AVAILABILITY OF INSTRUCTIONAL MATERIALS IN THE TEACHING OF PRIMARY MATHEMATICS IN BASIC SCHOOLS

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Abstract

This study investigated the availability of instructional materials of mathematics in primary schools. Ten schools comprising four private and six public primary schools were randomly selected in Oyo west local government area of Oyo state. In all, 300 pupils participated in the research (i.e. 30 pupils from each school). Two hypotheses guided the study and Wilcox on matched pairs [WMP] signed-ranked text was used to analyze the data. Findings showed that, there were significant differences in the performance of pupils taught with instructional materials, and those that are not in the primary schools and that the use of instructional materials make pupils have positive attitude towards mathematics. Recommendations were made on the need for using instructional material for teaching mathematics in Primary school.

Introduction

The effective teaching of mathematics for technological development is very crucial for nation-building. Since the children of today are expected to be involved in the development of the nation tomorrow, there is need to monitor them in the way they learn mathematics. There is no gainsaying the fact that the quality of mathematics education of a country determines the technological potential, for without mathematics, technological culture cannot really be imbibed by the citizens (Okunowo, 2001).

One of the problems of mathematics teaching and learning is lack of sustainable interest in the subject among pupils. Ivowi (1996) observed that the bias of girls and boys against mathematics need to be recognized. There is the need to 'catch them young', right from primary schools. Interest in mathematics and technology is best developed through the psychomotor and effective domains than the cognitive domains. Therefore, the use of instructional materials, either real objects or improvisation to develop pupils interest in mathematics for nation building should be from primary schools. Akinbote (1995) observed that instructional materials increase learning effectiveness. The developed countries are able to 'raise their heads' because their citizens are able to fabricate equipment through either local materials or imported materials.

The Concept of Instructional Materials

By definition, instructional materials have been seen as channels, through which instructional information passes out, in order to achieve specific instructional objectives (Akanbi, 1998). Many authors, variously classified instructional materials into; audio, visual and audio-visual (Nwosu 1991); printed and non-printed media (Agun, 1998); hypermedia, discursive, adaptive, interactive and reflective types. The choice and use of instructional materials depend on such factors as instructional objectives, the characteristics of the learners, the size and composition of the class, cost of the materials, availability of the materials, technical quality of the materials and others (Akanmu, 2004). The same author observed that teachers use instructional material anyhow, regardless of the above factors and hence the difference in the procedure for selecting and utilizing instructional materials in primary schools. In the primary school curriculum, the materials are already written beside each topic along with the activities to be carried out by the teachers.

Most of these instructional materials needed are not available in schools. Pupils do not understand the rudiments of mathematics at this level before going to secondary schools, while some of them would have developed their attitude towards mathematics even at this level because of many other factors which may include lack of quality teachers, lack of positive attitude towards improvisation (Egbegbedia, 1997), lack of material for teaching (Olagunju, 2000) and alternative teaching strategies with improvisation (Akinrotohin, 2000). Primary education is the foundation of the whole system of education and some of the goals of primary education, according to the National Policy on Education (NPE, 2008), section 3 (16), is to lay a sound basis for scientific and reflective thinking and to develop the manipulative skills that will enable pupils to function effectively in the society within the limits of his capacity. Ajayi (1999) observed that mathematics has been presented to the pupils and the community at large as an activity which is different from what is happening in the society. Some teachers even teach without instructional materials at the primary school level. All these invariably affect the attitude of the pupils towards mathematics negatively.

Nobody is born with attitude; it is developed through learning and social interaction. Some attitudes affect human perception. A boring and dull lesson can negatively affect the perception of students about the subjects and subsequently affect their performance on the subject. Aikem (2007) observed that, there is a significant correlation between performance and measure of attitude.

Statement of the Problem

This study investigates the availability of instructional materials necessary for teaching mathematics in primary schools. It further investigates the subjects' attitude to mathematics with, or without instructional materials.

Purpose of the study

When interest in mathematics is developed in the child, then a foundation for technology is laid. The use of toys, improvisation and other concrete instructional materials for teaching is to arouse the curiosity of pupils and to sustain the interest of pupils in going further to study mathematics at the secondary school level and technologically based courses at tertiary institutions. This is to make teachers become aware of the need for the use of instructional materials while teaching.

Research hypotheses

(i) There is no significant difference between the performance of pupils where instructional materials are used and where they are not used in the primary schools.

(ii) There is no significant difference in the attitude of pupils taught mathematics with instructional material, and those who are not.

Research Design

The design of the study is descriptive in nature, in the sense that, it is concerned with the practices that prevail and are conducted under conditions that do not permit manipulations of variables.

Sample and Sampling

The sample of the study comprises of 10 primary schools situated within Oyo west local Government. They were randomly selected among the public (six) and private (four) primary schools. Thirty pupils were randomly selected in each primary five classes in private schools, and primary six in public schools, making a total of 300 pupils.

Instrument

The instrument used for the study is a questionnaire divided into three sections. Section 'A' seeks the information on name, school, sex and age of the pupils, while section 'B' contains statements seeking the opinion of the pupils on the usefulness of instructional materials and about their attitude towards mathematics. Section 'C' is a checklist of instructional materials needed to teach mathematics. In the existing National Education Commission Primary Schools

Curriculum modules, the needed teaching materials were written besides the contents, hence teachers know what to use. About 60 items were identified from the syllabus in section C.

Procedure

The administration of the questionnaire was done personally by the researcher. Sections A and B of the questionnaire were given to 30 pupils in each of the ten (10) schools selected to fill and were later collected back. Section C of the questionnaire was personally filled by the researcher. The researcher observed the availability of instructional materials in each school and ticked. This was done to prevent schools covering up their inadequacies.

Results

Hypothesis 1: There is no significant difference in the availability and non-availability of instructional materials in primary schools.

For Hypothesis 1, Wilcoxon Matched-Pairs (WMP) signed-rank test was used for data analysis.

Table 1: Availability of instructional materials in primary school

S/N	AV	NAV	Diff(AV-NAV)	Rank of diff	Rank of Smallest Sum
1.	32	28	4	1	
2.	20	40	-20	-(5)	-(5)
3.	43	17	26	8	
4.	25	35	-10	-(2)	-(2)
5.	22	38	-16	-(3)	-(3)
6.	16	44	-28	-(9)	-(9)
7.	18	42	-24	-(7)	-(7)
8.	21	39	-18	-(4)	-(4)
9.	19	41	-22	-(6)	-(6)
10.	15	45	-30	-(10)	-(10)
				+9	-46

N = 10 T = -46
+9

If the null hypothesis was correct and acceptable, we would expect the sum of the positive (+9) and that of the negative (-46) ranks to be more or less balanced. This value

indicated a rejection in the null hypothesis. A sum of available materials in the ten (10) schools showed an average of 23.1 in each school while a sum of non-available materials in the ten (10) schools showed and average of 36.9 per School. This means that about 30% of the instructional materials were available in each school. Only two private schools have 50% of the materials.

Hypothesis 2: There is no significant difference in the attitude of pupils taught mathematics with instructional material, and those who are not.

Table 2: Attitude of Pupils Taught with and without Instructional Materials

S/N	Y	N	D	Rank of diff	Rank of smallest sum
1.	132	168	-(36)	-(1)	-(1)
2.	264	36	228	9	
3.	241	59	182	8	
4.	265	35	230	10	
5.	203	97	106	3	
6.	235	65	170	5	
7.	221	79	142	4	
8.	113	187	-(74)	-(2)	-2
9.	237	63	174	7	
10.	236	64	172	6	
				52	-3

N = 10 T = -3
52

If the null hypothesis was correct and acceptable, we would expect the sum of the positive (+52) and that of the negative (-3) ranks to be more or less balanced. This value indicated a rejection in the null hypothesis. Therefore it can be concluded that students' attitude towards mathematics is dependent on instructional materials.

Discussion

The year of establishment of schools used, ranges from 1950 to 2001. One school was established in 1950, two schools established in 1940s, three schools in 1980s, one in 1994,

while the remaining three were in the 1990s. There is no school that is less than eight years old. Some are above 40 years and so one expects that since they have been teaching mathematics for years, they are supposed to have at least 70% of the instructional materials on ground.

This shows that most of the mathematics contents have been taught to pupils without instructional materials. One can then see the reason why the pupils have negative attitude towards the learning of mathematics. The study shows that, the schools and the teachers care less about the importance of using instructional materials.

The responses of the pupils to the statements raised under section B of the questionnaire showed that the pupils like mathematics as a subject but do not see it as a science; this may be due to the inability of teachers to teach with instructional materials. It is also observed in many primary schools under study most of the instructional materials are not available both in private and public schools. Many teachers seem not to appreciate the importance of using instructional materials to teach.

Conclusion and Recommendation

The findings of this study confirm that most of the primary schools teachers do not use instructional materials to teach mathematics in their classes. There is need for each school to have a resource centre where materials are kept, for the use of teachers. The center should have shelves and tables where materials are displayed for the manipulative skills of the pupils.
Use of charts, printed materials, audio and visual aids in teaching/learning in primary schools should be emphasized for effective teaching and arousing pupils' interest in learning mathematics. Instructional materials help in awaking the memory of pupils, therefore teachers should intensify more effort in the use of these materials in mathematics lessons. The Federal and states' Ministries of education should make appropriate plans to provide, train and expose primary school teachers to the use of instructional materials. Also, seminal should be organized on school bases to train teachers about the improvisation of instructional materials.

This study could still be carried out in more local government areas in Oyo state for wider coverage and possible corroboration.

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