



Assessment of Availability and Teachers Utilization of Instructional Materials in Teaching Mathematics in Secondary Schools in Kwande Local Government Area

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ABSTRACT

This research adopts the descriptive survey research design to investigate the assessment of availability and utilization of instructional materials in teaching Mathematics in secondary schools. four research questions were asked in the study with 2 research hypotheses were formulated and tested at 0.05 level of significance. The sample size was 70 teachers. This sample size is gotten through random sampling technique. The area of the study was Kwande Local Government Area. The instrument used was a questionnaire titled "Assessment of Availability and Teachers Utilization of Instructional Materials in Teaching Mathematics in Secondary Schools Questionnaire (AATUIMTM)" was used to gather information from respondents. The instrument was also validated by experts. The research questions were answered using mean and standard deviation while the hypotheses were tested using chi-square statistics. The study found that Secondary School teachers significantly utilize available instructional materials in teaching Mathematics. The study also found that there is a significant difference between male and female teachers' utilization of instructional materials for teaching mathematics in secondary schools. This shows that the male teachers make use of instructional materials in teaching mathematics more than their female counterparts.

Keywords: Assessment, Gender, instructional material and Mathematics

Introduction

The use of instructional materials is indispensable in the teaching and learning process. They are essential tools which enhance the assimilation, comprehension, application and retention of concepts in any subject. Instructional materials are used to make teaching and learning more meaningful and comprehensible to learners (Obidile & Obi, 2020). Tamakloe, Amedale and Atta (2005) defined instructional materials as those resources used to facilitate teaching and learning. Bashir (2018) asserted that instructional resources are people, events, places or materials that are used to enhance learning, usually by simplifying a difficult situation or making uninteresting learning attractive.

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. Achimugu (2016) reported that most instructional materials for teaching science were neither available or utilized for teaching-learning process. The implication of these conflicting reports calls for more research efforts in this direction

The following research questions were asked to guide the study;

1. To what extent are instructional materials available for the learning of Mathematics in Secondary Schools in Kwande Local Government Area of Benue State.
2. To what extent do teachers utilize the available instructional materials in teaching Mathematics in Secondary Schools in Kwande Local Government Area of Benue State.
3. To what extent do male and female teachers utilize the available instructional materials in teaching mathematics in Secondary schools in Kwande Local Government Area of Benue State.
4. Which factors affect the effective utilization of instructional materials for teaching Mathematics in Secondary Schools in Kwande Local Government Area of Benue State.

The following hypotheses were formulated and tested at 0.05 level of significance.

1. Secondary School teachers do not significantly utilize the available instructional materials in teaching mathematics.
2. There is no significant difference between male and female teachers utilization of instructional materials for teaching mathematics in

secondary schools in Kwande Local Government Area.

Methodology

This research adopts the descriptive survey research design to investigate the assessment availability and utilization of instructional materials in teaching Mathematics in secondary schools. Survey design involves a number of data-gathering where psychometric tools and procedures are used. These include questionnaires, tests, checklists, rating scales, score cards, inventories, interviews, etc. The descriptive survey design has been adopted considering the fact that this study focused on the assessment of availability and teacher's utilization of instructional materials for teaching mathematics in different secondary schools and has very little to bear on scientific observation. The design is also justifiable since utilization of instructional material vary from one teacher to another as well as from one school and environment to the other. The area of the study is Kwande Local Government Area. Kwande local government area is made up has fifteen council wards but sixteen traditional districts and its headquarters been Adikpo. The sample size was 70 teachers. This sample size is gotten through random sampling technique.

The questionnaire titled "Assessment of Availability and Teachers Utilization of Instructional Materials in Teaching Mathematics in Secondary Schools Questionnaire (AATUIMTM)" was the instrument used to gather information from respondents. The instrument consists of Sections A and B. Section A seeks information on the demographic aspect of respondents while Section B consists of thirteen (11) questions which seeks information on assessment of Availability and Teachers Utilization of Instructional Materials in Teaching mathematics. The instrument consists of rating on availability and utilization of the instructional materials. The questionnaire was adopted for this research because it enabled the respondents to give quick and exact answers to the items contained on it. It also has all the options on it for the respondents to tick easily. The instruments was validated by experts and reliability, Cronbach's alpha (α) of 0.84 was gotten.

In order to collect data for the study, the researcher personally visited the selected research area and administered the questionnaire to the selected 70 respondents in each of the selected secondary schools. The selected respondents were given 15 minutes to fill their questionnaire before the researcher retrieved them for analysis. On the whole, the researcher and assistant issued out a total number of 70 questionnaires. The study further employed the use of chi-square statistics to assess Teachers utilization of available instructional materials in teaching Mathematics.

Result

Research Question 1

To what extent are instructional materials available for the learning of Mathematics in secondary schools in Kwande Local Government Area of Benue State?

Table 1: Mean and Standard deviation of the response to the extent to which instructional materials are available for the learning of mathematics

S/N	Items	$\bar{x}$	SD	Remark
1.	Instructional materials for teaching mathematics are adequately available in my school	2.70	0.92	Agreed
2.	My school make use of improvised instructional materials for teaching and learning of mathematics	2.43	1.25	Disagreed
3.	My school principal will prefer buying football and other athletics facilities rather than mathematics teaching aids	1.73	1.13	Disagreed
4.	There are no functional libraries and mathematics laboratories in my school	2.73	0.95	Agreed
	Grand Mean	2.40	1.06	Disagreed

Table 1 shows the extent to which instructional materials are available for the learning of mathematics. Item four (4) which says there are no functional libraries and mathematics laboratories in my school was accepted with the highest mean of 2.73 which is greater than 2.5 and a standard deviation of 0.95. Item one (1) which says instructional materials for teaching mathematics are adequately available in my school had a mean of 2.70 which is greater than 2.5 and a standard deviation of 0.92, hence accepted. Item two which says my school make use of improvised instructional materials for teaching and learning of mathematics had a mean of 2.43 which is less than 2.5 and a standard deviation of 1.25, hence item two was rejected. Item three (3) which says my school principal will prefer buying football and other athletics facilities rather than mathematics teaching aids had a mean score of 1.73 which is less than 2.5 and a standard deviation of 1.13. Hence item three was rejected. The Grand mean in Table one is 2.40 which shows the low extent to which instructional materials are available for the learning of mathematics in secondary schools.

Research question 2

To what extent do teachers utilize the available instructional materials in teaching Mathematics in secondary schools in Kwande Local Government Area of Benue State?

Table 2: Mean and Standard deviation on the response to the extent of utilization of available instructional materials by mathematics teachers

S/N	Items	$\bar{x}$	SD	Remark
1.	I prefer teaching mathematics concepts without using instructional materials	3.11	0.84	Agreed
2.	I feel teaching aids or using instructional materials for teaching will not make any impact on the academic achievements of students in mathematics	2.43	1.07	Disagreed
3.	Teachers should use instructional materials to make mathematics real	3.26	0.88	Agreed
Grand Mean		2.93	0.93	Agreed

Table 2 shows the extent of utilization of available instructional materials by mathematics teachers with the grand mean of 2.93 which is greater than 2.50. This implies that there is a high level of utilization of the available instructional materials by mathematics teachers in teaching mathematics in secondary schools. Hypothesis 1 was tested to ascertain how significant teachers utilize the available instructional materials in teaching mathematics.

Research Question 3

To what extent do male and female teachers utilize the available instructional materials in teaching mathematics in secondary schools in Kwande Local Government Area of Benue State?

Table 3: Mean and Standard deviation on the response to the extent to which male and female teachers utilize the available instructional materials in teaching mathematics

Gender	Q8		Q9		Q10		Grand Mean
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	
Male	3.11	0.81	2.41	1.06	3.41	0.81	2.98
Female	3.12	0.84	2.43	1.07	3.26	0.88	2.94

Table 3 shows the extent to which male and female teachers utilize the available instructional materials in teaching mathematics. The grand mean for male and female teachers is 2.98 and 2.94 respectively. From the grand mean, it is seen that the male teachers utilize the available instructional materials more than the female teachers. To show if the difference in the utilization of instructional materials between the male and female teachers is significant, hypothesis 2 was tested at 0.05 level of significance.

Research Question 4

Which factors affect the effective utilization of instructional materials for teaching mathematics in secondary schools in Kwande Local Government Area of Benue State?

Table 4: Mean and Standard Deviation of factors affecting effective utilization of instructional materials for teaching mathematics

S/N	Items	$\bar{x}$	SD	Remark
1.	Unavailability of instructional materials and teaching aids increases students loss of interest in mathematics	2.96	0.91	Agreed
2.	Lack of mathematics teachers affect adequate utilization of instructional material	2.79	1.05	Agreed
3.	Effective teaching is hindered by the unavailability and inadequacy of instructional material	2.74	0.93	Agreed
Grand Mean		2.83	0.96	Agreed

From table 4, item five (5) which says unavailability of instructional materials and teaching aids increases students loss of interest in mathematics had a mean of 2.96 which is higher than 2.5, hence it is accepted. Item six (6) which says that lack of mathematics teachers affect adequate utilization of instructional material had a mean of 2.79 which is greater than 2.5, hence it is accepted. Item 7 which says effective teaching is hindered by the unavailability and inadequacy of instructional material had a mean of 2.74, hence it is accepted. The Grand mean in Table four (4) is 2.83 which is

greater than 2.5. This implies that all the factors affect the effective utilization of instructional materials for teaching mathematics in secondary schools.

Hypothesis 1

Secondary school teachers do not significantly utilize the available instructional materials in teaching mathematics

Table 5: Chi-square showing the analysis of utilization of available instructional materials by mathematics teachers

Item	df	χ^2	Asymp.Sig
Chi-square	6	20.000 ^a	0.003
No. of valid case	3		

Table 5 shows that the χ^2 calculated is 20.000^a and sig (p-value) is 0.003. Hence $p < 0.05$, the null hypothesis is rejected. This implies that secondary school teachers significantly utilize the available instructional materials in teaching mathematics.

Hypothesis Two

There is no significant difference between male and female teachers' utilization of instructional materials for teaching mathematics in secondary schools in Kwande Local Government Area.

Table 6: Chi-square showing the analysis of male and female teachers' utilization of instructional materials for teaching mathematics in secondary schools

Item	Observed	Expected	df	χ^2	Asymp.Sig
Male	44	35			
			1	4.629 ^b	0.031
Female	26	35			

Table 6 shows that the χ^2 calculated is 4.629^b and sig (p-value) is 0.031. Hence $p < 0.05$, the null hypothesis is rejected. This implies that there is a significant difference between male and female teachers' utilization of instructional materials for teaching mathematics in secondary schools. This shows that the male teachers make use of instructional materials in teaching mathematics more than their female counterparts.

Discussion

Table 1 shows the extent to which instructional materials are available for the learning of mathematics. Item four (4) which says there are no functional libraries and mathematics laboratories in my school was accepted with the highest mean of 2.73 which is greater than 2.5 and a standard deviation of 0.95. Item one (1) which says instructional materials for teaching mathematics are adequately available in my school had a mean of 2.70 which is greater than 2.5 and a standard deviation of 0.92, hence accepted. Item two which says my school make use of improvised instructional materials for teaching and learning of mathematics had a mean of 2.43 which is less than 2.5 and a standard deviation of 1.25, hence item two was rejected. Item three (3) which says my school principal will prefer buying football and other athletics facilities rather than mathematics teaching aids had a mean score of 1.73 which is less than 2.5 and a standard deviation of 1.13. Hence item three was rejected. The Grand mean in Table one is 2.40 which shows the low extent to which instructional materials are available for the learning of mathematics in secondary schools. This implies that, there are no available instructional materials for learning of mathematics in secondary schools.

Table 2 shows the extent of utilization of available instructional materials by mathematics teachers with the grand mean of 2.93 which is greater than 2.50. This implies that there is a high level of utilization of the available instructional materials by mathematics teachers in teaching mathematics in secondary schools. Hypothesis 1 was tested to ascertain how significant teachers utilize the available instructional materials in teaching mathematics. Hypothesis 1 in Table 5 shows that the χ^2 calculated is 20.000^a and sig (p-value) is 0.003. Hence $p < 0.05$, the null hypothesis is rejected. This implies that secondary school teachers significantly utilize the available instructional materials in teaching mathematics.

Table 3 shows the extent to which male and female teachers utilize the available instructional materials in teaching mathematics. The grand mean for male and female teachers is 2.98 and 2.94 respectively. From the grand mean, it is seen that the male teachers utilize the available instructional materials more than the female teachers. To show if the difference in the utilization of instructional materials between the male and female teachers is significant, hypothesis 2 was tested at 0.05 level of significance. Hypothesis 2 in Table 6 shows that the χ^2 calculated is 4.629^b and sig (p-value) is 0.031. Hence $p < 0.05$, the null hypothesis is rejected. This implies that there is a significant difference between male and female teachers' utilization of instructional materials for teaching mathematics in secondary schools. This shows that the male teachers make use of instructional materials in teaching mathematics more than their female counterparts.

From table 4, item five (5) which says unavailability of instructional materials and teaching aids increases students loss of interest in mathematics had a mean of 2.96 which is higher than 2.5, hence it is accepted. Item six (6) which says that lack of mathematics teachers affect adequate utilization of instructional material had a mean of 2.79 which is greater than 2.5, hence it is accepted. Item 7 which says effective teaching is hindered by the unavailability and inadequacy of instructional material had a mean of 2.74, hence it is accepted. The Grand mean in Table four (4) is 2.83 which is greater than 2.5. This implies that all the factors affects the effective utilization of instructional materials for teaching mathematics in secondary schools.

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