strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD). The researcher gave the instrument to experts in the field of psychology and experts in the area of research and statistics. All these people gave their suggestions and made necessary corrections to the instrument. After confirming the content and face validity of the instrument, 20 copies of the instrument were administered in order to test for reliability. Cronbach’s alpha coefficient was then used to test the instrument’s reliability to ensure that it is consistent in measuring what it was designed to measure. A reliability coefficient of .78 was obtained.

The instrument was administered to the subjects on the day approved by the school authorities for the exercise. The researcher was assisted by research assistants in administration and collection of the instrument. On the whole, data collection lasted for three weeks. Out of the questionnaires distributed, only 103 were properly filled in and considered useful for research purposes. The Pearson Product Moment Correlation Coefficient (PPMC) was used to analyse the data.

Results

Two research questions were raised and answered. The data were analysed using the Pearson Product Moment Correlation Coefficient (PPMC) statistical method. The results are presented below:

Hypothesis One: There is no relationship between paper quality and the preference among primary school pupils for mathematics textbook illustrations.

Table 1: Relationship between paper quality and the pupils' preferences regarding mathematics textbook illustrations

Variable	Mean	SD	N	r	p	Remark
Preference for textbook illustration	35.18	19.19	103	.712	.000	Significant
Paper quality	22.02	11.62				

Table 1 shows that there was a significant relationship between paper quality and the preference among primary school pupils for mathematics textbook illustrations ($r = .712$; $P < 0.05$). This means that paper quality influences the level of preference among primary school pupils for mathematics textbook illustrations.

Hypothesis Two: There is no relationship between the use of colour in the book and the preference among primary school pupils for mathematics textbook illustrations.

Table 2: Relationship between the use of colour in the book and the preference for mathematics textbook illustrations

Variable	Mean	SD	N	r	P	Remark
Preference for textbook illustration	35.18	19.19	103	.841	.000	Significant
Paper quality	19.13	9.83				

Table 2 shows that there was a significant relationship between the use of colour in the book and the preference among primary school pupils for mathematics textbook illustrations ($r = .841$; $P < 0.05$). This means that the use of colour in the book will influence the level of preference among primary school pupils for mathematics textbook illustrations.

Discussion of Findings

There is a significant relationship between paper quality and the preference among primary school pupils for mathematics textbook illustrations. This means that paper quality influences the level of preference for mathematics textbook illustrations among primary school pupils. This is in agreement with the findings of Muraina and Muazu (2017), who show that although a group of fourth graders benefited from pictures that accompanied a story on one day and seven days later, they did not receive any immediate significant benefit. Studies conducted by Silverman, Davids, and Andrews (cited in Rudman 1995) reported that pictures actually interfered with reading development in pupils from poor backgrounds. In recent years, however, research has been conducted in order to challenge the researchers whose work proposed that images, or pictures, included in the reading process presented a negative effect when considering the value and benefit of illustrations in reading materials. Significant current research

supports the claim that the use of pictures and illustrations facilitate reading and comprehension when the pictures overlap (or have common characteristics and connections to the words) the process of learning how to read (Muraina and Muazu 2017; Reutzler and Gali 1998).

The result concerning the second research question reveals that there was a significant relationship between the use of colour in the book and the preference among primary school pupils for mathematics textbook illustrations. This means that the use of colour in the book influences the level of readers' preference among primary school pupils for mathematics textbook illustrations. This is in line with the findings of Timion (1992), who asserts that colours help to aid classroom instruction in that they can cue actions, facilitate discrimination among objects, stress relationships between objects, and enhance interest in a given topic. A major disadvantage of such studies is that they tend to overestimate the effects of reading promotion policies. If we assume that reading promotion aims to foster people's preference for book reading, it is vital to assess its long-term effects. A preference for book reading and reading skills are not acquired by unique and non-recurrent introductions to literature or textbooks, but by intensive and lasting activation of available colours and the quality of the text as well as the social environment (Owoyele and Muraina 2016). As such, colours are used to emphasise what is being taught or what young readers should focus on at a particular moment.

Conclusion

Based on the findings of this study, persistent poor reports concerning mathematics textbook reading among primary school pupils need not continue indefinitely. There is hope that with the improvement of quality and the use of colour in the books, among others, the situation can be changed for the better. The study discovered that the quality and use of colour in the books influence the preference among primary school pupils for mathematics textbook illustrations. By and large, quality and colour have a great influence on the preference among primary school pupils for mathematics textbook illustrations. As such, it is crucial to improve these factors (the quality and use of colour in books) so as to eradicate primary school pupils' persistent lack of interest in mathematics textbook illustrations.

Recommendations

1. Public and private schools should endeavour to provide appropriate textbooks in terms of book illustrations for the pupils in the school. This will help to improve the comprehension of the book and academic achievement in terms of reading of the pupils in the school.
2. Teachers should be enlightened on how to effectively and efficiently use books' illustrations to enhance the pupils' reading, because the pupils' use of book illustrations have a significant influence on the academic achievement of pupils in the school.

3. Educational stakeholders and counselling psychologists should intensify their effort to organise conferences on the implications of these factors (i.e., use of colour and paper quality, among others) for pupils' reading comprehension and academic achievement in school.
4. The pupils should be enlightened on the importance of book illustrations for their reading comprehension and academic achievement in school.

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