

EDUCATIONAL RESOURCE AS PREDICTOR OF STUDENTS ACHIEVEMENT IN MATHEMATICS

Oshin, Olayemi Oyeniike

&

Afolabi, Rebecca Adenike

Department of Curriculum and Instruction, School of Education, Emmanuel Alayande College OF Education

adeolayemioshin@yahoo.com
afolabiolowoporoku@gmail.com

Abstract

Mathematics lessons have been described as boring, uninteresting, and unchallenging because of inadequate use of educational resources. It was revealed that a lot of students perform below average in external examinations in secondary schools in mathematics. Thus, this study critically examined the influence of Educational Resources on the academic achievement of secondary school students in mathematics. Two hypotheses were tested. A survey research design was used, and the population of the study comprised all secondary schools in Oyo State. A simple random sampling technique was used to select six local government areas, two schools from each of the LGA and twenty students from each school. Schools were stratified into two, schools with educational media and schools without. Two self-designed instruments were used for data collection. The study revealed that there is a correlation between the use of educational resources and academic performance ($r = .002$, $p < 0.05$) and there is a significant difference between the performance of students in schools with educational resources and schools without educational resources. It was recommended that the Provision of necessary education resource material should be encouraged in schools to enhance effective teaching and learning of mathematics and the Government should increase funding for the entire educational sector with particular emphasis on the acquisition of educational resources

Keywords: *Educational-Resource, Performance, Mathematics, Students*

Introduction

Mathematics is a compulsory subject at all levels of education due to its day-to-day application in our daily activities and can be applied in every aspect of life. It supports the development of critical and logical thinking and enables us to analyse, describe, and change things over. Research findings revealed several factors that may be responsible for student's underperformance in mathematics among which are peer group interaction (Owuruamaku, 2002), untrained and shortage of teachers (Negumbo, 2016), Language barrier (Mwinda & Vanderwall, 2015), lack of parental involvement (Kandumbu, 2005), lack of teaching and learning support (Kandumbu, 2005: 96-97) and teaching and learning strategies (Carl, 2012) were identified as causes of students' underperformance in schools.

Table 1:

Analysis of Oyo State candidates that Sat for May/June WASSCE from 2014 to 2018

May/June WASSCE	2014	2015	2016	2017	2018
Number of candidates that Sat for the Examination	77,321	78,574	70,581	53,850	65,340
Candidates with five credits and above including Mathematics and English Language	14754	16998	25,774	28,852	24,742
Percentage (%) Passed	19.08	21.63	36.52	53.58	37.87

Source: Federal Ministry of Education, Nigeria Digest of Education Statistics (2017)

Table 1 revealed the number of Oyo State candidates that Sat for May/June WASSCE from 2014 to 2018 as follows; 77,321, 78,574, 70,581, 53,850, 65,340 and number and percentage of candidates that obtained five credits and above including Mathematics and English Language in Oyo State 14754(19.08) 16998(21.63), 25,774(36.52), 28,852(53.58), 24,742(37.87). The analysis showed below average performance.

Tata (2013) made his study in Nigeria and came out with findings that, students' negative attitude toward mathematics, fear of mathematics, inadequate qualified teachers and inadequate teaching materials were some of the causes of poor performance in mathematics. However according to Mlozi, Kaguo and Nyamba (2013), students' performance in mathematics was not good at all in Tanzania as there were not enough teaching and learning materials. Several factors had been identified by Suan (2014) which seems to be the reason for student's underachievement in mathematics. First was teacher factor, such as teaching styles, mastery of the subject matter, instructional techniques and strategies, classroom management, communication skills, and personality. Second was student factor like study habits, time management, attitude, and interests towards mathematics. Third was environmental factor such as parents' values attitudes, classroom settings and peer group.

According to Oloolobou (2010) too often mathematics lessons have been described as boring, uninteresting, and unchallenging this negative and uninspiring state can be turned around through the identification, collection, preparation and utilisation of instructional resources and materials. It has been suggested that educational resources can play a number of roles in Education such as developing the kind of graduates and citizens required in informed society; improving educational outcomes and enhancing and improving the quality of teaching and learning (Waguer,2001; McCormick and Scoanshaw,2001; Flecknoe,2002).

Garrison and Anderson (2003) argue that the application of educational resources in Teaching learning process can enhance the quality of education of education in serial ways such as increasing learner motivation and enhancing teachers training. Since government is one of the major subjects being offered in primary schools its relevance and sustenance in day-to-day class activities requires the adequate application of educational resources like video tapes, television and multimedia computer software that combine text, sound and colorful moving images which can be used to provide challenging and authentic content that will not only engage the student in the learning process but as well make learning concrete.

Educational resources greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and executions. Educational resources have revolutionized the way people work today and how educational system is been transformed. As a result, if students who were trained in yesterday's skills and technologies do not update their knowledge, they may not be effective and fit into tomorrow's world. This is a sufficient reason for educational resources to win global recognition and attention. For instance, educational resources are dependable tools in facilitation the attainment of the Millennium Development Goals (MDGs). This indicates the growing demand and increasingly important place that educational resources could receive in education. Since Educational resources provide greater opportunities for students and teachers to adjust learning and teaching to individual needs, society is, forcing schools to give appropriate responses to this technical innovation. The reality of the digital divide the gap between those who access to, and control technology and those who doubt, make a huge difference in the use of educational resources. This means that the introduction and integration of educational resources at different levels and various types of education is the most challenging undertaking. Failure to meet the challenges would mean a further widening of the knowledge gap and deepening of existing economies and social inequalities among the developed and the under developing countries.

Yusuf and Onasanya (2004) opined that educational media provides opportunities for school to communicate with one another through email, mailing list, chat room and other facilities. It provides quicker and easier access to more extensive and current information. Educational resources can also be used to do complex task as it provides researchers with a steady avenue for the dissemination of research reports and findings. Honey and Mandinach (2003) advanced three major reasons for educational resources in education. They, however, suggested that it is a tool for addressing challenges in teaching and learning situation; a change agent; and central force in economics competitiveness. As a tool for addressing challenges in teaching and learning, technology has the capability to delivery of effective teaching and learning. As a change agent, it can change the content, methods and overall quality of teaching and learning. If educational resources are properly used it holds great promises to improve teaching and learning. Findings revealed that mathematics lessons have been described as boring, uninteresting, and unchallenging because of inadequate use of educational resources. A lot of students perform below average in external examinations in secondary schools today owing to lack of electronic media and well equipped and functional resource center. Thus, this study set out to critically

appraise the influence of Educational Resources on academic performance of secondary school students on students' performance in mathematics.

Hypotheses

The following hypotheses were tested in this study:

H₀₁: There is significant correlation between the use of Education resources and secondary school students' academic performance in mathematics

H₀₂: There is no significant difference in the performance of student in schools utilizing educational resource and schools who do not utilize educational resources in teaching/learning of mathematics

Methods

The research design used was descriptive survey research design. The population of this study consists of all secondary schools in Oyo State. Simple random sampling was used to select six local government areas from the thirty-three LGA's in Oyo State, from each of the LGA's two schools and twenty students and two teachers from each school. The schools were stratified into schools using educational media and schools not using educational media. Making a total of twelve (12) schools, two hundred and forty students (240) and twenty-four (24) teachers.

The two instruments developed by the researcher to collect information from the participants are:

Questionnaire on Educational Resource (QER): It was used to obtain information on educational resource material used in schools and it was administered by the researcher to obtain adequate information from the teachers. The reliability of the questionnaire using test-re-test is 0.78 and content validity was done by test and measurement expert. The questionnaire was divided into two sections.

Section A; consisted of Personal Data of the respondent and **section B;** contained questions on the variable of interest in the study. The total obtainable score on the questionnaire is 28 and any school that score below 14 marks is regarded as schools not using Education resource while school rated above 20 marks were regarded as school with education resources.

Mathematics Achievement Test (MAT): It was constructed by the investigator using second term scheme of work of senior secondary one (SS1) student. The test contained twenty items. The pupils are to choose from option A to E. The total obtainable mark is twenty while the least score is zero (0). Any pupils that scored below ten are regarded as below average and score ten and above are above average. The reliability of the test item when using Kuder Richardson 20 is 0.82 and the content and face validity was established by professionals in mathematics.

Method of Data Administration and Data Collection

The instruments were administered to the students and their teachers by the investigator and two research assistances.

Method of Data Analysis

To analysis the data correlation and T-test was used.

Results

H₀₁: There is significant correlation between the use of Education resources and secondary school students’ academic performance in mathematics

Table 2:
Correlation between the use of Education resources and secondary school students’ academic performance in mathematics

Variables	N	Mean	SD	P-value	Sig
Education Resource	240	6.83	6.75	0.22	0.00
Academic Performance	240	9.72	3.31		

From table 2, the p-value showed 0.222 which was significant at 0.001. The results show that there is significant relationship between the use of education resource and academic performance of students in mathematics. Therefore, the hypothesis which states that there is significant correlation between the use of Education resources and secondary school students’ academic performance in mathematics is reject.

Hypothesis 2: There is no significant difference in the performance of students in schools utilizing educational resource and schools who do not utilize education resources in mathematics

Table 3:
Difference in the use of Education resources by school

Variables	N	Mean	SD	df	t-value	Sig	Remark
Use of Education Resource	240	10.43	3.72	238	3.38	0.00	
Do not use of Education Resource	240	9.00	2.66				

From table 3, it can be deduced that there was a significant difference between schools that uses educational resources and those not using educational resources. This is reflected in the result: df (238) t= 3.38, p<0.05. Thus, the hypothesis is rejected. The mean score (10.43) differs significantly from (09.00). The implication is that students in schools utilizing educational resource perform better that those in schools who do not utilize education resources in mathematics.

Discussion of Findings

The finding revealed that there is correlation between the use of Education Resources and students’ academic performance. The results are in consonance with the outcome of Okwo (2006) who found that accessibility to ICT makes information handling less demanding quicker and more effective. It also supports the finding of Nwosu (2009) who pointed out that the use of ICT makes learning less demanding, seedier energizing and fascinating to learners. It also buttressed the work of Lizzio, Wilson, and Simons (2002) who found that facilities have significant impact on students’ performance. It further corroborates the results of Kandumbu (2005) who identified lack of teaching and learning support materials as one of the challenges that face the primary school education sector in Namibia. It’s also in agreement with Ololobu (2010) that retreated that education resource materials stimulates thinking and interest of pupils.

Effect size provides us with a measure of the extent to which two means differ in terms of standard deviations (Brace, Kemp & Snelgar, 2006). According to Cohen in Brace, Kemp and Snelgar (2006), effect size of 0.2 should be regarded as small, 0.5 regarded as medium while 0.8 and above should be regarded as large. It tells us how big an effect we can expect from an independent variable or difference between two groups. The result that there is significant difference between the performance of students in school with education resource and school without supports the finding of Nwaji (2002) who discovered that instructional materials offer teachers and the learners’ good opportunity to relate theoretical knowledge to practical experience. The use of education resource in teaching and learning of mathematics exposes students to the realities of their environments and makes learning relatively permanent.

Conclusion

It can be concluded that educational resource when used during teaching and learning process facilitates effective teaching and makes teaching and learning more interesting and learning relatively permanent. The result of the research study found that educational resources predict students' performance in mathematics in secondary schools.

Recommendations

The study recommended that

1. Provision of necessary education resource material should be encouraged in schools to enhance effective teaching and learning of mathematics.
2. Young software developer should be trained and supported with the necessary equipment to develop nationally usable education resource software for improved teaching and learning
3. Government should increase funding for the entire educational sector with particular emphasis on acquisition of educational resources.
4. Government should work with the private sectors to ensure affordable and sustainable access to educational resources infrastructure to enhance better students' academic performance.

References

- Abbasi, A.R. and Mir. G.M. (2012). Impact of teacher's ability, Students' work ethics and Institutional environment on student's performance at University of Gujrat Middle-East Journal of scientific Research, 2(4), 572-579.
- Iheanachor, O. U. (2007). The Influence of Teachers' Background, Professional Development and Teaching Practices on Students' Achievement in Mathematics in Lesotho: University of South Africa.
- Lizzi O.A., Wilson K., and Simons. R. (2002). University Students perception of Learning environment and academic Outcomes: Implications for theory and practice. *Studies in Higher Education*. 27(1), 27-52.
- National Bureau of Statistics (2019). WAEC Results Statistics. Retrieved from <https://education.gov.ng>
- Ololobou, C.O. (2010) Methodological approach in Social Studies Education.
- Suan, I. (2014). A Critical Review of Leadership Styles on the Performance of Public Secondary Schools in National Examinations in Tana River County. Kenya.