Effect of Yoruba Language on Primary School Pupils’ Academic Achievement in Numeracy in Ibadan, Oyo State, Nigeria

Dr Felix O. Ibode & Lasaki Omolola Aishat
Institute of Education, University of Ibadan, Ibadan, Nigeria

Abstract
The study investigated the effect of Yoruba language (mother tongue) on pupils’ academic achievement in Ibadan. The study adopted pretest-posttest control group quasi-experimental research design. Simple random sampling technique was used to select three local government areas and two primary schools in each of the local government areas using intact classes that were distinctly located from one another within the selected local government areas. The researcher randomly assigned four schools to the Yoruba Language Teaching Strategy (YLTS) and the remaining two schools to the conventional method (English Language). The participants comprised 197 primary four pupils. One treatment package [Yoruba language instructional package (YLIP)] and one instrument [Numeracy Achievement Test (NAT)] were used in the study. The ability of the package and the instrument to measure the skill it has been designed for was established by the researchers. Thus, the reliability co-efficient of 0.76 was obtained using KR20. The data collected were analyzed using Analysis of covariance (ANCOVA). The result reveals that Yoruba language has significant effect on pupils’ academic achievement in numeracy. Also, school locations do not significantly affect the academic achievement of primary school pupils and no significant interaction effect of Yoruba language and school location is revealed. The researchers advocated that Yoruba language as a medium of instruction should be used in teaching numeracy at the primary school level for the purpose of improving academic achievement. The federal government should take a second look at the policy of use of mother tongue for instruction to cover all level of primary school education, in order to prepare them for effective secondary school education. The government should endeavour to monitor the teachers to know if the policies are being implemented.

Keywords: Yoruba language, school location, academic achievement, primary school pupils.

Introduction
The language of instruction in school is determined by the lingua franca of the country, the mother tongue of the learners and the geographical location of the school (Aceme, 2015). The medium of instruction in school can either be bilingual or single language instructional medium in most countries. Therefore, the language through which teaching and learning is conducted, is as important as other factors affecting pupils’ achievement in schools. Language serves as a medium of expression which helps in shaping human thoughts. It also helps to maintain cultural affinity thereby improving inter-personal cognitive communication. Language is the basic tool for acquiring knowledge, hence, it is very crucial to teaching and learning.

The use of language to facilitate teaching and learning has been the concern of most countries in the world. Some countries either adopt one of the two languages as medium of instruction in schools. For example, in India, English or Hindi is used as medium of instruction. In China, Chinese is used to teach at all levels of their educational system. But in Africa, many countries have been adopting bilingualism in lower primary and strictly single language instructional medium from the upper primary to the tertiary education. According to Walu (2009) Tanzania and Zimbabwe are the two African countries that have gone far in the use of mother tongue as medium of instruction in the entire primary schools. Nigeria should not be left out in this pursuit of the use of indigenous language as a medium of instruction for teaching and learning processes, especially at the lower basic class. This can be seen in the amount of studies that have been carried out by various researchers of which the work of Prof Babatunde Fafunwa on the use of mother tongue as language of instruction is prominent.
It was stated in the National Policy on Education (FRN, 2004) that throughout early childhood, pre-primary and the first three years of primary education, pupils must be taught in the mother tongue or language of the immediate community (section 14). This refers to the 521 local languages (Euron Monitor International, 2010) of which three major ones; Hausa, Yoruba and Igbo are spoken by over 70% of the population and serve largely regional functions (Ibekwe, 2006). Despite the government’s commitment to education the quality of education in our schools has been declining tremendously, thereby giving successive government’s serious concern (Adeyemi et al 2012).

The debate on the use of mother tongue as a medium of instruction in primary schools has been ongoing for over a decade. UNESCO has emphasized the importance of the mother tongue in the education of the child (UNESCO, 2008). Also, the National Policy on Education (2004) which has been revised severally recognized the importance and purposes of indigenous languages in the educational sector. The policy stated that the medium of instruction should be the language of the immediate environment for the first three years of the learner’s education and subsequent introduction of English language as a medium of instruction from the fourth year. However, it seems teachers are no longer following what the policy stated. In support of this, findings from the use of mother tongue indicate that the policy is not being implemented in some parts of the country while it is partially implemented in other parts. This assertion was affirmed by Igboanusi (2008) who stated that the policy has not been effectively implemented. The pronouncement in the National Policy on Education has inspired several researchers like Akinola (2010), Olajide (2007) and Walu (2009) on the implementation of mother tongue as medium of instruction in Nigerian primary schools.

When learners are given opportunities to learn in their mother tongue, they are more likely to succeed in classrooms (Kosonen 2005) and their parents are likely to communicate with teachers and get involved in their children’s learning (Benson 2002). Ball (2010) argues that six to eight years of education in mother tongue are essential to develop the literacy and verbal proficiency level of learners required for academic achievement in schools. Furthermore, Ball asserts that literacy in the mother tongue allows for linguistic foundation for learning additional languages. Fasanmi and Adesina (2003) a child will learn faster and better if he is taught in the native language at the primary level of education. It was identified that the mother tongue instruction will help learners to acquire facts and information easily and also aid speedy interpretation.

According to Kraft (2003) learners who were taught for a long period in their first language and did most of their normal academic and cognitive instructions in that language, will have a greater opportunity to learn the second language. Mathooko (2009) states that an indigenous language as a medium of instruction is educationally preferable because it links teaching with the home life of the child. Studies by Alidou, Boly, Brock-Utne, Diallo, Heughand Wolff (2006) have shown that the use of the mother tongue as a medium of instruction in schooling improves teaching and learning of a foreign language as a subject of learning which may eventually make it a better medium of specialized learning at all times. Also, Lindholm, 2001; Lindholm-Leary and Borsato, (2006) argue wisely that learners should not be instructed in a second language until they have acquired the basic academic competence in the first language, till the end of primary 6 in school. This can bring about significant social change in the society in which the learner finds himself. Learning in mother tongue-based education assists pupils to achieve higher proficiency in the majority language than learning in transitional bilingual programmes (Thomas & Collier, 2002). This results in noticeable programmes that have continued to use indigenous language as the primary language of instruction in the primary school (Abidogun 2012).

On the other hand, Gupta (1997) states that the use of mother tongue does not necessarily lead to better education. Instead mother tongue instruction is used to perpetuate the cycle of class distinction. Gupta says it is only the poor who are subjected to the use of the language while the rich and elites make use of the official language to communicate and transact business. Some groups believe that if children are taught in their mother-tongue at the early stages, they will understand the subjects better and subsequently perform excellently in exams. Perhaps, in recognition of the crucial role of language in education, the Nigerian National Policy on Education stipulated that government will see to it that the medium of instruction in primary school is initially the mother-tongue or the language of the immediate environment.
Primary education is most often referred to as elementary education, which comprises grade one through six. The main purpose of primary education is to give children a strong foundation of formal education. It is an essential component in the levels of educational system of every nation. In order to qualify for other levels of education, one must pass through primary school, because it is the foundation upon which all other levels of education and educational achievements are built. Also, it prepares the mind and trains the child for higher academic pursuits, provides young learners with fundamentals of reading, writing, skill acquisition, information and attitudes necessary for proper adjustment into the society. This level of education seems to be a panacea for solving societal problems, such as ignorance, illiteracy, insecurity and political bondage. Plausibly, the Nigerian government has for long known the importance of primary education to national development. Fafunwa (1974) stated that the aims of primary education in all the states of the federation were to help the child to "Master the three Rs - Reading, Writing, and Arithmetic, this is to develop permanent literacy."

An essential function of primary education is effective communication skills that will enable the pupils to be relevant to the socio-economic development of the nation, especially in this era where improved communication has become the order of the day through the use of sustained information and communication technologies. This important function is aimed at providing literate population and to lay down the foundation for further education in terms of secondary and higher education. Primary education is the pupils' stepping-stone to pursue higher academic and social goals (FRN, 2013).

Numeracy is a compulsory subject offered in Nigerian primary schools and is taught daily in all the schools or at least four times in a week. Every individual require the knowledge of numeracy to function effectively in today's world. Numeracy encourages the habit of self-reliance and assists learners to think and solve their problems themselves. (Primaryschoolcurriculum, teachers guidelines 1999)

Topics in numeracy inculcate good habits into learners. For instance, topics in measurement demand some amount of logical reasoning and analytical thinking from individuals so that they can be able to establish a relationship between known and required facts. Such topics help learners to reason logically and to realize that facts can be utterly established and so consequently develop the habit of desiring and demanding that in their affairs with others.

Furthermore, numeracy is an exact and precise body of knowledge. The procedure by which the final answer is arrived at may be different, but the answer remains the same. There is therefore no half-truth in numeracy. A statement is either true or false and an answer is either correct or not correct and can be verified by a reverse process. Accuracy and exactness are the pillars on which numeracy stands. It is a subject that cannot be learnt through vagueness of thought or argument. It therefore trains and disciplines the mind. A learner of numeracy learns the value of accuracy and adopts it as a principle of life. Knowledge of numeracy, thus, promotes the habit of accuracy, logical, systematic and orderly arrangements of facts in the individual learner (INTO. 2013)

In addition, a whole lot of difference in the teaching and learning of numeracy can however be made by the teacher of numeracy. The medium of instruction in which the teacher uses may be a reason for pupils losing interest or not doing well in numeracy. A teacher should be able to lift his learners to the level they would begin to appreciate numeracy and its application so that learners' attitude towards the subject would begin to change and their performance in the subject consequently would also improve (Ramona 2015) Furthermore, in the teaching of numeracy the best practice may be teaching or boosting learners' understanding with the language in which they are familiar with, for understand the rudiments involved in the subject.

Yoruba language serves as a mother tongue for indigenes of southwestern Nigeria, the home and first language of children is Yoruba language. Yoruba is an ethnic group in West Africa and predominantly in Nigeria. The tribe is famous and it has a language known as Yoruba language which is spoken in the South Western states of Nigeria and it is the mother tongue of the people of the states. Bamgbose (2011) states that the standard forms of Yoruba is the type of Yoruba learned at school, and spoken or written mostly by educated native speakers to addressees who speak different dialects. The language is one of the three national languages in Nigeria and it is an honor due, to the socio-political importance and sheer number of its speakers. This has translated into socio-linguistic developments for the language in terms of its study and usage in the country.
Academic achievement is the level of performance that is exhibited by an individual (Irogbo 1992). In other words, it is the degree of success attained at the end of an academic exercise which can be conceived to mean the extent one is able to accomplish after learning has taken place. Academic achievement can be known as the level of efficiency and knowledge demonstrated by an individual after learning has occurred (Irogbo 2002). Oshokoya (1998) also states that academic achievement is the outcome of education and Odinko (2014) claims that academic achievement is the extent to which a student, teacher and institutions have achieved their educational goals. Academic achievement is commonly measured by examination or continuous assessment but Adedipe (1985) claims there is no general agreement on how it is best tested or which aspects is more important procedural knowledge.

School location is considered in this study as moderating variable. School location may be a factor that can contribute significantly to teaching and learning process. School location refers to the site of the school, either in urban or semi-urban area. Difference in location of schools simply connotes existence of difference in the language environment and the school tone. Language environment refers to where learner is surrounded by those who frequently speak or communicate with the learner using a wide vocabulary. The choice of medium of instruction in different school locations may vary, for instance, a pupil who goes to school in a semi-urban area and is being taught with English medium of instruction might not be efficient enough in learning. The language environment of a language learner has a lot to contribute because he learns from what he hears or sees around.

Statement of the Problem

Language and medium of instruction is germane to teaching-learning process, especially at the primary level of Education. The medium of instruction in primary education is crucial because it is the foundation level of education to which other levels of education are built. Presently, the Nigeria primary education has come under severe criticism because the various problems besetting the level of Education especially the low level of academic performance. Some of the problems in the primary school system could be traced to the medium of instruction, which is majorly English language. This seems to be against the National policy of education which stated that mother-tongue should be used as medium of instruction for the lower primary school one to three. The popular mother tongue research carried out among primary school pupils by Prof Babatunde Fafunwa was about thirty years. Since then a lot of development has taken place within the primary education system. There seems to be need for re-appraisal for the use of mother tongue in Nigerian primary education. Moreover, there seems to be scarcity of literature in Nigeria on the use of Yoruba language (mother tongue) as medium of instruction in numeracy. Therefore, in order to fill this gap in the existing literature the study examined the effect of Yoruba language as Medium of instruction on pupils' academic achievement in numeracy among primary school pupils in Ibadan, Oyo state.

Hypotheses

H01: There is no significant main effect of treatment on pupils' academic achievement in numeracy.

H02: There is no significant main effect of school location on pupils' academic achievement in numeracy.

H03: There is no significant interaction effect of treatment and school location on pupils' academic achievement in numeracy.

Methodology

The study adopted pretest-posttest control group quasi-experimental research design. The population of the study consisted of all primary four pupils in Ibadan. Simple random sampling technique was used to select three local government areas and two primary schools in each of the local government areas using intact classes that were distinctly located from one another within the selected local government areas. The researcher randomly assigned four schools to the Yoruba Language Teaching Strategy (YLTS) and the remaining two schools to the conventional method (English Language). The participants comprised 197 primary four pupils, 112 in experimental group and 85 in conventional group. One treatment package [Yoruba language instructional package (YLIP)] and one instrument [Social Studies Achievement Test (SSAT)] were used in the study. The ability of the package and the instrument to measure the skill it has been designed for was established by the researchers. The researchers distributed ten
copies to some experts in test construction for their suggestions and
recommendations which led to modification in some aspects of the
package and instrument. The consistency on the part of the instrument
in measuring the achievement of pupils it was designed for was
ascertained by the researchers. The pilot study was conducted in a
school outside the selected sample to establish reliability of the
instrument. Thus the reliability co-efficient of 0.76 was obtained using
KR20. The data collected were analyzed using Analysis of Covariance
for all the stated hypotheses.

Results and Discussion

Testing of Stated Hypotheses

Analysis of Covariance (ANCOVA) was used in the study to test the
stated hypotheses and interpreted findings at 0.05 level of significance
(p<0.05).

Hypothesis 1

H0: There is no significant main effect of treatment (Yoruba
language) on pupils' achievement in numeracy.

Table 1: shows the main effect of treatment on pupils' achievement in
Numeracy.

Table 1: Summary of 2 x 1 x 1 Analysis of Covariance (ANCOVA)
of posttest Mean score of pupils' achievement in Numeracy by
treatment and location

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>906.234</td>
<td>4</td>
<td>226.558</td>
<td>34.290</td>
<td>.000</td>
<td>.417</td>
</tr>
<tr>
<td>Intercept</td>
<td>1168.149</td>
<td>1</td>
<td>1168.149</td>
<td>176.801</td>
<td>.000</td>
<td>.479</td>
</tr>
<tr>
<td>Numeracy</td>
<td>861.774</td>
<td>1</td>
<td>861.774</td>
<td>130.431</td>
<td>.000</td>
<td>.405</td>
</tr>
<tr>
<td>Pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>44.795</td>
<td>1</td>
<td>44.795</td>
<td>6.780</td>
<td>.010</td>
<td>.034</td>
</tr>
<tr>
<td>Location</td>
<td>19.624</td>
<td>1</td>
<td>19.624</td>
<td>2.970</td>
<td>.086</td>
<td>.015</td>
</tr>
</tbody>
</table>

The result on Table 1 indicates that there is significant main effect of
treatment (Yoruba language) on pupils' achievement in numeracy
F(1,192) = 6.780; p<0.05. The null hypothesis H0 (a) was therefore
rejected. The Partial eta squared of 0.34 implies that the treatment
(Yoruba language) accounts for 3.4% of the observed variance in the
post-test scores of pupils' achievement in numeracy. The adjusted R
square value of .405 indicates that the independent variables accounted
for 40.5% of the variation in pupils' achievement in numeracy.

Table 2 Estimated Marginal Means and Standard Error of
Treatment Groups

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
</table>

Covariates appearing in the model are evaluated at the following
values:
Numeracy pretest = 11.07

Table 3 Pairwise Comparison of pupils' achievement in numeracy
by treatment (Yoruba language)

(1) Treatment (J)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval for Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tbody>
</table>
Table 2 shows that the mean posttest scores of pupils exposed to Yoruba language (X=14.683) is higher than those exposed to the conventional method (X=13.670). The significant difference is the mean difference of pupils exposed to Yoruba language and conventional method shows that pupils exposed to Yoruba language enhanced pupils' achievement in numeracy. This may be due to the fact that pupils' understand better the concept of what they are taught since it is their mother tongue that they are used to. Table 3 confirmed that the difference between the treatment group (Yoruba language) and the Control Group was statistically significant.

**Hypothesis 2**

H2(a): There is no significant main effect of location on pupils' achievement in numeracy.

The result on Table 1 indicates that there is no significant main effect of location on pupils' achievement in numeracy F<sub>1,92</sub> = 2.970; P>0.05. The null hypothesis H2 was therefore not rejected. The Partial eta squared of 0.015 implies that location account for 1.5% of the observed variance in the post-test scores of pupils' achievement in numeracy. The adjusted R square value of .405 indicates that the independent variables accounted for 40.5% of the variation in pupils' achievement in numeracy.

**Table 4 Estimated Marginal Means and Standard Error of Location**

<table>
<thead>
<tr>
<th>Location</th>
<th>Mean</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>13.841</td>
<td>2.33</td>
<td>13.382</td>
<td>14.300</td>
</tr>
</tbody>
</table>

Table 4 shows that the mean posttest scores of pupils from semi-urban (X=14.512) is higher than those from urban areas (X=13.841). The significant difference is the mean difference of pupils from urban area and semi-urban areas shows that pupils from semi-urban areas perform better than pupils' achievement in numeracy. This may be due to the fact that pupils from semi-urban areas are exposed to Yoruba language than pupils from urban areas. Table 5 confirmed that the difference between the pupils from semi-urban areas and the pupils from urban areas was statistically not significant.

**Hypothesis 3**

H3: There is no significant interaction effect of treatment and school location on pupils' academic achievement in numeracy.

The result on Table 1 indicates that there is no significant interaction effect of treatment (Yoruba language) and location on pupils' achievement in numeracy F<sub>1,192</sub> = 0.440; P>0.05. The null H3 hypothesis was therefore not rejected. The Partial eta squared of 0.002
implies that treatment (Yoruba language) and location account for 0.2% of the observed variance in the post-test scores of pupils' achievement in numeracy. The adjusted R square value of 0.405 indicates that the independent variables accounted for 40.5% of the variation in pupils' achievement in numeracy.

Discussion of Findings

The main effect of treatment (Yoruba language) on pupil's post test scores in numeracy was reported to be statistically significant after adjusting to the covariates, (pre-test score in numeracy). This implies that there was variation in student's scores in Numeracy based on the manipulation of the treatment (Yoruba language). In other words, the performance of pupils in experimental group differs from their counterparts in conventional group. The result of the study corroborates the findings of Alabi, (2002) who found out that the use of Yoruba Language as a medium of instruction is found to be more effective in the teaching of Primary Science, especially in the areas of heightening pupils' interests, participation and understanding, and ability to relate learnt concepts to the environment. Also, Alabi found that majority of the reporters confirmed the use of Yoruba Language to elicit Pupils understanding, interest, participation and ability to relate more concepts learnt to the environment. The study supports the findings of Dutcher (2003) who argues that children who begin their education with mother tongue as the language of instruction perform better than those who begin their education in another language other than the indigenous one. Explaining further, Dutcher (2003) mentions that academic achievement can be attained when mother tongue is used as a basis for learning additional language. Likewise, the study is in line with the findings of Adegoju (2008); Ross, (2004) and Ukwuma (2004) who support the use of the mother tongue as a medium of instruction in primary school classes. However, the study negate the findings of Bamgbose (2011) who argues that using the mother tongues a medium of instruction has a negative effect on academic achievement.

The result also shows that there was no significant main effect of location on pupils' academic achievement in numeracy. This finding may be unexpected due to the fact that, pupils from urban areas are expected to perform better in their studies and especially an important subject like numeracy. This finding may be so, because of the exposure of pupils from semi-urban area to Yoruba language. Further result shows that school location do not significantly relate with the achievement of pupils in numeracy. It could therefore be inferred that pupils from urban and semi-urban areas of Ibadan do not differ in their achievement score in numeracy. The study also shows that the mean difference between pupils from urban areas and pupils from semi-urban areas of Ibadan is not significant as well. Therefore, schools located in semi-urban areas stand the same chance to excel academically like their counterparts in the urban schools. The study supports the study of Arikpo (2016), whose study is on Evaluation of Computer Studies Curriculum Implementation at the Upper Basic Level of Education in Cross River State, Nigeria and his findings reveals that school location had a negative relationship with the achievement of students and location do not significantly predict student skills acquisition in computer studies. This implies that students in urban location seem to be more efficient in computer studies than their rural counterparts.

However, the study negates the findings of Adepoju (2001) who found that learners in urban schools manifest more brilliant performance than their counterpart in rural location. Also, Akinwumi, (2008), found that pupils in urban areas seem to be more efficient in computer studies than their rural counterparts. The study disagree with the study of Okwelle and Wokocha (2014) who carried out a study on influence of school location and class size on academic performance of students in public secondary schools in Rivers state, Nigeria their findings revealed that there are significant differences between the school location and academic performance of students in Rivers state. Likewise, the study is not in line the finding of Odinko (2002), on how home and school factors determine literacy skills development, established that school location has influence on the academic achievement of the child. She adds that in most of the learners in urban schools are exposed to better and modern infrastructural facilities (computers facilities) and that they performed better academically than their counterparts in the rural schools.

Conclusion and Recommendations

The findings of this study have shown that Yoruba languages as a mother tongue could enhance academic achievement of pupils in Numeracy whether in urban or rural areas. This implies that the
interaction effect of treatment and location is not significant on pupils’ achievement in numeracy. In other words, if mother tongue (Yoruba Language) is use to teach numeracy either in urban or rural school it will still be effective.

1. Yoruba language as a medium of instruction should be used in teaching numeracy at the primary school level for the purpose of improving academic achievement.
2. The policy of use of mother tongue to teach pupils in primary schools should cover all the classes, in order to prepare them for a proper secondary school education.
3. Learning of numeracy and its application requires pupils to reason and put their mother tongue into the concepts of numeracy. Therefore, the mother tongue use for instruction should be based on the predominant language of each geopolitical zone.

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