

Impact of Instructional Material and Self-Motivation on Learning Mathematics and Academic Performance in Public Primary Schools in Awka South

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Abstract

The aim of this study is to examine the impact of instructional materials and self motivation on learning mathematics and academic performance in the public primary schools in Awka South Local Government Area of Anambra State. According to data from Anambra state ministry of Education, there were 644 teachers in the 43 registered public primary schools in Awka South Local Government of Anambra State. The sample, for the study was 180 teachers obtained through stratified random sampling technique based on the names of the schools. Out of the 43 schools in Awka South, 10 schools were randomly selected. The design for the study was cross sectional survey design while data collected were analyzed using Hierarchical Multiple Regression. The results showed that instructional materials, significantly effect learning mathematics and academic performance and self motivation, significantly effect learning mathematics and academic performance in Public Primary Schools in Awka South. Based on the findings, it was recommended that government and parent teachers association should assist primary schools to purchase and develop instructional materials to improve academic performance of pupils.

Keywords: Instructional materials, Self Motivation, Learning, Mathematics, Academic Performance

Introduction

Over the years, there have been problems on how best to teach in order to motivate the students thereby bring about the desired results which is effective and efficient learning. (National Policy on Education, 2021).

Burns (2020) defines learning as a relatively permanent change in behaviour, which includes both observable activities and internal processes like thinking, attitude and emotions. Learning involves the ability to connect previous experience with the new ones. Learning occurs once a learner is able to retain and apply ideas, skills and knowledge in solving any challenge\confronting problems.

Bandura (1978) in his social learning was of the view that certain factors must be present before learning could take place, and such factors include: the learner (who is the observer), the teacher (who is a model), and the learners' attention and proximity. He further stated that the process of learning is influenced by the extent of identification and imitations by the learners to the other three factors. By implication, learners look up to their teachers as role models, imitate them as they teach, try to identify the objects (instructional materials) they use in teaching them, touch, see, experiment and explore these instructional materials in order to make learning concrete.

Anih, (2019) was of the view that chalkboard has been one of the most commonly used visual materials in the classrooms, lecture room and laboratory. The chalkboard\whiteboard is one of the quickest, easiest and often the only way to illustrate important points. It is of course an important teaching material to both the teachers and learners in educational setting. More so, curriculum materials are all the materials that teachers and learners utilize in learning for the purpose of curriculum planning and implementation. Teaching materials are teacher oriented while self motivation are learner oriented (Anih, 2019).

Self Motivation refers to “a student's willingness, need, desire and compulsion to participate in, and be successful in the learning process” (Bomia et al., 2021). Middleton and Spanias (2020) viewed self motivation as reasons individuals have for behaving in a given situation. A more comprehensive definition was provided by Ames (2020) who stated that self motivation exists as part of one’s goal structures, one’s beliefs about what is important and it determines whether or not one will engage in a given pursuit.

The findings support findings of Middleton and Spanias’ (2020) study which concluded that success in mathematics is a powerful influence on the motivation to achieve. However, this study cannot establish whether high level of motivation is the result of high academic performance or whether high instructional materials is the result of high level of academic performance. This finding also confirms conclusive findings from previous researches (Malpass, O’Neil and Hocevar, 2019; Mone, Baker & Jefferies, 2021; Wolf & Smith, 1995) that instructional materials has a high positive correlation with test academic performance outcomes. Consequently, effort is directly influenced by instructional materials and directly affecting academic performance (Bandura, 1993 & Schunk, 1984).

According to Salman, Yahaya, and Adewara, (2019) it is highly needed in science and technology which brings about the economic development and growth of every nation. Unfortunately, this course has been dreaded by so many people who would have gone into science and technology due to inadequate provision of mathematical instructional tools and trained personnel to handle this course. Research has shown that there is gender disparity in the lack of knowledge of mathematics. Mathematics is an important tool in the world of business, technology, economics and sciences, development and growth. In the olden days, people used calculations in a primitive way (using bottle cover and pebbles), but in recent times, more sophisticated machines and gadgets (instructional materials) had been established to aid in the learning of mathematics, though not without human resources.

Statement of the Problem

A lot of research has been carried out and many are ongoing on how best to improve the academic performance of primary school pupils which will in turn boost the economy of this country. Poor provision of teaching and lack of self motivation resources is general in all Nigerian schools at all levels today especially in primary schools where a learner is supposed to get the foundation of his/her academic learning; this however, necessitates this study. There are massive failures in external examinations nationwide and creation of magic centres for examinations are on the high side on daily basis, this simply shows that school children don’t really get qualitative education while in school. Taking a good look into the recent WASCE, NECO and JAMB results respectively in recent times, one will note that poor academic performance is on the increase especially in mathematics and this is a very big problem to the development and growth of this country, indeed it is a great concern to all. This calls for urgent attention to educational setting especially at the preoperational stage in primary school where a child is supposed to have strong foundation. However, the researcher aims to find out why this massive failure and poor academic performance generally in schools at every level especially in mathematics; and to determine the impact of instructional materials and self smotivation on academic performance in the learning of mathematics in the public primary schools in Awka South.

Objective of the Study

The major objective of the study are:

1. To determine the availability of instructional materials for the learning of mathematic in public primary schools in Awka South.
2. To buttress the genres of available self motivation used in the teaching\learning of mathematics in public primary schools in Awka South.

Method

Participants

A total of one hundred and eighty (180) participants comprising eighty-five (85) male teachers and from Enugu Diocese and ninety-five (95) female teachers, randomly selected from ten (10) public primary schools Awka South Local Government of Anambra State, obtained through stratified random sampling technique based on the names of the schools, between the ages of 25-68 years, with mean age of 46.5 and standard deviation of 6.82.

Instruments

Two sets of instruments were used, they are:

Instructional Materials Scale (IMS)

Self Motivational Questionnaire Scale (IMS)

Questionnaire designed by the researcher was used for data collection. The items were designed following the research questions, using the five likert rating scale of Strongly Agree (SA) 5 points, Agree (A) 4 points, Undecided (U) 3 points, Disagree (D) 2 points and Strongly Disagree (SD) 1 point, and available point 1 and not available point 2 for section A items. The questionnaire has 16 items, grouped into four different sections of A, B, C, D. Section A dealt on “available instructional materials in public primary schools in Awka south”. Section B was specifically on “different types of instructional materials used in public primary schools in Awka South to increase academic performance”. Section A used 2 likert rating scale of Available 1 point and Unavailable 2 points. Section C was on “attitudes of teachers towards the use of instructional materials”. And section D dealt on “problems associated with the use of instructional materials to increase academic performance”. The validity of the instrument was carried out by the supervisor and 2 experts in education. They did both the face and content validity of the questionnaire. And they ascertained that the instrument has the capacity to measure what it was purported to measure. Having testified that the instrument was valid by the 3 experts, the researcher was confident and used the instrument on the study.

A 16- item questionnaire on impact of instructional materials in the learning of mathematics was administered on 65 participants. drawn by systematic random sampling from Awka South Local Government of Anambra State,, a two-weeks test-retest reliability check on academic performance in learning mathematics scale yielded a correlation coefficient of .64.

Self Motivation Questionnaire Scale (MQS)

The objective of the MQS was to elicit the opinion of students’ on the motivation of their teachers sought. Section A, for students’ personal information on such variables as sex, age, number of years in present school. The extrinsic teachers’ motivation variables include salary, security, and interpersonal relationship with peer groups, work conditions, interpersonal relationship with subordinates, technical supervision, organization policy and administration (Herzberg, 1959). In generating items on the instrument, the researcher paid much attention to his own personal experience as a teacher and to different motivation theories. In support of this view Millers and Fom (1996) opined that researches have to deal with:

- (a) Intrinsic and extrinsic job satisfaction of teachers
- (b) Involvement of the teachers in the immediate work of the group which constitutes the school
- (c) Identification of the teachers with the organizational and satisfaction from work status

The questionnaire was validated by given copies of the instrument 65 teachers in Secondary Schools in Awka Educational Zone, Anambra State. The reason for this was to avoid the contamination of the instrument. After 14 days the same students were re-administered with the questionnaire on the ground that copies of the first administration were misplaced. The data generated from the two administrations of the instrument were then correlated with Pearson Product Moment Correlation. Following up on the 65 participants drawn by systematic random sampling from Awka South Local Government of Anambra State,, a two-weeks test-retest reliability

check on motivational learning scale yielded a correlation coefficient of .92.

Statistics and Design

Data was collected and analyzed, using Hierarchical Multiple Regression for the research questions analysis for the null hypotheses, and the design for the study was cross sectional survey design. Survey design was adopted for the investigation based on the use of questionnaire in gathering information that was covered a wild range of the target population (Jackson, 2001).

Results

Table1: Mean and Standard Deviation Impact of Instructional Materials, Self Motivation on Learning Mathematics and Academic Performance in Public Primary Schools In Awka South

Variable	Mean	SD	1	2	3	4	5	6	7
Age	17.62	1.61	1	-.08	-.04	-.28**	-.02	.07	.09*
Gender	1.44	.49		1	-.00	-.07	.09	.00	.05
Religion	2.09	.95			1	-.02	-.09	-.19*	.05
MaritalStatus	4.06	.23				1	.02	-.09	.01
InstructMateria	29.14	5.51					1	.02	.11*
SelfMotivation	23.44	2.57						1	.07*
AcademicPerf	27.63	3.34							1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Result in table1 indicated that gender, religion, and marital status, did not correlate with learning mathematics on academic performance, only age was positively related to learning mathematics on academic performance ($r = .09, p < 0.01$). indicating that the older the students in class likely they learning mathematics on academic performance develop.

Instructional materials was significantly relate to learning mathematics on academic performance in Public Primary Schools in Awka South ($r = .11, p < 0.01$), indicating that the use of instructional materials in schools has posed a very good success to the teachers and the learners alike.

Self motivation was significantly relate to learning mathematics on academic performance in Public Primary Schools in Awka South ($r = .07, p < 0.01$) indicated that personal efforts can equally contributes to learning mathematics on academic performance in Public Primary Schools in Awka South.

Table2: Hierarchical Multiple Regression table showing the Impact of Instructional Materials and Self Motivation on Learning Mathematics and Academic Performance in Public Primary Schools In Awka South

	Step1	Step2
Variables	β	β
Age	-.103	-.100
Gender	.039	.029
Religion	-.052	-.056
Martial	-.022	-.032
Predictors		
Instructional Material		.098**

Self Motivation		-.074*
Adjusted R2	-.008	-.005
ΔR^2	.014	.015
ΔF	639	1.301**

Note: * = $P < .05$, ** = $P < .01$

In the hierarchical multiple regression in table 2, the result showed that among all the control variables added in step 1, (gender, religion, and marital) non predicts learning mathematics on academic performance in Public Primary Schools in Awka South, only age was positively related to learning mathematics on academic performance.

Instructional materials was significantly effect learning mathematics on academic performance in Public Primary Schools in Awka South ($r = .098$, $p < 0.01$), indicating that the use of instructional materials in schools has posed a very good success to the teachers and the learners alike.

Self motivation was significantly negatively effect learning mathematics on academic performance in Public Primary Schools in Awka South ($r = -.074$, $p < 0.01$) indicated that personal efforts can equally contributes to learning mathematics on academic performance in Public Primary Schools in Awka South.

Summary of Findings

- (1) Instructional materials was significantly effect learning mathematics on academic performance in Public Primary Schools in Awka South.
- (2) Self motivation was significantly negatively effect learning mathematics on academic performance in Public Primary Schools in Awka South

Discussion of Results

This study examined the impact of instructional materials and self motivation on learning mathematic and academic performance in public primary schools, Awka South LGA of Anambra State. From the findings, it is indicative that the use of instructional materials in schools has posed a very big success to the teachers and the learners in so many public primary schools in Awka South. According to (Nwosu, 2002) instructional materials include the following – graphics, pictures, posters, textbooks, newspapers, magazines, radio and television. Instructional materials provide good opportunities for better understanding of the course; they provide efficiency and proficiency and high performance level. When these materials that aid teaching and learning are not available, lack personnel who will operate them and lack maintenance, then there is problem in the academic performance.

Secondly, self motivation was significantly negatively effect learning mathematics on academic performance in Public Primary Schools in Awka South. Middleton and Spanias (2020) viewed self motivation as reasons individuals have for behaving in a given situation. Ames (2020) who stated that self motivation exists as part of one’s goal structures, one’s beliefs about what is important and it determines whether or not one will engage in a given pursuit. Skinner and Belmont (2021) explained that students who are self motivated to engage in school “select tasks at the border of their competencies, initiate action when given the opportunity, and exert intense effort and concentration in the implementation of learning tasks; they show generally positive emotions during ongoing action, including good academic performance, enthusiasm, optimism, curiosity, and interest”. According to Middleton and Spanias (2020), research indicates that success in mathematics is a powerful influence on the self motivation to achieve academic performance. Limitations of the Study

There were limitations in this study and that should be considered and treated in future research. The researcher had a problem of participation and co-operation as the respondents were so busy with class activities and so did not agree to collect the questionnaire and those that collected did not respond well to the questionnaire given.

Moreover putting this research work together has not been easy for the researcher because of financial constraints while carrying out the study. If research grant is available, the researcher would have extended the scope of the study as well make the work more extensive. Again, the work is limited only to public private schools in Awka South Local Government Area of Anambra State due to lack of fund.

Conclusion

Conclusively, the findings from this work and other related literature approved of the fact that there had been success on the academic performance in the teaching/learning of mathematics. Some scholars were of the opinion that teachers are the cause of this good academic performance; others said it was the work of parents, and while others said both the government and the entire society are largely involved. Research has shown that good attitudes of government towards the payment of teachers' salaries and parents attitudes over their children's education, positive interest by the school administration, and availability of instructional materials, replacement of the teaching aids in primary schools are the major contributively factors to the good academic performance in the learning of mathematics. According to Oladejo and Olosunde, (2011), instructional materials supplement, clarify, vitalize, emphasize instruction and enhance learning in the process of transmitting knowledge, ideas, skills and attitudes.

Secondly, self motivation of a students contributes a lot to learning mathematics on academic performance in Public Primary Schools in Awka South, therefore, instructional materials and self motivation are those informative carries or equipment that bring about maximum effectiveness in teaching/learning situations, and so if these instructional materials and self motivation are isolated in the learning of mathematics, teachers will not adequately handle mathematics as a subject, learners will not perform well and the economy and technological development will be adversely affected.

Recommendations

From the findings however, the following recommendations are made:

1. Government and parent teachers association should render financial assistance to primary schools to purchase and develop instructional materials to improve academic performance.
2. Teachers of mathematics should make use of instructional materials in the teaching and learning of mathematic, and that there should be periodic workshops and seminars to educate teachers on the use of these materials.
3. Teachers are encouraged to engage themselves in further studies\training to improve their standard.

Suggestions for Further Study

1. It will be a welcome development if this study will be carried out in both secondary schools and tertiary institutions to find out whether the use of instructional materials will have significant positive effect on academic performance.
2. It will be of paramount importance if the government, PTA and school authority should give incentives to teachers who regularly use instructional materials during teaching\learning periods.
3. Since it has been discovered that learners learn well and fast if instructional materials are used in teaching them, it is therefore suggested that prizes, awards and scholarships should be given to learners who show special interest in learning through the use of instructional materials.

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