

EFFECT OF MOTHER TONGUE (IGBO) ON ACADEMIC ACHIEVEMENT OF LOWER UNIVERSAL BASIC EDUCATION (UBE) PUPILS IN BASIC SCIENCE IN NWAGELE L.G.A., IMO STATE, NIGERIA.

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Abstract

This study investigated the effect of mother tongue (Igbo) on academic achievement of lower universal basic education (UBE) pupils in basic science. Two research questions and two null hypotheses guided the study. The study adopted quasi-experimental; specifically, the pre-test, post-test, non-equivalent control group design. The population for the study comprised 160 lower basic five (5) pupils in Nwangele L.G.A Orlu, Imo state. Simple random sampling technique of lucky dip with replacement was used to draw the sample for the study. The instrument, Basic Science Achievement Test (BSAT) was used for data collection. The reliability of BSAT using Kuder Richardson formula 20(KR20) was 0.74. The data collected were analyzed using mean and standard deviation to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance. The result of the findings revealed that there was significant effect of mother tongue on the

achievement of pupils taught basic science using mother tongue because pupils who were taught with mother tongue performed better than those taught with English language. Also, that gender was not a significant factor in pupils' achievement. Based on the findings of this study, some recommendations were made which includes adopting the language policy provision on the use of mother tongue for instruction in the lower basic levels of education as well as for Parents to endeavor to speak and encourage their children to speak and study in their mother tongue.

Keywords: Mother Tongue, Academic Achievement, Lower Universal Basic Education (UBE), Basic Science.

Introduction

Basic Science is the first form of science a student encounters at lower basic level; hence it prepares the students at the junior secondary school level (Bukunola & Odowu, 2012). This

implies that for a student to study single science subjects at senior Secondary School level successfully, such a student must be well grounded in basic science at the lower basic level (Samuel, 2017). Basic science has been made mandatory as a subject for all Nigerian children at the basic education level, this is to catch the pupils' heart young in science. It helps children to develop reflective thinking and good habits which are needed for scientific method and successful future life. Basic science enables students to understand science concepts, principles, theories and laws which are further elaborated in the core sciences. Sequel to this, Ogunjobi (2016) stated that children should be exposed to the rudiments of science and technology education. According to Oludipe (2009) the prestige, political power, and economic survival of any nation depends in its level of scientific activities. Research reports in basic science teaching and learning revealed that many students in lower and middle UBE level have developed negative attitudes towards the subject, many of the students at this level, because of their dismal achievement in the subject, are not benefitting much from the basic science curriculum (Osokoya, 2013; Oni, 2014 & Samuel 2018). This, according to the researchers, is responsible for many students not achieving better in the core science subjects at the senior

secondary school level. The persistent underachievement of basic science students necessitates the need to explore other strategies that could enhance students' achievement in the subject. In this study therefore, the effect of mother tongue (Igbo) on the achievement of lower Universal Basic Education (UBE) pupils in basic science was explored.

Language is an integral part of any culture and it is an important tool that enhances human communication and interaction. Language is a vital instrument in cultural transmission and preservation of a social group. Hence, every child born into any culture will first acquire the linguistic aspect of that culture into which he is born. Children learn better if they understand the language used as medium of instruction. The use of mother tongue as a medium of instruction, especially in schools in the rural areas will be of great benefit to the rural people.

Mother tongue refers to a child's first language that is, the language learned in the home from older family members (United Nations Education, Scientific and Cultural Organization, (UNESCO). According to Olanrewaju (2021), the term "mother tongue" refers to a person's native language; that is, a language learned from birth, the first language. Fafunwa and Afolayan (1982) observed that the child's mother tongue is natural to him like

mother's milk and suggested that the child should be encouraged in his first twelve years of life to master his mother tongue for the positive development of his physical, mental and intellectual potentials. Enang and Okono (2020) observed that the use of mother tongue in the early years helps, not only to preserve and value one's culture but also to develop it lexically. Enang and Okono (2020) also reported that a citizen that is literate only in the mother tongue would be sufficiently equipped to live a useful life in the fast changing world. The use of mother tongue as a medium of instruction, especially in schools in the rural areas will be of great benefit to the rural people because it will play a key role in keeping children from poor homes in school. Children from poor background with less exposure can feel the sense of belonging as well as being carried along if mother tongue is used as a medium of instruction. In addition to this, it ensures that the knowledge children bring to school is used as a basis for further learning as well as allows teachers to use more active and effective teaching methods. This invariably, enhance the pupils' creativity and improvisation skills.

UNESCO has been advocating for multilingual education based on the mother tongue from the earliest years of schooling. In some countries, over 90 percent of students are not taught in a

language they speak and understand (World Bank, 2021). According to Keri (2006) when a child begins to learn in his/her mother tongue, that child is more likely to succeed academically and is better able to learn additional language. The use of learners' own language for literacy and learning provides a solid pillar for education. Learning in one's first language facilitates understanding and interaction, and further develops critical thinking, strengthens self-confidence and self-esteem and stimulates active participation during instruction. The importance of mother tongue cannot be overemphasized. In the light of this, Fafunwa (1986) emphasized, that mother tongue based education can ensure a better quality education in the early years of schooling. A lot has been done in the use of mother tongue in teaching in Nigeria, especially in Western (Yoruba) and Northern (Hausa) Nigeria. Available literature revealed that very little studies are available on the use of mother tongue in teaching in the Eastern (Igbo) part of Nigeria, especially on the use of mother tongue for the teaching of science. Usman and Umo (2006) observed that many developing countries like Nigeria use a foreign language as the medium of instruction at lower and middle level of UBE. Poor learning outcome may be a reflection of inadequate language of instruction policies. Usman and

Umo also noted that the language of former colonizer often dominates the languages of others, particularly in an official setting like school system. One of the reasons given for the use of a foreign language for instruction is that the mother tongue lacks precision. Clarity and precision of language is a sine qua non of sound education in science and technology education.

Problem of the Study

Language is one of the most important features that makes human beings different from other living things. It is the basis of communication among human beings as well as the most important and effective key to human achievement. In recent times, the cry of poor performance in sciences among pupils and students is alarming; an issue that needs redress, as the development of a nation largely depends on science and technology. This poor performance in science may be attributed to the teachers' method of teaching as well as the language of instruction, this may make teaching and learning more meaningful and enables students achieve highly in science. The most relevant language of instruction in most of the Nigerians' lower universal basic education schools especially in the cities today is the English language, a foreign language instead of the indigenous language the pupils are familiar with. This may be responsible for

the poor academic achievement in science as reported by many research studies (Nathaniel, Andrew & Monday 2014; Sunday, 2021; Oniveh, James & Sulaiman, 2022; Adeniran, Uduaka & Ekunadayo, 2023). According to Onotere (2018), difficulties are often associated with the acquisition of a second language. Scholars believe this is the background insight into the declining rate of poor performance in sciences.

In the past, researchers have conducted studies on identifying ways of reversing the declining rate of pupils' academic achievements in sciences, of all these studies, the efficacy of the effect of mother tongue on the academic achievement of lower universal basic education pupils in basic science has not yet been established. Therefore, the question this study sought to address is "what is the effect of mother tongue on the academic achievement of lower universal basic education pupils on basic science?" The problem of identifying and utilizing effective teaching and learning strategies in basic science classrooms has become a source of worry to stakeholders, teachers, governments and the general public and requires urgent attention. There is therefore the need to find appropriate teaching strategies that can enhance students' academic achievement in basic science. If mother tongue is used in teaching basic science, what will be

the resultant effects on pupils' academic achievement? This is the focus of the present study.

Purpose of the Study

The purpose of this study is to investigate the effect of mother tongue (Igbo) on the academic achievement of Lower Universal Basic Education pupils in basic Science.

Research Questions

The following research questions and null hypotheses guided the study:

1. What are the mean achievement scores of pupils taught basic science using mother tongue and those taught using English language?
2. What are the mean achievement scores of male and female pupils taught basic science using mother tongue and those taught using English language?

Hypothesis:

H₀₁: There is no significant difference in the mean achievement scores of pupils taught basic science using mother tongue and those taught using English Language

H₀₂: There is no significant difference in the mean achievement scores of male and

female pupils taught basic science using mother tongue and those taught using English language?

Methodology

The researcher adopted a Quasi-experimental research design; specifically, the pre-test, post-test, non-equivalent control group design. The target population for this study comprised all lower basic 5 pupils in the nine (9) government approved private schools in Imo state. The population comprised 160 lower basic 5 pupils comprising 62 males and 98 females in the 2023/2024 sessions in the study area. Simple random sampling technique of lucky dip with replacement was used to select 2 schools from the study area, this is due to the experimental nature of the study. The sample size of the study was 31 pupils from two of the selected schools. Nineteen and twelve pupils from an intact class in each of the schools were randomly selected for the study. The experimental group was taught basic science using mother tongue (Igbo) while the control group was taught basic science using the conventional language of instruction (English language). The instrument used for the study was Basic Science Achievement Test (BSAT). This comprised English and Igbo versions, which has 40 items designed to measure the level of acquisition and comprehension of

objectives in the cognitive domains. BSAT was validated by 3 experts in Science Education, Measurement and Evaluation and Igbo Language Education. The reliability of BSAT using Kuder Richardson formula 20(KR₂₀) was 0.74.

At the beginning of the experiment, a pre-test on BSAT was administered to both groups (mother tongue and the conventional language groups) to get the pre-test scores. After the

treatment which lasted for the period of four weeks, the post BSAT (after reshuffling) was administered to the subjects in the two groups. Data collected from both pre-test and post-test were used to answer the research questions and test the hypotheses stated for the study. Mean and standard deviation were used to answer the research questions while analysis of covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance.

Result

Research Question 1

What are the mean achievement scores of pupils taught basic science using mother tongue and those taught using English language?

Table 1 Means, Standard Deviation and Mean Gain Achievement Scores of Pupils Taught Basic Science Using Mother Tongue and those Taught Using English language

Group	N	Pre-test		Post-test		
		Mean	SD	Mean	SD	Mean Gain
Experimental group	19	10.68	5.19	17.47	1.89	6.79
Control group	12	10.42	1.68	13.58	1.62	3.16

Table 1 shows that the experimental group has a pretest mean score of 10.68 with a standard deviation of 5.19 while the post-test mean score is 17.47 with a standard deviation of 1.89 and

mean gain scores of 6.79. The control group has a pretest mean score of 10.42 and posttest of 13.58 with a standard deviation of 1.68 and 1.62 respectively and mean gain scores of 3.16.

Test of Hypotheses 1

H₀₁: There is no significant difference in the mean achievement scores of pupils taught basic science using mother tongue and those taught using English Language.

Table 2: Results of Analysis of Covariance (ANCOVA) Results for the Two Groups of Pupils

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2493.568	2	1286.784	118.806	.000
Intercept	3671.733	1	3671.733	227.228	.000
PretestA	873.163	1	773.163	80.912	.000
Group	744.954	1	744.954	68.234	.000
Error	1397.135	128	10.915		
Total	89046.000	131			
Corrected Total	3990.702	130			

Table 2 reveals a significant difference in the achievement of students taught using mother tongue and that taught using English language. F= ratio of 68.234 was obtained with associated exact probability value of 0.000. Since the associated probability (0.000) is less than 0.05

set as level of significance, the null hypothesis was rejected. The result shows that the use of mother tongue produced a significant effect on the posttest achievement scores of students more than those taught with English language.

Research Question 2

What are the mean achievement scores of male and female pupils taught basic science using mother tongue and those taught using English language?

Table 3: Means, Standard Deviation and Mean Gain Achievement Scores of Male and Female Pupils in both Experimental and Control Groups

Group	Gender	N	Pre-test		Post-test		Mean Gain
			Mean	SD	Mean	SD	
Experimental group	Male	07	10.71	1.89	17.00	1.63	6.29
	Female	12	10.67	1.97	17.75	1.66	7.08
Control group	Male	04	11.00	1.63	13.25	1.5	2.25
	Female	08	10.13	1.73	13.75	1.75	3.62

Table 3 shows that in both the experimental and control groups, the female pupils performed better than their male counterparts after the treatment.

Test of Hypotheses 2

Ho₂: There is no significant difference in the mean achievement scores of male and female pupils taught basic science using mother tongue.

Table 4: Results of Analysis of Covariance on pupils' Achievement Based on Gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	321.445 ^a	2	160.722	16.413	.000
Intercept	2859.382	1	2859.382	292.005	.000
PretestA	262.051	1	262.051	26.761	.000
GenderExp	25.643	1	25.643	2.619	.112
Error	460.235	47	9.792		
Total	46022.000	50			
Corrected Total	781.680	49			

Table 4 shows an F = ratio 2.619 with associated exact probability value of 0.112 which is greater than the bench mark probability value of 0.05. The Null hypothesis was not rejected

Discussion of Findings

The study investigated the effect of mother tongue (Igbo) on the achievement of Lower Universal Basic Education (UBE) pupils in

basic science. The findings of this study reveals that there was no significance difference in the achievement of experimental and control groups before treatment as measured by the

pre-test. This implies that the two groups were homogenous in ability by the beginning of the study. However, as it can be seen there was significant difference in the achievement of the experimental and control groups during the post-test in favour of the experimental group. The findings revealed that the pupils in the experimental group had a higher mean achievement score in BSAT compared to their control group counterparts, this means that instructions received in mother tongue are easily assimilated and permanent than those received in the second or foreign language. This shows that mother tongue was more positive and effective in enhancing and facilitating students' achievement in basic science than the conventional language of instruction (English language). This is in line with the findings of (Nathaniel, Andrew & Monday, 2014; Onyeka, Nwamaradi & Okafor-Agbala, 2023) who also discovered that teaching in mother tongue gave rise to more meaningful learning. The use of the learners' own language in the lesson may have given rise to efficient and effective learning, which accounted for the reported significant effect in achievement of the experimental group over the control group. Globally, progress is being made in multilingual education based on mother tongue with growing understanding of its importance, particularly in early childhood

schooling. The use of learners' own language for literacy and learning provides a solid pillar for education and speaking one's own language is more and more a right.

This result agrees with the findings of (Usman and Umo, 2006 & Adeniran, Uduaka & Ekundayo, 2023) who found no significant difference in the achievement of the female and their male counterparts. This finding shows that pupils learn better in their mother tongue and that pupils do better if they get a basic education in their mother tongue irrespective of the pupil's gender.

Conclusion

From the results of this study, it has been empirically proven that using mother tongue in teaching basic science enhances higher mean scores than the use of English language. This study also, concluded that lower basic five using mother tongue significantly had a higher mean interest rating as compared to those who were taught via English language. It was also, found that there was no significant difference between the mean achievement scores of male and female pupils taught basic science using mother tongue. From the results of this study, it has been empirically proven that using mother tongue in teaching basic science enhances higher mean scores than the use of English language. It was also, found that there was no significant difference between the mean

achievement scores of male and female pupils taught basic science using mother tongue.

Recommendations

Based on the findings of this study, the following recommendations were made;

1. Government should adopt the use of mother tongue in teaching basic science at lower basic levels of education.
2. Curriculum developers should develop basic science curriculum in the mother tongue for easy planning and presentation of basic science instructions in mother tongue.
3. Parents should endeavor to speak and encourage their children to speak and study in their mother tongue.
4. Government should encourage the mass media to enlighten the public on the need to use mother tongue to teach subjects such as basic science at lower basic levels of education.

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