

## Evaluation of Instructional Materials Commonly Used in the Teaching of Mathematics in Junior Secondary Schools in Ekiti State

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### Abstract

The study evaluated the instructional resources commonly used in the teaching of Mathematics in junior secondary schools (JSS) in Ekiti State. The purpose of the study was to determine the availability, functionality and level of usage of instructional materials for teaching the subject. The descriptive research design of the survey was adopted. The sample for the study consisted of 360 Mathematics teachers selected through the multistage sampling technique from selected secondary schools in the state. Three research questions were raised and the data collected were analyzed using descriptive statistics. The results from the teachers' responses revealed that instructional materials are available for teaching Mathematics but are not adequate. It was also found out that to a certain extent, the instructional materials are functioning. However, teachers are not putting the materials into good use.

**Keywords:** Evaluation, Instructional Materials

### Introduction

Mathematics is a subject that is very important in every day to day activity. It forms the bedrock for all other subjects be it pure science, social science, applied science or arts. Due to its importance, it was made a compulsory subject in schools such that failure in the subject may hinder a student from being promoted to the next class or from gaining admission into a higher institution of learning. As important as this subject is, students are failing at an alarming rate in both internal and external examinations like West African Examination Council and National Examination Council. There are various factors responsible for the poor performance of students in Mathematics in which the use of instructional resources in the teaching – learning process is one. According to Oguntuase, Awe & Ajayi (2013), availability and adequacy of teaching/learning resources promote the effectiveness of schools as these are basic things that can trigger good academic performance in the students. These materials can be used to encourage, promote and facilitate teaching and learning of Mathematics.

According to Adebule & Akomolafe (2014), survey from schools revealed that there are inadequate good instructional materials. Also, Okobia (2011) observed that the instructional materials available in schools are grossly inadequate. The most available instructional materials are textbook and chalkboards. Ekpo (2001) also observed that of all the problems plaguing education in Nigeria, the most intractable is the dearth of relevant instructional resources. Teachers depended mostly on textbooks and chalkboards as instructional materials while other relevant instructional materials such as charts, mathematical sets, plane shapes, measuring tapes, meter rule, slides and projectors were sparingly used.

Oluwatayo and Adebule (2009) see evaluation as such activities that involve gathering of valid information on attainment of educational objectives, analyzing and fashioning information to aid judgment and effectiveness of an educational programme. According to Aduloju (2009), evaluation is the appraisal, judgmental in addition to the decision-making characteristics where the worth of something as to its desirability or non – desirability will be summarily determined.

Evaluation helps to determine the efficacy of the instructional materials, the extent to which it has been used and the judgmental value on performance of secondary school students in mathematics. That is, it focuses on the worthiness, effectiveness, efficiency such as assessing the worth, value and credibility of the materials.

### Statement of the Problem

Mathematics is a core subject offered in the Secondary School educational system. There appears to be inadequate evaluation procedure put in place to ascertain whether the instructional materials for teaching the subject are available, adequate, functioning and properly utilized. Hence, it calls for attention.

### Purpose of the Study

The study evaluated the instructional resources commonly used in the teaching of Mathematics in secondary schools in Ekiti State. The study determined the availability, adequacy, functionality and frequency of use of Mathematics instructional materials in secondary schools.

### Research Questions

The following research questions were raised for the study

1. How available are the instructional materials in junior secondary schools in Ekiti State for the teaching and learning of Mathematics?

2. Are the available instructional materials for teaching – learning Mathematics in JSS in Ekiti State functional?
3. To what extent do teachers make use of instructional materials in teaching Mathematics

**Methodology**

The study employed the descriptive research design of survey type. The population consisted of all Mathematics teachers teaching in all the public secondary schools in Ekiti State, Nigeria. The sample for the study consisted of 360 Mathematics teachers. The data were analyzed descriptively using bar graphs, frequency counts and percentages.

**Results**

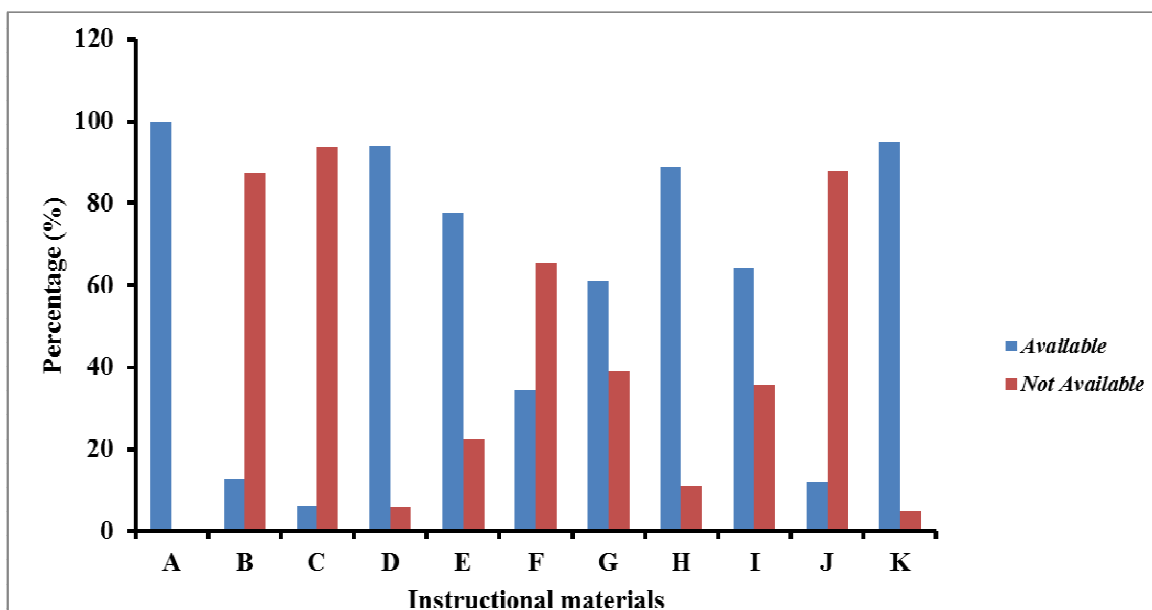
Question 1: How available are instructional materials in Junior Secondary Schools in Ekiti State for the teaching and learning of Mathematics?

**Table 1: Availability of instructional materials in JSS in Ekiti State for teaching – learning Mathematics**

S/N	INSTRUCTIONAL MATERIALS	AVAILABLE		NOT AVAILABLE	
		Freq	%	freq	%
1	Textbooks and workbooks	360	100	-	-
2	Journals	46	12.8	314	87.2
3	Magazines	22	6.1	338	93.9
4	Metre Rule	339	94.1	21	5.9
5	Plane Shapes	280	77.8	80	22.2
6	Internet Services	124	34.4	236	65.6
7	Measuring tape	220	61.1	140	38.9
8	Diagrams,Charts	320	88.9	40	11.1
9	Posters, maps	231	64.2	129	35.8
10	Slide and projectors	43	11.9	317	88.1
11	Mathematical sets	342	95	18	5.0

Table 1 shows that textbooks and workbooks (100%), metre rule (94.1%), plane shapes (77.8%), measuring tape (61.1%), diagrams and charts (88.9%), posters and maps (64.2%) and mathematical sets (95%) are readily available in JSS classes in Ekiti State for teaching – learning Mathematics. However, the results indicate that instructional materials such as journals (12.8%), magazines (6.1%), internet services (34.4%), slide and projector (11.9%) are either not available or short in supply in JSS in Ekiti State.

**Figure 1: Multiple Bar Graph showing the availability of instructional materials in JSS in Ekiti State for teaching-learning mathematics**



**Figure 1: Availability of instructional materials in JSS in Ekiti State for teaching-learning Mathematics**

**KEY:**

- |                                   |                             |                             |
|-----------------------------------|-----------------------------|-----------------------------|
| <b>A:</b> Textbooks and workbooks | <b>B:</b> Journals          | <b>C:</b> Magazines         |
| <b>D:</b> Metre rule              | <b>E:</b> Plane shapes      | <b>F:</b> Internet services |
| <b>G:</b> Measuring tape          | <b>H:</b> Diagrams, charts  | <b>I:</b> Posters, maps     |
| <b>J:</b> Slide and projectors    | <b>K:</b> Mathematical sets |                             |

From figure 1 above, Textbooks and workbooks are readily available. Also, other instructional materials like metre rule, plane shapes, diagrams/ charts and mathematical sets are also available. The result also indicated that instructional materials like internet services, posters and maps are in short supply while slides and projectors are either in short supply or not available.

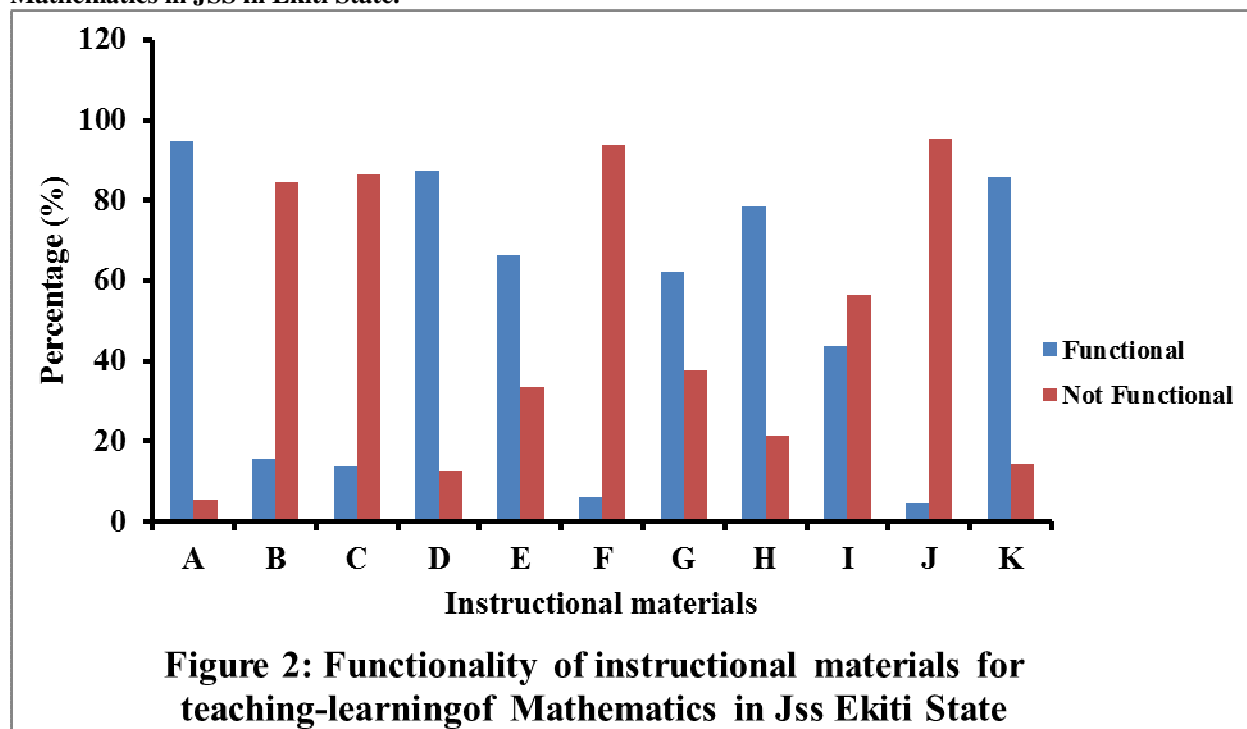
**Question 2:** Are the available instructional materials for teaching and learning Mathematics in JSS in Ekiti State functional?

**Table 2: Functionality of instructional materials for teaching – learning of Mathematics in JSS in Ekiti State**

S/N	INSTRUCTIONAL MATERIALS	FUNCTIONAL		NOT FUNCTIONAL	
		Freq	%	freq	%
1	Textbooks and workbooks	341	94.7	19	5.3
2	Journals	56	15.6	304	84.4
3	Magazines	49	13.6	311	86.4
4	Metre Rule	315	87.5	45	12.5
5	Plane Shapes	239	66.4	121	33.6
6	Internet Services	22	6.1	338	93.9
7	Measuring tape	224	62.2	136	37.8
8	Diagrams,Charts	283	78.6	77	21.4
9	Posters, maps	157	43.6	203	56.4
10	Slide and projectors	16	4.5	344	95.5
11	Mathematical sets	309	85.8	51	14.2

The results in Table 2 reveal that the available instructional materials in JSS in Ekiti State are functioning to a certain extent. That is, text books and workbooks (94.7%), meter rule ( 87.5%), plane shapes (66.4%), measuring tape (62.2%), diagrams, charts(78.6%), posters and maps (44.4%) and mathematical sets (85.8%).

**Figure 2: Multiple Bar Graph showing functionality of instructional materials for teaching – learning of Mathematics in JSS in Ekiti State.**



**KEY:**

- |                                   |                             |                             |
|-----------------------------------|-----------------------------|-----------------------------|
| <b>A:</b> Textbooks and workbooks | <b>B:</b> Journals          | <b>C:</b> Magazines         |
| <b>D:</b> Metre rule              | <b>E:</b> Plane shapes      | <b>F:</b> Internet services |
| <b>G:</b> Measuring tape          | <b>H:</b> Diagrams, charts  | <b>I:</b> Posters, maps     |
| <b>J:</b> Slide and projectors    | <b>K:</b> Mathematical sets |                             |

From figure 2 above, textbooks, metre rule and mathematical sets are functioning at a very high rate while measuring tape is functioning but not at a very high rate. Also, materials like internet services, slides and projectors are not functioning.

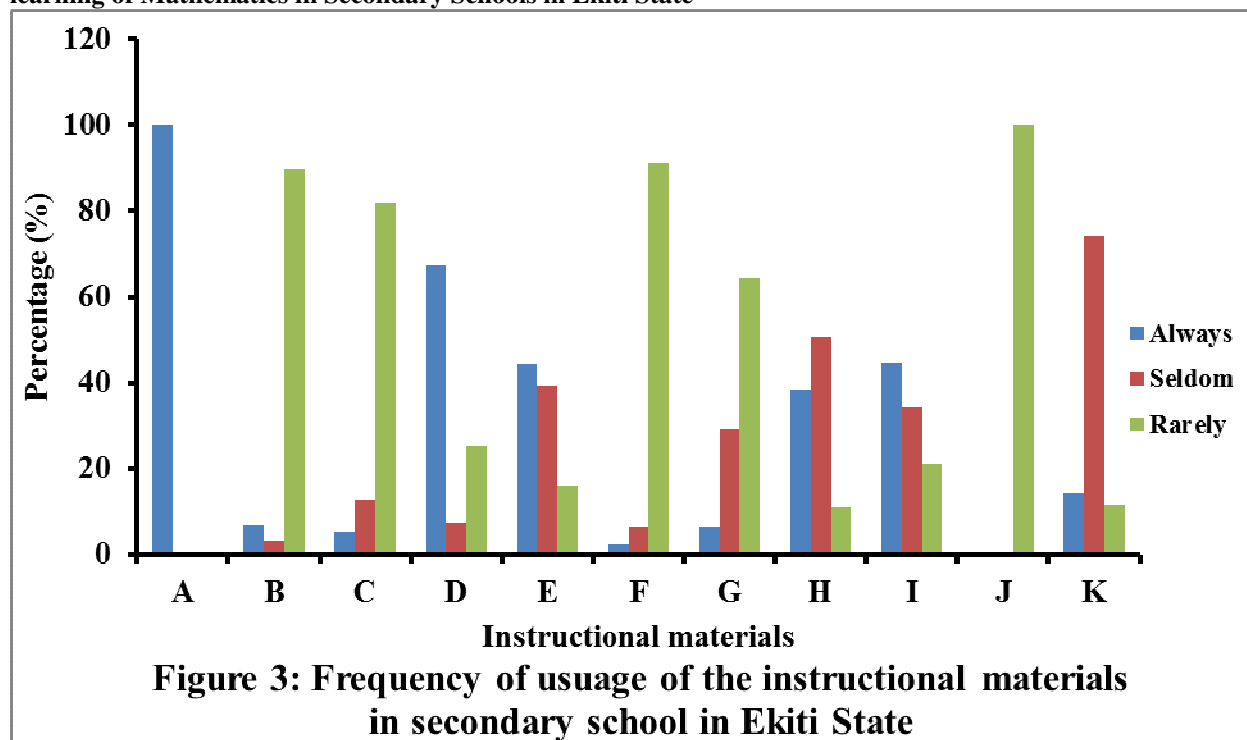
Question 3: What is the frequency of usage of the instructional resources in secondary schools in Ekiti State?

**Table 3: Frequency of usage of instructional materials for the teaching and learning of Mathematics in Secondary Schools in Ekiti State**

S/N	INSTRUCTIONAL MATERIALS	ALWAYS		SELDOM		RARELY	
		freq	%	freq	%	freq	%
1	Textbooks and workbooks	360	100	-	-	-	-
2	Journals	25	6.9	12	3.3	323	89.7
3	Magazines	19	5.3	46	12.8	295	81.9
4	Meter Rule	242	67.2	27	7.5	91	25.3
5	Plane Shapes	160	44.4	142	39.4	58	16.1
6	Internet Services	9	2.5	23	6.4	328	91.1
7	Measuring tape	23	6.4	105	29.2	232	64.4
8	Diagrams, Charts	138	38.3	182	50.6	40	11.1
9	Posters, maps	161	44.7	123	34.2	76	21.1
10	Slide and projectors	-	-	-	-	360	100
11	Mathematical sets	51	14.2	267	74.1	42	11.7

The results in Table 3 above shows that text books are fully utilized since it has a percentage of 100%. Also, meter rule (67.2%) are also put into use. Mathematical sets were seldom used. However, instructional materials like measuring tape (6.4%), plane shapes (44.4%), diagrams and charts (38.3%), posters and maps (44.7%) are underutilized. It was also indicated that slides and projectors(0%) was not put into use.

**Figure 3: Multiple Bar Graph showing frequency of usage of instructional materials for the teaching and learning of Mathematics in Secondary Schools in Ekiti State**



**KEY:**

- |                                   |                             |                             |
|-----------------------------------|-----------------------------|-----------------------------|
| <b>A:</b> Textbooks and workbooks | <b>B:</b> Journals          | <b>C:</b> Magazines         |
| <b>D:</b> Metre rule              | <b>E:</b> Plane shapes      | <b>F:</b> Internet services |
| <b>G:</b> Measuring tape          | <b>H:</b> Diagrams, charts  | <b>I:</b> Posters, maps     |
| <b>J:</b> Slide and projectors    | <b>K:</b> Mathematical sets |                             |

From the result in the figure above, it is quite evident that the instructional resources are underutilized except for Textbooks, meter rule, diagrams/charts, posters and maps.

**Discussion**

The findings of this study show that instructional materials are available for the teaching of Mathematics in Junior Secondary Schools in Ekiti State but they are not enough. This implies inadequate instructional materials for teaching Mathematics in our schools. This finding corroborates that of Adelusi (2006) and Adebule (2009). Most of the few available instructional materials were not functional as almost all the teachers make use of textbooks and workbooks more than all the other materials except for meter rule. This means that the few available materials were not put into good use. This could be as a result of power failure, inability to use the materials or ignorance of their importance to teaching as in the case of the internet services according to Ayoola (2015). This implies that the teachers have not realized the importance of these instructional materials. This is in line with the findings of Kadzera (2006), Afolabi and Adeleke (2010), Dahar and Faize (2011).

**Conclusion**

There are inadequate instructional materials and resources for the teaching and learning of Mathematics in schools. Most teachers do not use the available materials effectively well for fear of wasting their time (since some of the teachers teach more than 30 periods per week). The lack of necessary instructional materials and resources reduces the students to mere passive participants in the learning process.

Also, the fact that Mathematics teachers are not adequate in schools does not give room for proper usage of instructional materials. They dwell more on the number of classes they will cover per day rather than focusing on the use of instructional materials for effective learning and teaching. They dwell more on ‘what to teach’ and not ‘how to teach’. In general, students will perform better in Mathematics provided they are allowed to interact or participate effectively in the teaching – learning process through the use of instructional materials.

## Recommendations

Based on the findings of this study, the following recommendations were made,

- i. There is need for the government at all levels to provide instructional materials and resources for the teaching of Mathematics in secondary schools.
- ii. Government should recruit more Mathematics teachers to teach in the schools. This will reduce excess workload of Mathematics teachers thereby encouraging them to use instructional materials effectively.
- iii. Principals and officials of the Ministry of Education, Science and Technology should ensure regular supervision to enhance effective use of instructional materials and resources in the teaching of Mathematics in Schools.

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