



Efficacy of Mother Tongue Instruction on Performance of Primary School Pupils in The Concept of Pollution in Educational Zone

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ABSTRACT

This study explored the effect of Mother tongue on the performance of primary school pupils in the concept of pollution. The objective of the study aimed to examine the mean performance score of pupils taught the concept of pollution using the mother tongue medium of instruction and those taught using the English language in the Faskari educational zone, Katsina, Nigeria. The research question and hypothesis are in line with the objective of the study. The study adopted quasi quasi-experimental research design (pre-test, treatment, post-test). The population of the study consists of all primary five pupils in Faskari local government education authority. Intact classes in two primary schools were purposively selected as samples. Mother Tongue Performance Test (MTPT) containing thirty multiple-choice items was used as the research instrument. The instrument yielded a reliability coefficient of 0.83. Mean and standard deviation were used to answer the research question, while a t-test was used to test the hypothesis. The finding of the study revealed that students taught the concept of pollution using the mother tongue medium of instruction performed significantly better than those taught using the English language. Based on the findings, the study recommended that the mother tongue should be made the language of instruction at the primary school level and eventually at all levels of education in Katsina and Nigeria.

ARTICLE INFO

Article History:

Submitted/Received 05 Nov 2023

First Revised 24 Dec 2023

Accepted 25 Feb 2024

First Available online 26 Feb 2024

Publication Date 01 Mar 2024

Keyword:

*Mother tongue,
Performance,
Pollution.*

1. INTRODUCTION

Primary school education is considered the first stage of formal education. The policy explains further that, since the rest of the education system of the country is built on primary education, this level constitutes the key to the success or failure of the whole system. It is considered as the bedrock to further learning in achieving basic literacy, and numeracy as well as establishing solid foundations in science and other related subjects and disciplines. On the other hand, [Kabir and Zakari \(2017\)](#) maintained that primary school is a place where teaching and learning are practicalized, knowledge and skills are acquired and advanced, attitudes and values are internalized and educational ends are met. This is why any meaningful learning and subsequent educational fortunes and achievements are tied to a successful primary education.

In the act of learning, learners obtain content knowledge, values, positive attitudes, and skills develop work habits, and practice the application of all upper mentioned to real-life situations; applications that have a bearing on performance ([Credé & Kuncel, 2008](#); [Shidiq & Yamtinah, 2019](#)). Performance represents a set of strategies for the acquisition and application of knowledge and skills through tasks that are meaningful and engaging to learners. Teachers can therefore determine the extent to which learners acquire relevant curriculum content by assessing their performance.

In recognition of the importance and contributions of language to education (especially at the primary school level), the Federal Ministry of Education, in collaboration with other statutory agencies included in the National Policy on Education, as reported by [Okudo \(2013\)](#), stipulated that instructions in primary schools should be solely in the mother tongue or the language of the immediate community. Subsequently, English language can be used as the language of instruction at the secondary school level and higher institutions ([Kirkgöz, 2014](#); [Tai & Zhao, 2024](#); [Smit & Dafouz, 2012](#)). It is this policy of adopting the mother tongue as a medium of instruction at primary schools and the subsequent shift to English as a medium of instruction in post-primary education that formed the basis of this study.

There are arguments and counterarguments for and against the language policy in question: “that instruction at the primary school should be given in Mother tongue, after which, at the post-primary education, instruction should be switched to the English Language.” This issue is becoming more problematic in the sense that many scholars contradict each other as to which approach or medium is appropriate for instruction at the primary school level, which is all considered to be a central stage of formal education.

Advocates for the adoption of Mother tongue as the medium of instruction such as are of the view that the proper development of a child is closely related to the frequent use of the language he or she is used to. In essence, through exercising the mother tongue as the medium of instruction, the child acquired, at the very early stage, self-confidence, initiative, resourcefulness, creative reasoning, and adaptability, that is, skills necessary for further growth in the later stage of educational development. Hence, by adopting the mother tongue medium as a medium of instruction, the individual child is groomed to lay the foundation of further developments, which he/she is likely in a position to build upon in later years in another language.

Strongly opined that education should be given through the medium of Mother tongue in the formative years (1-12) and that, this should extend to as late a stage as possible. To them providing education through the mother tongue will offer the child an opportunity to explore the natural environment, develop curiosity, and reasoning ability, and engender self-confidence. They maintained that the use of the mother tongue in the teaching-learning process in the early years (at the primary school level) helps not only in preserving one’s

culture and values but also develop it lexically. Fernando (2020) maintained that the mother tongue is the language a child has acquired through their first experiences of life, dreams, thinking, and confidently and conveniently expressing feelings and emotions. To ignore the child's familiar language as soon as he/she comes to school is like taking the child away from home. In addition, the mother tongue is an indispensable instrument for the development of the intellectual, moral, and physical aspects of education. It is a subject of thought through which other thoughts can be tackled, understood, and communicated. Clarity of thought and expression is only possible when one has a certain command over the mother tongue. Weakness in any other subject means weakness in that subject only; weakness in the mother tongue means the paralysis of all thought and the power of expression, deep insight, fresh discoveries, appreciation, and expansion of ideas.

The mother tongue as the language that a group of people considered to be inhabitants of an area acquire in the early years and which eventually becomes their natural instrument of thought and communication. Moreover, the mother tongue can be defined in many ways that depict the following variables such as; by origin, which is the language one has first spoken in the early childhood, or the language which one has established the first long-lasting verbal contact. Internal identification, which is the language one identifies with as a speaker of by the people around him for his/her ability to manipulate the language to suit his claim and thoughts. Others are external identification which implies the language one is identified with as a speaker by others who consider his/her dialect and accent as unique to a particular community. Competence signifies the language one knows and can manipulate best; and function, which is the language one uses most and exercises a lot of command in deliberations and activities.

From whatever viewpoint, the mother tongue is the first language that a person learns. In this regard and the teaching-learning process, the mother tongue of a child is of utmost importance. It categorizes a large part of the child's environment that has names for all the objects. Considering the relevance of the mother tongue in the teaching-learning process, the following advantages of the mother tongue in the instructional process: The Mother tongue medium of instruction promotes the psycho-emotional well-being of the learner as it ensures a smooth transition from home to school. It deepens the orientation of the child's socio-cultural environment. It enhances patriotism to empower and strengthen good citizens, integrate the child soundly into the creative cultural environment, and ensure the unique survival of the child. It facilitates learning by maintaining a high level of motivation. Hence, any sudden break from the mother tongue to which the learner is both psychologically and socio-culturally attached may introduce feelings of inadequacy and resentment towards self, teacher, and school. It leads to continuity in cognitive maturation. In this situation, schools should build on already-acquired experiences at home instead of breaking or frustrating the intellectual process. Linguistic research has shown that, at the age of five, the child has acquired some fluency and competency in appropriate and developmental tasks, which the school should continue to promote and to ensure the child's early activation of potential. Mother tongue helps in the quicker acquisition, retention, dissemination, and use of knowledge in other subject areas.

Mother tongue instruction encourages children to learn the basic rudiments of modern science and technology in their language. The mother tongue instruction if properly handled, can contribute to our overall national development. Hence, as long as science and technology are transmitted in the mother tongue, so long as scientific and technological development is transmitted in children and youth, it will open the door of opportunity for the technological advancement of Nigeria as a nation. In this respect and as a reasonable perspective, a Nigerian

child should be encouraged from the start to develop curiosity, initiative, manipulative abilities, spontaneous flexibility, and manual dexterity. He/she should acquire these skills and attitudes through the mother tongue. This is where the average European or English child has an added advantage over his Nigerian counterpart. While the former is acquiring new skills in primary education in his mother tongue, the latter is busy struggling with a foreign language during the greater part of his primary education.

Critics of the adoption of the mother tongue as the medium of instruction have argued that, early instruction in one's Mother tongue could have a negative effect on the learner. They further stressed that the transition from the mother tongue to English, which is the official language in Nigeria, will be difficult and that, the official language will never be sufficiently mastered to enable the learner to fit properly into the life of the national elite (Aliyu, 2019). They further argued that intellectual development will be hindered by the need to cope with the demands of two languages (the mother tongue and the official language, English). On the other hand, English as one of the most prominent and prestigious languages in the world, is adopted as the official language in Nigeria. As a multilingual nation, Nigeria uses English as a unifying language among its people. It enhances socialization and promotes mutual intelligibility among different ethnic groups. It is the language of instruction in all the higher institutions of learning. Most school texts are printed in English. It is a subject in itself and a specialized discipline in its context. Admission to higher institutions, especially, universities is based on competency in English. English language has become integral, if not indispensable, to our national history. It is not just a first or second language to many Nigerians but also the official language of the entire country, with all its educational, technological, legislative, and diplomatic functions.

Scholars (Aliyu, 2019) who supported the adoption of the English language as the medium of instruction at the primary and all school levels are of the view that early exposure of children to the English language will help prepare them to achieve mastery and fluency. They believed that children at the age of seven and below stands a chance of achieving the same inter-language and fluency as the natives can. This is so because the language acquisition device (LAD) only freezes at the age of twelve. English language has an increasing recognition for helping learners cope effectively with the challenges of learning, the development of skills, educational transformation as well as instructional effectiveness. The education system is in dire need of positive transformation, most especially in the teaching-learning process at the primary school level. Hence, the English language will serve as the bedrock of success in other fields of study, as comprehending those fields of endeavor depends largely on its effective usage.

Advocates of the adoption of the English language as the medium of instruction further argued that most indigenous languages (Mother tongue) are too underdeveloped and not sophisticated enough to take cognizance of scientific terms and technical thoughts. They entertain fears that most mother tongues in Nigeria have no technical development of language that is, writing form, body of creative writing, vocabulary and register appropriate to a variety of specialized technical areas and discourse modes. Less than 10% of all indigenous languages in Nigeria were transformed into writing form. In addition, it is a well-known fact that an overwhelming majority of indigenous languages in Nigeria do not meet the standardized criteria required of a language in such a situation, thus; How do you explain mathematical equations and conduct scientific experiments?

Advocates of the mother tongue instruction believed that these arguments are not supported by available research evidence and experiences but rather by fear of the unknown. What arguments of this nature tend to ignore is that living languages do grow by adapting to

the demands of the changing times. Thus, as soon as a language encounters new experiences or phenomena, it progressively finds an appropriate term for it. To develop the mother tongue scientifically and technologically, translation of key terminologies is all that is required. In this context, translation is an operation performed on a language that involves a process of substituting a text in one language for a text in another. The fact that for languages with fairly stable or settled orthographies, as in the case of Hausa and Yoruba, creating indigenous technical terms is all that is required. For example, in the Hausa language, “Yanan Gizo” is for the internet, “Na’ura mai kwakwalwa” is for the computer, and so on. The great and developed nations of the world, the individualized high-performance nations are those that have acquired skills based on their native languages. Hence, Nigeria should not be excluded. It is pertinent to stress the relevance of Basic Science as a core subject at the primary school level. One of the developments that deserve commendation associated with the National Policy on Education is the pride of place it has accorded Basic Science as a compulsory subject which all primary school pupils cannot dispense with in their learning activities. It is believed that teaching and learning Basic Science could establish a strong avenue for the production of science-based pupils that will further promote scientific and technological advancements needed for the development of the nation. Hence, it is in the recognition of the need for inculcating into young pupils the right type of skills and integrated disciplinary orientation in the study of science, that calls for its inclusion in the primary school curriculum.

Basic science is a body of organized knowledge and a process of inquiry that deals with the basic ideas, methods, and objectives of finding out about things in our environment. The components that ought to be reflected in the instructional process of Basic science, such as information which includes facts, formulas, principles, and explanations. The process through which scientists think and work, design experiments to answer questions, solve problems, and gain information. Creativity, which means visualizing scientific principles, imagining solutions to puzzles, and connecting ideas; attitudinal which includes self-image and personal confidence in personal scientific ability and societal role; and personal relevance, which involves applications and connections to the environment. Moreover, when Basic science is taught to reflect all these domains, pupils acquire scientific skills like observation, measurement, and classification, and attitudes like open-mindedness, honesty, perseverance, and curiosity, among others.

Based on the foregoing perspectives, it is endorsed that in any attempt that is geared at improving pupils’ academic performance, the relevant instructional medium can never be overemphasized. The medium of instruction is highly considered to be the process of classroom interaction, which contributes to the effectiveness or otherwise of any teaching and learning process. Basic Science in primary school is believed to be the foundation for creating scientific minds in pupils. Despite the relevance attached to the subject in the curriculum as the prerequisite to study science-related courses at the secondary and tertiary institution levels, available data obtained from Faskari Local Government Education Authority revealed an alarming rate of failure of 68% of primary school pupils in Basic Science in 2021/2022 Science and Technical Schools entrance examination (see **Table 1**).

Table 1. 2021/2022 Entrance Examination Result in Basic Science.

Gender	No. of Candidates	No. of Pass	No. of Fail	%Pass	%Fail
Male	374	107	267	21	53
Female	127	53	74	11	15
Total	501	160	341	32	68

Different scholars (Salisu, 2017) have revealed positive perspectives on the effectiveness of the mother tongue medium of instruction in the teaching and learning process at the primary school level. Despite this, therefore, this study examined the effect of mother tongue on performance in the concept of pollution among primary school pupils in Faskari Educational Zone, Katsina, Nigeria.

The study was conducted to determine the difference in the mean performance score of pupils taught the concept of pollution using the mother tongue medium of instruction and those taught using the English language in Faskari Educational Zone, Katsina, Nigeria.

The following question was raised for the study: What is the difference between the mean performance score of pupils taught the concept of pollution using the mother tongue medium of instruction and those taught using the English language in Faskari Educational Zone, Katsina, Nigeria?

The following hypothesis was formulated based on the research question: There is no significant difference between the mean performance score of pupils taught the concept of pollution using the mother tongue medium of instruction and those taught using the English language in Faskari Educational Zone, Katsina, Nigeria.

2. METHODS

The study adopted quasi quasi-experimental research design (pre-test, treatment, post-test). The population of the study consists of all primary five pupils in Faskari local government education authority. To this effect, seven thousand two hundred thirty-three (7,233) primary five pupils of the 2022/2023 academic session consisting of 4,567 males and 2,666 females were the population of the study. Intact classes in two primary schools were purposively selected as samples. Mother Tongue Performance Test (MTPT) was used for the study. The instrument contains thirty multiple-choice items. Using the Pearson Product Moment Correlation Coefficient (PPMC), the instrument yielded a reliability coefficient of 0.83. Mean and standard deviation was used to answer the research question, while an independent samples t-test was used in testing the hypothesis at a 0.05 significance level using the SPSS 23.0 version.

3. RESULTS AND DISCUSSION

3.1. Research Question: What is the difference between the mean performance score of pupils taught the concept of pollution using the mother tongue medium of instruction and those taught using the English language in Faskari Educational Zone, Katsina, Nigeria?

To answer this research question, the mean and standard deviation of students' post-test scores on the concept of pollution in the experimental and control groups were used. **Table 2** revealed that there is a statistical difference in the mean score and standard deviation between the experimental and control groups in the concept of pollution. The experimental group has a mean score of 25.432 and a standard deviation of 3.203 while the control group has a mean score of 6.522 and a standard deviation of 3.102. A mean gain of 18.91 was calculated in favor of the experimental group. This finding implies that pupils taught the concept of pollution using the mother tongue medium of instruction performed significantly better than those taught using the English language.

Table 2. Mean performance score of experimental and control groups.

Group	N	\bar{x}	SD	Mean Gain
Experimental	40	25.432	3.203	18.91
Control	40	6.522	3.102	

3.2. Hypothesis: There is no significant difference between the mean performance score of pupils taught the concept of pollution using the mother tongue medium of instruction and those taught using the English language in Faskari Educational Zone, Katsina, Nigeria.

Independent samples t-test was explored to test the null hypothesis at a 0.05 significant level as presented in **Table 3**.

Table 3 presented the mean performance score of experimental and control groups taught the concept of pollution using the mother tongue medium of instruction and English language. The table revealed that the p-value= 0.000 is less than the alpha 0.05. The t-calculated 6.49 is greater than the t-critical 2.78 at 78 degrees of freedom. The hypothesis which stated that there is no significant difference between the mean performance score of pupils taught the concept of pollution using the mother tongue medium of instruction and those taught using the English language in Faskari Educational Zone, Katsina, Nigeria was rejected. This means that there is a significant difference between the mean performance score of pupils taught the concept of pollution using the mother tongue medium of instruction and those taught using the English language in Faskari Educational Zone, Katsina, Nigeria.

Table 3. T-test analysis of mean performance score of experimental and control groups.

Group	N	\bar{x}	SD	df	t-cal	t-crit	p-value
Experimental	40	25.432	3.203				
Control	40	6.520	3.102	78	6.49	2.78	0.00

3.3. Discussion

The findings of the study revealed that there is a significant difference between the mean performance score of pupils taught the concept of pollution using the mother tongue medium of instruction and those taught using the English language in Faskari Educational Zone, Katsina, Nigeria. The pupils taught the concept of pollution using the mother tongue medium of instruction performed academically better than those taught using the English language. This finding agrees with the findings of [Fernando \(2020\)](#), all of whom revealed that instructions in the mother tongue enhance academic performance. Scientific and technological development is best expressed in the language that the child is so comfortable twisting, blending, manipulating, or even breaking to suit his/her creative intention and capabilities. Hence, the language that can easily be twisted to suit learners' needs and scientific development is the mother tongue. The finding of this study also supported and justified the findings of Oluwole in 2008 that pupils become active in the teaching-learning process using their mother tongue and become passive in the process that uses the English language.

4. CONCLUSION

This study has revealed that the mother tongue medium is more effective than the English language medium in teaching the concept of pollution in Basic Science. The study therefore concluded that the mother tongue medium of instruction is more effective in enhancing primary school pupils' academic performance in Basic Science than the English language medium. Based on the findings and the conclusion drawn, the following recommendations were made: (i) That Mother tongue should be made the language of instruction at the primary school level and subsequently at the basic and tertiary education levels; (ii) This could be

made possible through strengthening and advancing the National Policy on Education on Mother Tongue and the language of instruction to cover all levels of education.; and (iv) This also could be made possible by constituting a committee of curriculum experts, subject specialists, and all other stakeholders in education to come up with an integrated Mother tongue curriculum design for at least the three major Languages in the country. For the initial stage to cover all core subjects rendered in our institutions of learning and eventually, all subjects and courses.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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