

PAPER 28

EFFECTS OF MOTHER TONGUE INSTRUCTIONAL MEDIUM ON PRIMARY SCHOOL PUPILS' ACHIEVEMENT IN MATHEMATICS IN OKPOKWU LGA, BENUE STATE

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Abstract

This study investigates the effects of mother tongue instructional medium on primary school pupils' achievement in Mathematics in Okpokwu Local Government Area of Benue State. The study adopted a pre-test, post-test, control group quasi experimental design. A purposive sampling technique was used to select four primary schools which were randomly assigned to experimental and control group. Intact classes were used for the study. A total of 87 pupils participated in the study. Two research questions were raised and two hypotheses were formulated and tested at 0.05 level of significance. Two instruments were used for the study. Mathematics Achievement Test in English Language (MATEL) and Mathematics Achievement Test in Idoma Language (MATIL). The two instruments were subjected to face and content validity and a reliability coefficient of 0.81 and 0.87 were obtained respectively using test-retest method of determining reliability. The Research questions were answered using descriptive statistics of mean and standard deviation and the hypothesis tested using mean and t-test. The result revealed that pupils taught Mathematics in Idoma language perform better than those taught Mathematics in English language. Similarly, the result also shows that female pupils performed better than their male counterparts. It is therefore recommended that mother tongue should be combined with English for the first three years in the primary school as this will foster easy assimilation of concepts by the child.

Keywords: Mother-tongue (Idoma), Achievement in Mathematics, Instructional medium.

Introduction

All over the world, Mathematics is regarded as a core and important subject in the achievement of technological and economic development. Mathematics is also the bedrock of the development of manpower in the science and technological world. It is generally believed that the technological development of any nation strongly depends on the manpower the nation has acquired (Kolawale & Oluwatayo, 2004).

Furthermore, Sadiq (2011) stressed that a visible knowledge of Mathematics is a necessity for social and economic transformation of any nation. This is because developed countries have utilized the opportunities offered by the current phenomenal increase in science, technology and Mathematics, in information and communications technology and applied science whose main engine force is Mathematics. Thus, for a country like Nigeria to elevate its status from being a developing nation to a developed nation, proper understanding of Mathematics is paramount for

its citizen. The teaching of Mathematics therefore, should be done to help learner see, evaluate and appreciate its beauty and inherent universal usefulness in all sphere of the economy. There is the need to keep learners firmly anchored on a set of human values to teach students how to process the vast varieties of information so that they pick up Mathematical knowledge that are qualitative and functional to themselves and the society at large Abubakar and Dokubo (2010).

In spite of the enormous role played by Mathematics, its teaching and learning has been confronted with diverse challenges. One among them is the language of instruction used at the primary level of education (Ochigbo, 2004). The inability of hundreds of languages around the world without direct translations of core scientific and mathematical terms is a hindrance for students to face the real world, and apply their knowledge, resulting in them being globally incompetent (Paul, 2016). The Government of Nigeria seeing the importance of education and the indispensability of language in the nation for effective national development and dynamic instrument of change made the following pronouncement in the National Policy on Education (FRN, 2004) that "the child should be taught in his mother tongue for the first three years of primary education and be encourage to learn one of the three main language other than his own mother tongue". The policy statement covers the primary level of education. In the pre-primary school, the language policy specifically states that government should ensure the medium of instruction will principally be mother tongue or the language of the immediate community. These measures include the development of orthographies for many Nigerian languages and the production of enough mathematics textbooks in the mother tongue.

Mother tongue is the language of birth of the child or the language of the immediate community of the child. Fafunwa (2005) stressed that the mother tongue is the language in which a group of people or inhabitants of an area acquired in their early years and which normally becomes their natural instruments for communication of thought. As the intimate language of the child, the mother tongue becomes part of his personality which no teacher can afford to ignore as it incorporates the ideas and attitude which the child has gain from his environment.

Similarly, the United Nations Educational Scientific and Cultural Organization (UNESCO, 2008) talks on the importance of the mother tongue as "the language in which the child first learned how to express his ideas about himself and about the world he lives". Research has shown that children's first language is the optimal language for literacy and learning throughout primary school (UNESCO, 2008). In spite of the growing evidence and parent demand, many educational systems around the world insist on the exclusive use of one or sometimes several privileged languages. This means excluding other languages and with them the children who speak them (Anorid, Bartlett, Gowani & Merali, 2006).

In a related study conducted by Ochigbo (2004) to determine the causes of poor performance of Junior Secondary School Students in Mathematics, it was found that language barrier is a major hindrance to faulty foundation in Mathematics at the primary level. It was further observed that because of the indispensable nature of Mathematics and its importance to science and technology and in everyday lives, its teaching and learning must be given adequate attention at the primary level to enable them have a solid foundation in Mathematics. Ochigbo (2004) noted that language barrier is one of the impediments affecting the cognitive achievement in Mathematics, which is an

embodiment of signs and symbols, which can be better comprehended by pupils if properly blended in their local Language.

Statement of Problem

Poor performance in Mathematics has been a matter of concern to parents, government, teachers, pupils and the general public (Odili, 2006). The results from Examination bodies like National Common Entrance Examination (NCEE) (2008 – 2012) and Benue State Junior Secondary School Certificate Examination (JSCE) (2008 – 2012) show that the performance of pupils has been disappointing. For instance the results of the State JSCE taken from 2008 - 2012 shows that less than 59% had credit pass in Mathematics (Benue State Ministry of Education, 2016). While on the average less than 35% had credit pass between 2010 and 2012 in the same JSCE. The analysis of the results shows that performance of pupils in Mathematics in the state has been persistently poor. Although, several factors have been identified to be responsible for the poor performance, language of instruction has been identified as key in the challenges that pupils face in learning Mathematics (Ochigbo, 2004). It is on this note that the study is determines the effect of mother-tongue, as the language of instruction, on primary schools pupils' achievement in Mathematics in Okpokwu Local Government Area of Benue State.

Research Objectives

The study seeks to achieve the following research objectives:

- i. To determine if there will be any difference in the mean achievement scores of pupils taught Mathematics in Idoma language and those taught in English language.
- ii. To determine if there will be any difference in mean achievement scores of male and female pupils taught mathematics in the Idoma language

Research Questions

- i. What are the mean scores of pupils taught mathematics in Idoma language and those taught in English language?
- ii. What are the mean scores of male and female pupils taught Mathematics in Idoma language?

Hypotheses

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

HO₁: There is no significant difference in the mean achievement scores of pupils taught Mathematics in Idoma language and those taught in English language.

HO₂: There is no significant difference in the achievement of male and female pupils taught Mathematics in Idoma language.

Methodology

A pre-test, post-test, control group non-equivalent and non-randomized, quasi-experimental research design was used for this study. The population of the study consists of all primary schools in Eke ward of Okpokwu Local Government Area of Benue State. Four primary schools were purposefully selected and randomly assigned to experimental and control group. An intact class of primary two of each school was used. A sample of 87 pupils comprising 51 girls and 36 boys participated in the study. Two instruments; Mathematics Achievement Test in English Language (MATEL) and Mathematics Achievement Test in Idoma Language (MATIL), were

used in the study. Both MATEL and MATIL consist of 20 objectives questions having options from A to E and are constructed by the researchers. The two instruments were subjected to face and content validity. A reliability coefficient of 0.81 and 0.87 were obtained using test-retest method of determining reliability. The experimental group was taught Mathematics in Idoma language while the control group was taught Mathematics in English language. Data collected were analyzed using mean scores and t-test of significance.

Results

Research Question 1

What are the mean scores of pupils taught Mathematics in Idoma language and English language?

Table 1: Mean and standard deviation scores of pupils taught Mathematics in Idoma language and English language.

GROUP	N	MEAN	SD	MEAN DIFFERENCE
EXPERIMENTAL	42	65.95	15.30	3.41
CONTROL	45	62.54	14.74	

Table 1 shows that, the mean score of pupils taught Mathematics in Idoma language is 65.95 and pupils taught Mathematics in English language is 62.54. The mean of 65.95 shows that pupils taught in Idoma language performed better than pupils taught in English language with mean difference of 3.41.

Research question 2

What are the mean scores of male and female pupils taught Mathematics in the Idoma language?

Table 2: Mean and standard deviation scores of male and female pupils taught Mathematics in Idoma language.

GROUP	N	MEAN	SD
Male	17	47.14	13.30
Female	25	68.28	16.74

Table 2 shows the mean score of 47.17 for male pupils and a mean score of 68.28 for female pupils. The mean of 68.28 shows that female pupils performed better than their male counterparts

Hypothesis one

Table 3: t-test Analysis of Pupils' Mathematics Achievement Scores

GROUP	N	df	MEAN	SD	t-value	P-value
Experimental	42	85	65.95	15.30	8.170	0.024
Control	45		62.54	14.74		

Table 3 shows the analysis of pupils taught Mathematics in Idoma language and English language at 0.05 level of confidence. ($t = 8.170$, $df = 85$, $P < 0.05$). This implies that the null hypothesis which states that there is no significance difference in the mean achievement scores of pupils taught Mathematics in Idoma language and those taught in English language is rejected in favour of the alternative.

Hypothesis two

Table 4: t-test Analysis of Male and Female Pupils' Mathematics Achievement Scores taught in Idoma Language

GROUP	N	df	MEAN	SD	t-value	P-value
Male	17	43	47.14	13.30	6.21	0.031
Female	25		68.28	16.74		

Table 4 shows the analysis of male and female pupils at 0.05 level of confidence. ($t = 6.21$, $df = 43$, $P < 0.05$). This implies that the null hypothesis which states that there is no significance difference in the mean achievement scores of male and female pupils taught Mathematics in Idoma language is rejected. This outcome shows that there is significance difference in the mean achievement scores of male and female pupils taught mathematics in Idoma language in favour of the female pupils.

Discussions of results

It was observed that pupils perform better when Mathematics is taught in the mother tongue than in English language. This could be as result of the confidence and the ability of the pupils to discuss what they have been taught among themselves and with the teacher. This point is in agreement with Ochigbo (2004) which states that, one of the main reasons for poor Mathematics performance at the primary school level is the language of instruction. Pupils will do better if Mathematics is taught in a language understood by the pupils very well.

Fafunwa (2005) buttress this point saying that "in Nigeria, one of the main reasons advanced for poor technological growth and development is that the language of science is foreign". Science and technology can be developed if expressed in a language that a community understands. In addition, it was observed that female pupils perform better than their male counterpart when they are taught using the mother tongue. This could be as a result of the fact that female pupils show more interest when lessons were presented in the mother tongue than the males. This may also be as a result of the familiarity of the pupils with the language which they feel free to contribute in classroom discussion and ask questions wherever they are confused.

Recommendations

Based on the findings of this study, the following recommendations are made.

- i. Government should produce more mathematics textbooks in indigenous language and train more teachers on how to use it
- ii. There should be marriage of mother tongue and English language (Idoma and English) for class room instruction. Japan, China, USA and other industrialized nations of the world have attained that status through the use of their mother tongue in the educational system. (Fafunwa, (2005).

- iii. Good intentions are not enough; government should ensure the implementation of the language policy on education instead of the policy only existing on paper. Each Local Government Education Authority should saddle its supervisory unit with the responsibility of ensuring adequate monitoring of the implementation of the language policy at the basic level.

References

- Abubakar, R. B. & Dokubo, O. O. (2010). Age and Gender as Predictors of Academic Achievement of College Mathematics and Science Students. Proceedings of the 2011 International Conference on Teaching, Learning, and Change; Rivers State.
- Anorl, C., Bartlet, K., Gowani, S., & Merali, R., (2006). Is everybody ready? Readiness, transition and continuity: reflections and moving forward. Background paper for EFA Global Monitoring Report 2007.
- Benue State Ministry of Education (2016), Directorate of Planning, Research and Statistics.
- Fafunwa, B.(2005): Education in mother tongue: The Ife primary Education Research project ,Ibadan, University press Limited
- Federal Republic of Nigeria (2004). National Policy on Education (NPE).Lagos, NERDC press.
- Kolawale, B.E. & Oluwatayo, J. A. (2004). Mathematics as an essential tool for Universal Basic Education.(UBE). Ibadan; Oluseyi press Ltd.
- Ochigbo, D. (2004). Causes of poor performance of Junior Secondary school students Mathematics; A study of selected secondary schools in Okpokwu LGA of Benue state; Faculty of Education, Benue State University Makurdi.
- Odili, G.A. (2006). Mathematics in Nigeria secondary schools; A teaching perspective. Port Harcourt: Rex Charles and Patrick limited.
- Paul, M., (2016). Fallacy of Teaching Mathematics. London: Longman.
- Sadiq, J.O. (2011). A keynote Address Presentation at the National Conference of school of social sciences Federal College of Education Kastina, on innovative method of teaching and learning science, Technology and Mathematics for Quality Education.
- UNESCO (2008). Mother tongue matters: Local language as a key to effective learning .paris: UNESCO