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Factors Militating Against Improvisation and Utilization of Instructional Materials for Effective Teaching of Mathematics in Cross River State Secondary Schools

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***Abstract* - This study investigated the factors militating against improvisation and utilization of instructional materials for effective teaching and learning of Mathematics in Cross River State Secondary Schools. Descriptive survey design was used. All teachers currently teaching Mathematics in the State formed the population for the study. This gave the population size of 1,500 Mathematics teachers in public secondary schools in Cross River State. The schools were later stratified into urban and rural areas. Out of a 1,500 Mathematics teachers, a sample of 150 representing 10% of the entire population was drawn through the Stratified Random Sampling technique. Improvised Mathematics Instructional Materials Questionnaire (IMIMQ) was developed, validated and used for collection of relevant data. The reliability coefficient of the instrument was assessed with Cronbach's Alpha and yielded 0.80 which is an indicator of appreciable gain in reliability. Three research questions and three hypotheses were formulated to guide the investigation. Mean, standard deviation and t-statistics were used in analyzing data. The finding of the study revealed that the problems faced by Mathematics teachers during improvisation and utilization of instructional materials include financial constraints, lack of skills and strategies on improvisation and utilization, large class size, time constraint, unavailability of tools and lack of exposure on improvisation. The study also showed that these problem faced by teachers were not gender and location sensitive as there was no significant difference in the mean responses of male and female or urban and rural Mathematics teachers on improvisation and utilization of instructional materials. Recommendations were made among others that seminars and workshop on improvisation and utilization of instructional materials be organized for Mathematics teachers in Cross River State Secondary Schools by the authorities concerned.**

Keywords: Instructional materials, Improvisation, Teaching and Learning, Cross River State.

1. Introduction

Mathematics is one of the core subjects in the primary school curriculum. It occupies a central place among other school core subjects in Nigeria. Its importance cannot be overemphasized as it contributes to the study of most other subjects. This underscores why the subject is made compulsory at primary and secondary school levels of education in Nigeria. The teaching of Mathematics in school represents a basic preparation for adult life and a gateway into a vast array of career choices. Mathematics as we all know is the "queen of all sciences" and no nation can hope to achieve any measure of scientific and technological advancement without adequate foundation in Mathematics.

Despite these noble roles of Mathematics in life and modern civilization, it is regrettable that the strategies for teaching and learning of this subject at both primary and secondary levels are still not encouraging. This situation has resulted in students' poor performance in Mathematics tests and public examinations. The nation as a whole and Cross River State in particular has suffered very serious setbacks due to the general low performance in Mathematics results. Consequently, the urge to pursue Mathematics related disciplines in institutions of higher learning greatly deteriorates. Several factors are responsible for students' low performance in Mathematics such as; negative attitude of students toward Mathematics, poor instructional strategies, language problems, difficulty paying attention, lack of practice and inadequate instructional materials among others, [11], [12].

Instructional materials are essential tools needed for teaching and learning of school subjects to promote teachers' efficiency and improve students' performance. The use of

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instructional materials also makes learning more interesting, practical, realistic and appealing. Likewise, it enables both the teachers and students to participate actively and efficiently in lesson session. Students have shown that proper utilization of instructional resources foster learning. Pupils' interest in science and Mathematics would be stimulated and sustained if they were given opportunity to manipulate Mathematics instructional resources. In this way seemingly difficult concepts would be clarified and self-learning would be promoted. The use of instructional materials gives room for students' acquisition of skills, knowledge, self-development and self-actualization. Some research has reported that lack and non-use of instructional materials is one of the major contributors to students' poor achievement in Mathematics [3], [2], [4], and [14].

More so, when instructional materials are properly used, the following could be achieved;

1) They make teaching of concepts more meaningful, this enhances good retention.
2) They supply a concrete basis for conceptual thinking and reduced meaningless word responses.
3) They elicit a high degree of interest in pupils.
4) They provide for continuity of thought (this is especially true pictures and mental projection).
5) They offer realistic experiences which strengthen self-activity on a part of the pupils.

Finally the urge to reduce abstract concepts to concrete form and also to address the problem of the shortages of instructional materials in order to ensure that learners assimilate with ease what they are expected to learn in a given lesson lead to improvisation of instructional materials.

Improvisation is a skill which every resourceful teacher at any level of our educational system must develop for effective service delivery. Improvisation enables the teachers to function maximally in classroom setting as well as enhance learning efficiency and effectiveness. Improvisation is the process of using alternative materials for enhancing the teaching/learning process where there is absence of the standard instructional materials. It is an attempt to make use of local resources in the teaching/learning process when the ready-made (standard) materials are not available or are not within the reach of the users, [7].

The merit of improvisation includes:

1) It makes the lesson relevant to the child and his/her environment
2) It suits the learners' local background
3) Promotes creativity on the part of the teachers and students
4) It helps the students to acquire and develop manual skills
5) It stimulates the students' interest in Mathematics/Science
6) It reduces verbalization and provides interest on the students.

It should however be noted that improvisation requires creativity, curiosity and perseverance on the part of the teacher [10], in spite of the importance of instructional materials in the teaching and learning process of Mathematics. Related studies had been conducted elsewhere but none to the knowledge of the researcher had been conducted in Cross River State. This paper thus seeks to find out the perceived problems encountered by serving Mathematics teachers in Cross River State that do not allow them improvised.

1.1 Statement of research problem

In spite of the emphasis on the use of instructional materials in the teaching processes, it has been observed that secondary school Mathematics teachers in Cross River State teach the subject without instructional materials for the single fact that they are not available in schools. This observation has posed a serious constraint in the teaching and learning of Mathematics in secondary schools in the State. This observed problem can be attributed to a number of factors such as lack of financial support from the principals, lack of skills and strategies for improvisation and large class size arising from free and compulsory secondary education in the State. Other factors includes time constraint, school location where most secondary school are located in rural areas of the State, unavailability of producer goods or tools, inability to identify local materials and lack of exposure on improvisation on the part of Mathematics teachers. It is therefore the problem for this study to provide empirical data to these perceived problems.

1.2 Purpose of the study

The main purpose of the study is to investigate the factors militating against improvisation and utilization of instructional materials for effective teaching and learning of Mathematics in Cross River State secondary schools. Specifically, the study is designed to identify:

1) The problems encountered by Mathematics teachers in Cross River State in the process of improvising and utilizing instructional materials for Mathematics teaching
2) Secondly, the study aimed at determining whether these problems or constraints are location and gender based
3) Problem associated with the utilization of instructional materials by Mathematics teachers in secondary schools.

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1.3 Research questions

1) What problems do secondary schools Mathematics teachers encounter in the process of improvising instructional materials?
2) What problems do secondary school Mathematics teachers encounter in the process of improvising instructional materials based on location?
3) What problems do secondary schools Mathematics teachers encounter in the process of improvising instructional materials based on gender?
4) What problems are associated with the utilization of instructional materials by teachers of Mathematics in secondary schools?

1.4 Research hypotheses

1) There is no significant difference between rural and urban secondary school Mathematics teachers in the mean responses on perceived problems of improvisation and utilization of instructional materials
2) There is no significant difference between male and female Mathematics teachers in their mean responses on perceived problems of improvisation and utilization of instructional materials based on gender
3) There is no significant difference between the mean responses of male and female Mathematics teachers on the perceived problems of improvisation and utilization of instructional materials based on location.

2. Methodology

The design of the study was survey design. All teachers currently teaching Mathematics in the State formed the population for the study. This gave the population size of 1,500 Mathematics teachers in public secondary schools in Cross River State. The schools were later stratified into urban and rural areas. Out of a total of 1,500 Mathematics teachers, a sample of 150 representing 10% of the entire population was drawn through the Stratified Random Sampling technique (80 males and 70 females). The instrument "Improvised Mathematics Instructional Materials Questionnaire (IMIMQ)" was developed, validated and used for collection of relevant data. The questionnaire was made up of two sections, A and B. Section A sought information on personal data (sex and educational qualification) while section B sought information on problems encountered by teachers in improvising and utilizing instructional materials for the teaching and learning of Mathematics.

The instrument was an 8-item questionnaire based on a 4-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD), which were assigned numerical values of 4,3,2 and 1 respectively. The instrument was face validated by two experts in Mathematics Education, one each from University of Cross River State, Calabar and Cross River State College of Education, Akamkpa both in Cross River State of Nigeria. The instrument was trial tested on 20 Mathematics teachers who were not part of the sample for the study but within the population of the study. The reliability coefficient of the instrument determined using Cronbach's Alpha was 0.80 which was an indicator that the instrument was reliable and could therefore be used for the study. The research questions were answered using mean and standard deviation. The mean value of the response categories on the scale was 2.50. Therefore, any item statement with a mean of 2.50 was regarded as agreed while an item less than the mean of 2.50 was regarded as disagreed.

2.1 Results

The finding of the study is presented as follows:

Research question 1: What problems do secondary school Mathematics teachers encounter in the process of improvising instructional materials?

Table 1: Mean and standard deviation result on the problems faced by mathematics teachers in improvisation and utilization of instructional materials

No.	Item	$\bar{x}$	SD	Decision
1.	Financial constraints	3.73	0.37	Accepted
2.	Lack of skills and strategies on improvisation	2.84	0.53	Accepted
3.	Large class size	3.04	0.40	Accepted
4.	Time constraint	3.10	0.44	Accepted
5.	School location	3.02	0.46	Accepted
6.	Unavailability of tools	2.82	0.46	Accepted
7.	Inability to identify local materials	1.82	0.53	Not Accepted
8.	Lack of exposure on improvisation	2.62	0.51	Accepted

Table 1 provides the answer to research question 1. It was found out that mathematics teachers have problems in improvising instructional materials in secondary schools in Cross River State, Nigeria. The problems encountered were identified as financial constraints, lack of skills and strategies on improvisation, large class size, time constraint, school location, unavailability of tools and lack of exposure on improvisation. The respondents disagree that the inability of mathematics teachers to appreciate the need to use the instructional materials is an associated problem during instruction.

Testing of hypotheses

Hypothesis I: There is no significant difference between rural and urban schools mathematics teachers in their mean responses on perceived problems of improvisation of instructional materials.

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Table 2: t-test analysis of the mean response on problems faced by mathematics teachers during improvisation based on location

S/N	Source of variation		N	$\bar{X}$	SD	df	t-cal	t-crit	Decision	P<0.05
1.	Financial constraint	Urban vs.	85	3.67	0.31	148	1.02	2.05	Retain	$H0_1$
		Rural	65	2.04	0.42					
2.	Lack of skills and strategies on improvisation	Urban vs.	85	3.64	0.30	148	1.18	2.05	Retain	$H0_1$
		Rural	65	2.04	0.42					
3.	Large class size	Urban vs.	85	2.54	0.29	148	1.62	2.05	Retain	$H0_1$
		Rural	65	3.54	0.34					
4.	Time constraint	Urban vs.	85	2.60	0.38	148	2.01	2.05	Retain	$H0_1$
		Rural	65	3.50	0.42					
5.	School location	Urban vs.	85	2.52	0.32	148	1.82	2.05	Retain	$H0_1$
		Rural	65	3.60	0.41					
6.	Unavailability of tools	Urban vs.	83	2.22	0.42	148	0.82	2.03	Retain	$H0_1$
		Rural	65	3.12	0.52					
7.	Inability to identify local materials	Urban vs.	65	1.60	0.48	148	1.82	2.05	Retain	$H0_1$
		Rural	85	2.90	0.57					
8.	Lack of exposure on improvisation	Urban vs.	85	3.90	0.57	148	1.82	2.03	Retain	$H0_1$
		Rural	65	2.30	0.63					

Table 2 showed that the analysis of the mean response of both urban and rural mathematics teachers on the problems encountered in the process of improvisation of instructional materials for mathematics classroom teaching. The results revealed t-calculated values in all the perceived problems to be less than the t-critical values in all the perceived problems faced by Mathematics teachers in both urban and rural schools except in the problem of inability to identify local materials. This means that Mathematics teacher in Cross River State faced the same problems in sourcing for local instructional materials irrespective of inability to identify local materials.

Hypothesis 2: This hypothesis states that there is no significant difference between male and female secondary school Mathematics teachers in the mean responses on perceived problems of improvisation of instructional materials.

Table 3: t-test analysis of the mean response on problems faced by mathematics teachers on improvisation of instructional materials based on gender

S/N	Source of variation		N	$\bar{X}$	SD	df	t-cal	t-crit	Decision	P<0.05
1.	Financial constraint	Male vs.	80	3.67	0.31	148	1.11	2.05	Retain	$H0_2$
		Female	70	3.28	0.32					
2.	Lack of skills and strategies on improvisation	Male vs.	85	3.64	0.30	148	1.12	2.05	Retain	$H0_2$
		Female	70	2.80	0.44					
3.	Large class size	Male vs.	80	3.34	0.44	148	1.17	2.0	Retain	$H0_2$
		Female	70	3.74	0.30					
4.	Time constraint	Male vs.	80	3.28	0.45	148	1.62	2.05	Retain	$H0_2$
		Female	70	2.92	0.31					
5.	School location	Male vs.	80	3.32	0.31	148	1.62	2.05	Retain	$H0_2$
		Female	70	2.72	0.42					
6.	Unavailability of tools	Male vs.	80	3.22	0.46	148	1.72	2.03	Retain	$H0_2$
		Female	70	3.42	0.48					
7.	Inability to identify local materials	Male vs.	70	2.42	0.42	148	2.20	2.05	Retain	$H0_2$
		Female	80	1.80	0.65					
8.	Lack of exposure on improvisation	Male vs.	80	2.70	0.62	148	2.20	2.03	Retain	$H0_2$
		Female	70	2.52	6.57					

Table 3 showed the results of the t-test analysis of the mean responses on perceived problems faced by both male and female Mathematics teachers during improvisation of instructional materials at 0.05 level of significance. The results showed the null hypothesis to being retained in all the perceived problems faced by both male and female Mathematics teachers during improvisation of instructional materials except on item 7 problems, where t-cal (2.20) was greater than t-crit (2.05). What this result means is that there is no significant difference in the mean responses of male and female Mathematics teachers on items 1,2,3,4,5,6 and 8 (problems faced during improvisation of instructional materials). The result further showed a significant difference in the responses of male and female teachers on problem number 7 (inability to identify local materials).

Research question 3: What problems do secondary school Mathematics teachers encounter in the process of utilizing instructional materials?

Table 4: Means and standard deviation results on the problems faced by mathematics teachers in the process of utilizing instructional materials?

S/N	DESCRIPTION OF ITEM	$\bar{X}$	SD	Decision
1.	Instructional materials are not usually available In the school for the teachers to use.	3.37	0.83	Agree
2.	Mathematics teachers are unable to appreciate the need for using instructional materials	2.47	0.90	Disagree
3.	The mathematics teachers are not properly Prepared during pre-services course on the use of Instructional material during lesson	2.58	0.96	agree
4.	The type of teaching methods adopted by teachers During instruction does not favor the use of instructional material for instruction.	2.61	0.85	agree
5.	Mathematics teachers lack the skill to use Instructional materials during classroom Instruction.	2.38	0.85	agree
6.	There is a lack of mathematics laboratories to Facilitate the use of instructional materials	3.22	1.02	agree
7.	The allotted to the teaching of mathematics does Not favor the use of instructional materials during Instruction	2.67	1.08	agree

From the table 4, the respondents disagreed that the inability of the Mathematics teachers to appreciate the need to use the instructional materials is an associated problem during instruction. They however agreed with all other items in the table as problem associated with the utilization of the instructional materials during classroom instruction.

Hypothesis 3: There is no significant of difference between the mean rating of the urban and rural teachers on the problems teachers are facing in utilizing instructional materials.

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Table 5: t-test for mathematics teachers in urban and rural area on the problems the teachers are facing in utilizing instructional materials

Variable	N	$\overline{X}$	SD	DF	t–cal	t- crit	P>0.05
Urban Mathematics teachers vs. Rural Mathematics teachers	86 37	2.06 1.98	1.50 1.41	121	1	1.96	accepted

Note: Table value = 1.96 at 0.05 significant level.

In table 5: the t-value for items 4 data in the above table shoes that the critical values to be (±1.96). The null hypothesis was accepted. This means that there is a significant difference between the mean rating of the urban and rural teachers on the problems facing utilizing instructional materials in Cross River State and the null hypothesis was therefore upheld.

2.2 Discussion

The study has indicated same problems faced by secondary school mathematics teachers in Cross River State during improvisation of instructional materials. The problems identified are financial constraints, lack of skills and strategies on improvisation, large class size, time constraints school location, unavailability of Tools and lack of exposure on improvisation. The findings of this study also showed that secondary school Mathematics teachers irrespective of gender or location in Cross River State do not have problems of identifying local materials for improvisation of instructional materials. That is, gender and location of the teachers do not constitute any constraint during improvisation of instructional materials. The reason for the observed challenges faced by Mathematics teachers during improvisation of instructional material is caused by nonchalant attitudes to work by public servants including teachers in the State public service. This stems from irregular payment of salaries and poor financial support to secondary school by the State government. The results of this study on problems of improvisation of instructional materials agreed with the finding of [8],[13], [15] which revealed that the problem teachers have in improvisation of instructional materials relate mostly to their failure to give thought on constructing functionality, precisions of instructional materials and financial problems.

The result of the study on improvisation of instructional materials further agreed with the finding of [18], [1]who said if a teacher lacks basic instructional materials the effectiveness of his lesson delivery will be limited.

Instructional materials for teaching and learning are sometimes far expensive to be procured; inadequate in supply; obsolete in nature; unsuitable to one socio-cultural milieu or have been over stressed beyond the limits of their minimal effectiveness. [6] Said that the ability to improvise is limited by number factors such as: lack of fund poses the greatest problems to improvisation. [7] Maintains that the inability to improvise is due to lack of inadequate funding. According to him budgetary provisions for instructional materials are hardly enough to buy chalk or duster. It is not possible to design and procure instructional materials without money, [16].

Human limitation: The ability to improvise is limited by the degree of creativity resourcefulness and imagination of the improviser. It is not possible to create something which has not been thought of or imagined or where the competence and requisite skills are lacking.

Lack of Incentive and Motivation: Most teachers are not motivated to make sacrifices towards producing materials either because they are disenchanted with the teaching profession or that they do not have the personal resources to commit to it when they know such commitment will not be Acknowledged.

Another major constraint has to do with copyright law: The Effort of the resourceful teacher to design or adopt what has already been produced may infringe on copy right laws. The original designer may sue him for piracy which is a serious offence.

Some instructional material used for teaching and learning are complex and sophisticated. It follows that such materials cannot be easily improvised. The final factor is attitudinal, most teachers do not have the interest of using materials they see it as burdensome, unnecessary and waste of time and energy. According to [7], [9], [10] most teachers develop and utilize instructional material to teach during micro teaching and teaching practice session and upon certification and appointment as permanent teachers they simply bid farewell to anything instructional materials(improvised or convention).

[1] and [17], [19] confirmed that there are unavailable instructional materials in school for effective teaching and most mathematics teachers are not familiar with most of the materials that could be used for the effective teaching of mathematics. Some of the findings of this study ate in agreement with the above confirmation. Such problems of non utilization of instructional materials include their unavailability in schools, poor teaching method, lack of adequate preparation of teaching during pre-service courses, and lack of Mathematics laboratories to facilitate the use of instructional materials.

The utilization of instructional materials by Mathematics teachers during lessons depends on the kind of training received by the teachers while in training. It will also depend on the availability to aid Mathematics instruction in the

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classroom. The findings imply that there is the urgent need to make instructional materials available in school and train Mathematics teachers that are capable of producing and utilizing instructional materials during classroom instruction.

2.3 Recommendations

The finding of the study showed that secondary school Mathematics teachers in Cross River State face difficulties during improvisation of instructional materials. These problems are not gender or school location sensitive. Based on the findings of this study, it is recommended as follows:

1) The Cross River State government should sponsor all Mathematics teachers to attend seminars and workshop of improvisation of instructional materials.
2) Attendance of such seminars and workshop should be made compulsory for all Mathematics teachers as this will expose them to available local materials, skills and strategies needed for improvisation. This attendance should be used as one of the criteria for promotion and appointment as secondary school principals.
3) The Cross River State Government should make financial provision for improvisation of instructional materials since it is very clear that she is unable to provide enough standard instructional materials for the increased students' in-take.
4) Government and non-governmental organization should sponsor Mathematics teachers on training in improvisation of instructional materials.
5) Principals' heads of Mathematics Department and supervisors from the State Commission should sensitize Mathematics teachers on the potentials of using instructional materials for teaching become more knowledgeably and improvise instructional materials to improve their teaching.
6) Principals of school that have computers should allow Mathematics teachers to use them for teaching.
7) Government should provide a vast array of electronic instructional facilities in Mathematics laboratory workshops.

3. Conclusion

The short supply or absence of standard instructional materials in school has been the set back to fulfilling Mathematics teaching-learning process. Furthermore, some of the few standard instructional materials available do not reflect the local background of students for easy comprehension. This therefore calls for improvisation process as part of the role of Mathematics teachers. In view of the findings of this study, it is hope that implementation of the recommendation would restore the dignity of Mathematics teaching and learning in secondary school in Cross River State in particular and Nigeria at large.

REFERENCES

[1] Adebayo, O. A. (2000) availability of basic teaching/learning materials in mathematics in selected secondary schools on Lagos State. *41st annual conference proceeding of STAN*, 263-266.

[2] Adebempe, A.O. (2005) Improvisation of science teaching resource. *Science Teachers Association of Nigeria (STAN) 40th annual conference proceeding*, 55-60.

[3] Amadi, R. (2002). Harnessing Educational Resources in the teaching of history of sustainable development. *Journal of Teachers Educations* (1) pp 140-141.

[4] Bassey, U. (2002) Science, Technology and Mathematics (STM) Education. *As a part for sustainable industrialization 43rd annual conference of science teachers association of Nigeria (STAN)* 111-113.

[5] Bellow, J.Y. (1981) basic principles of teaching Ibadan: *spectrum Books Ltd*.

[6] Betikee, O. F. (2000) improvisation in mathematics in FCT primary school: how far? *41st annual conference of proceeding of STAN* 339-341.

[7] Eniajeju, I, E. (2005). Improvisation of Effective Learning of Mathematics. *The Education Technical and Science Education journal* 1 (1), 92-93.

[8] Esther, I.T. (2001). Using local Resources in Teaching. *Journal of the royal society of chemistry (RSC) London* 25,718-120.

[9] Etuk Udo,U. E (2000). The effect of improvised instructional materials on Students performance in Mensuration: *41st annual conference of proceeding of STAN* 229-234.

[10] Eya, P. E. (2004). Instructional Materials Production in a challenging educational system. *A paper presented at the annual national conference organized by curriculum development and instructional materials centre (CUDIMAC) university of Nigeria, Nsukka*.

[11] Federal Republic of Nigeria (2004) *national policy on education revised edition Lagos: NERDC press*.

[12] Federal Republic of Nigeria (FRN, 2004) - *National Policy on Education. Lagos, -NERDC.*

[13] Ige, N. P. (2004) poor performance in chemistry in technical college of education course and implications. *Unpublished PGDE project of Ahmadi Bello University, Zaria Nigeria*.

[14] Igwo, I. O, Arop, B. A & Ibe J.O (2013). Problems of improvising instructional materials for the teaching and learning of chemistry, *Journal of science teachers association of Nigeria (STAN)*, 40(1&2) 51-56.

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Volume 7, Issue 8, pp 1-7, August-2023
https://doi.org/10.47001/IRJIET/2023.708001

[15] Obodo, G. C. (2004). Principles and practice of Mathematics Education in Nigeria Division in General studies, *Enugu university of science and technology, E(SUT), Enugu*.

[16] Olaitan, S. O. (1984) Agricultural Education on the Tropics. *London: Mamitha publishers*.

[17] Omeano, C. N. (2006) Skill Required of Mathematics Teachers for Improvisation of Instructional Materials in Secondary Schools. *Unpublished M.ED project: university of Nigeria Nsukka*. 1 (1) 296-306.

[18] Usman, K. O. (2002) The Need to Retrain in Service Mathematics Teachers for attainment of the objective of universal basic education (UBE). *The journal of mathematics association of Nigeria (ABACUS*) 27 (1) 37-44.

[19] Usoro, K.O. & Adewunmi, A.O (2006). Factors responsible for inability of teachers to improvise instructional materials for teaching of mathematics, *Journal of science teachers association of Nigeria (STAN)* 42 (1), 52-56.

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