

Impact of Mother Tongue Interference on the Teaching and Learning of Biology among Idoma Students in Senior Secondary Schools in Otukpo Local Government Area of Benue State

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Abstract: This study investigated the impact of mother tongue interference on the teaching and learning of Biology among Idoma students in senior secondary schools in Otukpo Local Government Area of Benue State. Survey research design was used with a total population of 2,322 Biology teachers. Random sampling technique was implored to randomly select 80 Biology teachers from the secondary schools in Otukpo, Benue State. Questionnaires were administered to collect data from the respondents. Data collected from the respondents were analyzed with the aid of descriptive statistics of Mean and Standard Deviation. While the null hypotheses were analyzed with Chi-square statistics. Result of the analysis revealed that there is prevalence of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State. Findings of the study also revealed that students with mother tongue interference have difficulties passing their examination (mean 3.51) and that, mother tongue interference in Biology class leads to poor academic performance in class activities (mean 3.56). The study further found that there are significant measures such as prohibiting students' from using mother tongue during lesson hours, use of artificial intelligence such as google assistant for detection of words, practicing tongue-twisters, among others can be taken to curb mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State. The study recommended that school administrators together with concerned bodies should aid all secondary schools with the procurement of essential instructional materials such as Biology textbooks, Biology dictionary and Biology audio tapes required for effective learning of Biology, among others.

KEYWORDS: Impact, Idoma, Otukpo, Mother tongue, interference, Biology

1. INTRODUCTION

Mother tongue is a dialect that a person has been exposed to from birth or within the critical period. In other climes, native tongue or mother tongue means the accent of one's ethnic group rather than one's first language (Love and Umberto, 2010). The Mother Tongue is the accent of a home, the dialect which a child grew up with; the dialect in his immediate community (Salami, 2012). Merriam-Webster (2012) defined mother tongue as 'the language that someone learns to speak first. A child, having spent his formative years at home and having learnt the language is best equipped to learn in it. Through this medium, a child can study almost any learning matter.

Mother tongue interference on the contrary is seen as the error native made by carrying over the speech style of the native language or dialect into second language (Harker, 2010). The interference can be high in areas of pronunciation, grammar and vocabulary when someone is learning to master the pattern of second language (Harker, 2010). Eric (2015) viewed Mother-tongue interference as an influence to the native dialect of the learner on his/her grasp of the target dialect. The target dialect being the language the learner is aiming to grasp.

Several high school students are beset by the negative transfer of mother tongue to the mastery of particular concepts of subject matter, the student often tends to think using his/her mother tongue while expressing himself using the second language. This usually encourages memorization by repetition and so impairs understanding (Fromkin et al., 2017). Again the case of confusion on the side of the students due to interference in the mother tongue to newly introduced concept in class, since the child would have to translate what was heard from the teacher through native thinking and so results to a reduction in the academic achievement of the students. Considering such practices of the students, the transition from home to school becomes gradual and less rewarding and as a result would impede on the academic achievement of the child (Adegbite, 2014).

Nowadays many researchers have realized that many students who do not have a firm grasp of the second language totally rely on the mother tongue (Corder, 2013), this usually results to a negative or positive transfer to secondary school students whose performances have been undermined by this mother tongue interference, with the negative transfer is especially obvious. This is mostly seen with students of Biology in Otukpo Local Government Area trying to pronounce particular words/terms in Biology such as protozoa to be 'uprotozoa', *Maratus* spp to be 'Malatus spp', malaria to be 'umalaria' among so many other interference observed by Idoma students.

Most often mother tongue does not promote effective learning of a particular subject matter, but to an extent impede the learner's mastery of some new languages or fresh biological concept; this is mostly referred to as negative transfer (Ayodele, 2018). Mother tongue interference is common in secondary schools in Nigeria without exception to the Tiv and Idoma Students of Benue State, negative transfer is more pronounced in languages which are often found among secondary school students.

1.1 Statement of the Problem

Mother tongue interference has more negative than positive impact on the study of Biology; in several secondary schools in Benue State, prevalence of mother dialect hindrance is often noticed in students of Biology in an attempt to pronounce a particular word does so with the intonation of the native dialect making the actual word sound out of Biology concept. This practice is undisputable in most secondary schools in Benue State, Nigeria; this act is consequently reflected in the poor academic achievement of secondary school students in Otukpo local government Area and in Benue State at large. Also, there is a dearth of knowledge on the significant effect of this mother tongue interference in the study of Biology among students in Nigeria. This research work is therefore geared towards ascertaining the effects of mother tongue interference in the study of Biology among Idoma students in senior secondary schools in Otukpo Local Government Area of Benue State, Nigeria.

1.2 Research Questions

In order to achieve the objectives of the study, the following research questions were raised to guide the research:

- i. What is the prevalence of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State?
- ii. What is the perception of teachers and students on the influence of mother tongue interference on the academic performance of Biology Students in senior secondary schools in Otukpo Local Government Area of Benue State?
- iii. What are the measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State?

1.3 Research Hypothesis

Two null hypotheses were posed to guide the study

H0₁: There is no significant prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State

H0₂: There are no significant measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State

2. Methodology

2.1 Research Design

The surveys research design was used for this study. This is considered appropriate because survey design generally can be used to effectively investigate problems in realistic settings.

2.2 Population of the Study

The population of this study comprised of all Biology teachers who teaches Biology in senior secondary schools in Otukpo, Benue State. There are thirty six (36) senior secondary schools in Otukpo Local Government Area with a total population of 2,322 teachers (Zonal Ministry of Education, Otukpo, 2021).

2.3 Sample Size and Sampling Techniques

Simple random sampling technique was used for the study. The sample used by the researcher for this study was eighty (80) Biology teachers to be drawn from the selected senior secondary schools in Otukpo, Benue State and was calculated using Taro yamene formula.

2.4 Instrument for Data Collection

Questionnaire was used as instruments for the study. The questionnaire was sectioned into two parts (Part A, made up of the bio data section and Part B- made up of 3 sections) and have both closed and open ended items. A Four Point Likert Scale was rated as strongly agree = 4, agree = 3, disagree = 2, strongly disagree = 1. The instrument was used to collect data from teachers using the constructed Impacts of Mother Tongue Interference in the Study of Biology among Idoma Students Questionnaire (IMTISBISQ). A mean bench mark of 2.5 was established in deciding on the criteria for answering the research questions.

2.5 Validity of the Instrument

In order to obtain the validity of the instrument, experts in measurement and evaluation carried out both content and face validity of the research instruments.

2.6 Data Collection Procedures

The researcher with the aid of a research assistant administered the instrument to the respondents who were given enough time to respond to the items before the researcher collects the questionnaire. This was necessary to ensure achievement of a good return ratio and help respondents to get a chance to seek clarification on items which prove difficult to understand.

2.7 Method of Data Analysis

The research questions were answered using descriptive statistics of the Mean and Standard Deviation, where 2.50 was established as the mean bench mark for decision. Chi square statistics was used to analyze the null hypotheses.

3. RESULTS AND DISCUSSION OF FINDINGS

Results were obtained and presented as follows:

Research Question 1: What is the prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State?

Table 1: Mean and Standard Deviation of Responses on the prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State

S/N	Items	SA (4)	A (3)	D (2)	SD (1)	N	\bar{X}	Std.	Remarks
1.	Students in my school are seen with the problem of mother tongue interference	55	22	2	1	80	3.64	0.60	Accepted
2.	Students find it difficult to express themselves very well due to mother tongue interference	43	28	2	7	80	3.34	0.90	Accepted
3.	Idoma Biology students are often seen misinterpreting a particular word in English wrongly due to mother tongue interference	34	8	24	14	80	2.78	1.18	Accepted
4.	Mother tongue interference is prevalent among Idoma Biology students in Otukpo, Benue State	45	23	8	4	80	3.36	0.86	Accepted
5	Students find it difficult learning and speaking English due to mother tongue interference	42	23	8	7	80	3.55	0.96	Accepted
6	Students of Biology often define Biology terms with interference of mother tongue	50	18	7	5	80	3.41	0.90	Accepted

Table 1 reveals that items 1-6 have mean values of 3.64, 3.34, 2.78, 3.36, 3.55 and 3.41 respectively which are all above the benchmark of 2.50. It can thus be concluded that in respect to the prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State, it was found that there is prevalence of the effect of mother tongue interference in senior secondary schools in the study area.

Research Question 2: What is the perception of teachers and students on the influence of mother tongue interference on the academic performance of Biology Students in senior secondary schools in Otukpo Local Government Area of Benue State?

Table 2: Mean and Standard Deviation of Responses on the perception of teachers and students on the influence of mother tongue interference on the academic performance of Biology Students in senior secondary schools in Otukpo Local Government Area of Benue State

S/N	Items	SA (4)	A (3)	D (2)	SD (1)	N	\bar{X}	Std.	Remarks
1	Students with mother tongue interference have difficulties passing their examination due to interference	52	20	5	3	80	3.51	0.78	Agree
2	Effect of mother tongue interference in Biology class leads to poor academic performance in class activities	48	30	1	1	80	3.56	0.59	Agree
3	Mother tongue interference reduces students' participation in Biology class	57	23	0	0	80	3.71	0.46	Agree
4	Interference of mother tongue with basic concept in Biology makes students misinterpret a particular words correctly in Biology	42	30	8	0	80	3.43	0.67	Agree
5	Mother tongue interference affects students sense of boldness and as a result affect their concentration in class	56	21	3	-	80	3.66	0.55	Agree

Table 2 reveals that items 1-5 have mean values of 3.51, 3.56, 3.71, 3.43 and 3.66 respectively which are all above the benchmark of 2.50. It can thus be concluded that based on the perception of teachers and students on the influence of mother tongue interference on the academic performance of Biology Students in senior secondary schools in Otukpo Local Government Area of Benue State. The following were observed: students with mother tongue interference have difficulties passing their examination due to interference, use of mother tongue interference in Biology class leads to poor academic performance in class activities, mother tongue interference reduces students' participation in Biology class, interference of mother tongue with basic concept in Biology makes students misinterpret a particular words correctly in Biology and that mother tongue interference affects students sense of boldness and as a result affect their concentration in class.

Research Question 3: What are the measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State?

Table 3: Mean and Standard Deviation of Responses on the measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State

S/N	Items	SA (4)	A (3)	D (2)	SD (1)	N	\bar{X}	Std.	Remarks
1	Prohibiting students' use of mother tongue during lessons hours	57	23	0	0	80	3.71	0.46	Agree
2	Reading Biology dictionary so as to be acquainted with appropriate pronunciation of specific word in Biology	52	15	7	6	80	3.41	0.94	Agree
3	Reading Biology words aloud for 15-20 minutes daily and recording of voice could curb mother tongue interference	51	23	4	2	80	3.54	0.71	Agree
4	Use of artificial intelligence such as google assistant for detection of words	40	29	5	6	80	3.29	0.89	Agree
5	Practicing tongue-twisters may also help in improving the pronouncement of Biology words.	50	18	7	5	80	3.41	0.90	Agree

Table 3 shows that items 1-5 each have mean scores of 3.71, 3.41, 3.54, 3.29 and 3.41 respectively which are above the benchmark of 2.5. This indicates the various measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State. Therefore, it was observed that prohibiting students' use of mother tongue during lessons hours, reading Biology dictionary so as to be acquainted with appropriate pronunciation of specific word in Biology, reading Biology words aloud for 15-20 minutes daily and recording of voice could curb mother tongue interference, use of artificial intelligence such as google assistant for detection of words and that practicing tongue-twisters may also help in improving the pronouncement of Biology words were some of the identified measures required to curb mother tongue interference in the study area.

Test of Hypotheses

Hypothesis 1: There is no significant prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State

Table 4: Chi-Square Analysis on whether there is significant prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State

	<i>df</i>	<i>X²</i>	<i>Asymp. sig</i>
Pearson Chi-square	5	37.60	0.00
No. of valid cases		80	

Table 4 above shows the chi-square analysis of the data collected from the responses of respondents on whether there is no significant prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State. From the analysis, $df = 5$, $X^2 = 37.60$ and $P < 0.05$. Therefore, the null hypothesis which states that there is no significant prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State is rejected. It is therefore concluded that there is a significant prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State.

Hypothesis 2: There are no significant measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State

Table 5: Chi-Square Analysis on whether there is no significant measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State

	<i>df</i>	<i>X²</i>	<i>Asymp. sig</i>
Pearson Chi-square	4	13.293	0.021
No. of valid cases		80	

Table 5 shows the chi-square analysis of the data collected from the responses of respondents on whether there are no significant measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State. The analysis revealed that $df = 4$, $X^2 = 13.293$ and $P < 0.021$. Therefore the null hypothesis which states that there are no significant measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State is thereby rejected. The study does conclude that there are significant measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State.

3.1 Discussion of Findings

This section deals with the discussion of findings arrived at the end of this study and is discussed in line with the findings from research questions and null hypothesis formulated for the study as follows:

Research Question 1 sought to find out the prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State. This was analyzed in Table 1 which shows that there is prevalence of the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State. It was further indicated that students in the sampled schools are seen with the problem of mother tongue interference, students find it difficult to express themselves very well due to mother tongue interference, Idoma Biology students are often seen misinterpreting a particular word in English wrongly due to mother tongue interference and that mother tongue interference is prevalent among Idoma Biology students in Otukpo, Benue State.

This is in agreement with Zhao (2019) who also investigated negative transfer of mother tongue in English in Baoding University, Baoding, China and also reported that Chinese senior school students learn English on the basis of their Chinese and as a result are affected by their mother tongue and their knowledge.

Research question 2 determines the perception of teachers and students on the influence of mother tongue interference on the academic performance of Biology Students in senior secondary schools in Otukpo Local Government Area of Benue State. This was answered in Table 2 which reveals that students with mother tongue interference often may not pass their examination due to interference, effect of mother tongue interference in Biology class leads to poor academic performance in class activities, mother tongue interference reduces students' participation in Biology class, interference of mother tongue with basic concept in Biology makes students misinterpret a particular words correctly in Biology and that mother tongue interference affects students sense of boldness and as a result affect their concentration in class. This finding agrees with that of Umar (2018); Filade et al. (2019). In their various studies also asserted that effect of mother tongue interference in science class leads to poor academic performance in both internal and external examinations and that interference of mother tongue with basic concept in a particular subject makes the learner misinterpret a particular words correctly.

Research Question 3 investigated the measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State. This was analyzed in Table 3, it reveals that prohibiting students' use of mother tongue during lessons hours, reading Biology dictionary so as to be acquainted with appropriate pronunciation of specific word in Biology, reading Biology words aloud for 15-20 minutes daily and recording of voice could curb mother tongue interference, use of artificial intelligence such as google assistant for detection of words and that practicing tongue-twisters may also help in improving the pronouncement of Biology words were the identified measures use in curbing mother tongue interference in the study area. This finding is in cognizance with Owheoli (2011); Obungu (2016); Isah et al. (2017) who in their various studies identified measures such as prohibiting students' use of mother tongue in school premises would help curb mother tongue interference in students.

4. Conclusion

From the results obtained in the study on the effect of mother tongue interference in the study of Biology among Idoma students in senior secondary schools in Otukpo Local Government Area of Benue State, Nigeria. It was revealed that there is prevalence of the effect of mother tongue interference in senior secondary schools. The study also indicated that students with mother tongue interference have difficulties passing their examination due to interference of mother tongue and that interference of mother tongue with basic concept in Biology makes students misinterpret a particular word correctly in Biology. It was also revealed that there are significant measures taken to curb the effect of mother tongue interference in senior secondary schools in Otukpo Local Government Area of Benue State.

5. RECOMMENDATIONS

1. School administrators, government, education stakeholders as well as concerned bodies should aid schools in the procurement of essential instructional materials such as Biology textbooks, Biology dictionary and Biology audio tapes required for effective learning of Biology
2. The school authorities should be strict at prohibiting students' use of mother tongue during lessons hours and in the school premises.
3. The students should be encouraged to practice tongue-twisters as this may help in improving the pronouncement of Biology words.

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