COMPARATIVE STUDY OF USE OF LOCAL AND FOREIGN LANGUAGES IN TEACHING AND LEARNING OF COMPUTER SCIENCE IN SECONDARY SCHOOL

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Abstract

This study titled, "comparative study of use of local and foreign languages in teaching and learning of computer science in secondary school" was amid at ascertaining the impact of using local languages (Igbo language) over the use of foreign language (English language) in teaching computer. The study have three research questions and two hypotheses. It is a quasi-experimental research design that made use of 300 secondary school students drawn using simple random sample techniques from the five Igbo speaking states of Nigeria. Instrument for data collection is called "Computer Achievement Test (CAT)". The instrument contains 20 multiply choice questions with option A –D formed from secondary school computer lesson. Data for the study was generated by administering the same CAT to both experimental and the control group after teaching each group. Data collected was analyzed using mean and standard deviation for the research questions and analysis of covariance (ANCOVA) for hypotheses. Results showed that showed that students taught computer using local languages (Igbo language) performed better than those taught computer using foreign language (English language). The results showed that male students performing better in both experimental and control groups. Test of hypotheses also showed a significant difference in the performance of students taught computer using local languages (Igbo language) over those taught using foreign language (English language). In both experimental and control groups male students performed better than female students. Based on the results the researcher recommended among other things that computer teachers in secondary schools should inculcate the use of using local languages in teaching the subject as it will improving the understanding of what they are teaching especially in Igbo speaking states.

Key words: Comparative, Local and Foreign Languages, Teaching and Learning and Computer Science

Background of the Study

Language are system of communication used by humans to convey meaning, thought emotion, and ideas and a powerful tool that shapes how we think, perceive the world, and interact with others (Chatbor AI, 2024). Language can be categorize into; natural when it voice or written general language of a given group of people, sign language when it makes use of facial expression or body movement to convey meaning. Programing language design and use by human to communicate with machines like computer. Constructed language are language created by humans for special purpose. Mother tongue belong to natural language and it refers to the first

language that a person learns and speaks fluently from birth or from early childhood. Mother tongue is often the language of one's parents or caregivers and is typically or region where a person is born or raised. The term 'mother tongue' could also be replaced with 'local language', 'native language' or 'first language'.

On the contrary foreign languages are languages that are not native, local or mother tongue to a particular region or country. It is typically learned as a second language. Foreign language unlike local language is not cultural based and does not have its root on peoples way of life. Foreign language doesn't give deep or accurate interpretation or meaning to the societal idioms and proverbs.

The responsibility of the class teacher is to help students attain maximum achievement in their learning tasks and that several competencies are expected of the teacher in order to achieve this goal (Aluko, 2008). The teacher has to put all effort to achieve this knowledge transfer from teacher to students. This method of knowledge transfer involves employment of appropriate strategies otherwise called methods of teaching and learning. A teacher should understand that no two days are the same and that what might have worked once in a classroom, might not work again. The teacher is expected to employ all strategies to suit the needs of the learners. Nweke and Nwachukwu (2018) describe the teacher as that person who has taken the responsibility of leading another person (the Learner) to gain a new knowledge. It will not also be wrong if we say that a teacher is that person who plants a seed of knowledge in another person. The teacher as the planter will prepare planting site (prepare the learner), water the seed (re-enforcement), remove weed from the seed (clear learner wrong idea) and even apply fertilizer on the seed (encourage the learner).

The big questions now are; are there particular language meant to be use in teaching computer? Is it wrong to teach computer with the language the learners and teacher understand most? The answers to these questions is no. that is no particular language must be used to teach computer but depend on the ability of the teacher to convert the written language of the lesson to that language of the learners' convince. This language of convince for both teacher and learners should be their local language, the mother tongue or the native language.

In this part of the world (Africa – Nigeria – South East) the local language, mother tongue or native language is the Igbo language. The five South Eastern states of Abia, Amabra, Ebonyi, Enugu and Imo are major state of Nigeria that have Igbo language as their local language. This Igbo language has been developed both in written and oral aspects to the world standard. It has been developed to the standard of West African Examination Council (WAEC) for years now. Over the years the teaching and learning of computer has been done in English language which is a foreign language.

The researcher wish to compare the performance secondary school students when foreign language (English language) and when local language (Igbo language) is use in teaching computer. This researcher wants to compare this performance of students using this research work titled, 'comparative study of use of local and foreign languages in teaching and learning of computer science secondary school'. Believing that that the result of this study if turn positive will be a turning point to the teaching and learning of computer in the south eastern part of Nigeria.

Statement of the Problem

It is not on disputer that the performance of student any examination depend the level of the student's understanding of the topic taught. It also follows the understanding of the topic depend on method the teacher used in teaching the topic. No matter how good the method a

teacher used in teaching if the learners fail to understand the language of the lesson all efforts teacher must have put in delivering the lesson is in vain. Augusto C. & Emilia C. (2016) said that, scientific communication is, as far as the relationship between language and science is concerned, and as a matter of fact, it is inter-subjective communication which makes science itself possible. The "scientific communication" here is that set of discourses whose aim is the transmission of knowledge and research results, performed by communication procedures which vary depending on who acts as sender (the teacher) and who is the addressee (student). The current transformations in scientific communication are not concerned only with choosing which language to use but also with the text types, the topic styles and the communication aims. The examples of this change in progress will be taken from the major Western languages which have a centuries-old tradition in scientific communication 0' conner, Kanja and Baba (2011) identified the among others as the remote causes of this poor performance in science by students inappropriate teaching technique, which includes using language the students are not common with in teaching. Bearing the importance of the study computer in mind one agree with ne that we not leaving any stone unturned in making such the development of this all compassing is fully harnessed. It is obvious that one of the major problem of the major problems students face during teaching and learning of computer is the use of foreign language which there are not much conversant with.

To tackle this ugly situation the researcher have to develop series of computer secondary school topics in local language (Igbo language) and wish to compare the performance the students when taught using local language and when taught using foreign language. This will done under this study comparative study of use of local and foreign languages in teaching and learning of computer science secondary school.

Purpose of the Study

The purpose of this study is to compare performance secondary school students when taught computer using local and foreign languages (Igbo language) and when taught using foreign language (English language). In particular the study will determine;

1. the impact of using local languages (Igbo language) over the use of foreign language (English language) in teaching computer.
2. the mean performance of male and female students taught computer using local language (Igbo language) over the use of foreign language (English language).
3. the interaction effect of using local and foreign languages (Igbo language) over the use of foreign language (English language).

Significance of the Study

The findings of this study will be of much benefit to students, teachers and government and society in general. The findings of the study will` be beneficial to students in the sense that the students will no more have difficulty in understanding the language of the teacher is using to deliver the lesson.

Teachers on their own part will be at ease to use the students' convent language to teach. This if turns positive will facilitate quicker and easy understanding of computer lessons. The findings of the study will be beneficial to parents because their ward will now be performing better in computer examinations. Government and society will experience development brought about by the improvement in the study of this computer. And at the long run progress will bring all round development.

Scope of the Study

This study focused on comparing the performance students taught computer using local and foreign languages (Igbo language) and those taught using foreign language (English language). It is amid at covering the some of the computer topics taught in secondary schools. Due time and financial constrains the study will cover one of the five Igbo language speaking south Eastern state of Nigeria which is Ebonyi State. Ebonyi state has 222 Government/ Public senior Secondary Schools in the thirteen local Government Local Areas in Ebonyi state (ESEB, 2021). The study made use secondary school students the study.

Research Questions

The following research questions will guide the study:

1. What is the impact of using local languages (Igbo language) over the use of foreign language (English language) in teaching computer?
2. What are the mean performance of male and female students taught computer using local language (Igbo language) over the use of foreign language (English language)?
3. What is the interaction effect of using local and foreign languages (Igbo language) over the use of foreign language (English language)?

Hypotheses:

$H0_1$:   There is no significant difference in the mean performance of students taught computer using local language (Igbo language) over those taught using foreign language (English language).

$H0_2$:   There is no significant difference in the mean performance of male and female students taught computer using local language (Igbo language) over the use of foreign language (English language).

Method

This study adopted the quasi-experimental design. Ali, (1996) defined quasi-experimental design as research methodology that is similar to experimental design but lacks the element of random assignment of participants to group instead, the participants are assigned to groups based on natural characteristics or pre-existing conditions. It is the type of design often used when random assignment is not possible or ethical (Nweke and Nwachukwu, 2023). The covered all the main five Igbo language speaking state of Abia, Anambra, Ebonyi, Enugu and Imo States. In particular the samples will be collected in at least one secondary school in each of five states of the Igbo language speaking south eastern states of Nigeria.

Sample of this study was 30 secondary school students as experimental group and 30 secondary school students as control group in each of the five Igbo language speaking state of Abia, Anambra, Ebonyi, Enugu and Imo States. This summed up to 60 secondary school students in each of the state and a total of 300 secondary school students that made up the sample of the study. Instrument for data collection was called Computer Achievement Test (CAT). The Computer Achievement Test (CAT) will consist of 20 multiply choice questions with option A - D constructed from the content of senior secondary school computer topic. Each question has only one correct option. Each correct answer attracts ½ mark while each wrong answer attracts zero mark. The instrument received face validation from the experts in Computer -Education Department of 'the Ebonyi State College of Education, Ikwo and one in the measurement and Evaluation Department of Ebonyi State University, Abakaliki. The reliability of CAT was established using Kuder -Richardson formula 20. Descriptive statistics of which mean and standard deviation was used to answer the research questions, while the analysis of covariance

(ANCOVA) was employed to test the hypotheses. All hypotheses will be tested at an alpha level of 0.05 significance.

Results

This chapter presents the results of the study accordance with the research questions and hypotheses that guided the study.

Research Questions 1

What is the impact of using local languages (Igbo language) over the use of foreign language (English language) in teaching computer? To answer this research questions, reference was made to the information on table 1, the data was obtained using the Computer Achievement Test (CAT) administered to both the experimented and control groups involved in the study. The pretest and posttest scores were adjusted simultaneously during the analysis. The summary of the result is shown on table 1.

Table 1: Mean and Standard Deviation of achievement scores of students taught computer using local languages (Igbo language) over the use of foreign language (English language) in teaching computer.

Group	Mean Score	SD	N
Treatment	7.90	2.70	150
Control	7.32	3.05	150
Difference	0.58	0.65	00

The result on table 1 above showed that students taught computer using local languages (Igbo language) had a mean achievement score of 7.90 and standard deviation score of 2.70 while those taught computer using foreign language (English language) had a mean achievement score of 7.32 and standard deviation score of 3.05. The mean difference in favour of students taught computer using local language is 0.58. This result shows a slight increase in the achievement of students taught computer using local language.

Research Questions 2

What are the mean performance of male and female students taught computer using local language (Igbo language) over the use of foreign language (English language)?

Data collected from male and female students group were used to answer this research question.

Summary of result is presented in Table 2

Table 2: Mean and standard deviation of achievement scores of male and female students taught computer using local language (Igbo language) over the use of foreign language (English language).

Group	Experimental Group		Control Group		N
	Mean Score	SD	Mean Score	SD	
Male	8.08	3.12	7.38	2.88	150

Female	7.72	2.83	7.26	3.21	150
Difference	0.36	0.19	0.12	0.67	00

The result on table 2 above showed that male students taught computer using local languages (Igbo language) had a mean achievement score of 8.08 and standard deviation score of 3.12 while those taught computer using foreign language (English language) had a mean achievement score of 7.38 and standard deviation score of 2.88 while female side those taught computer using local languages (Igbo language) had a mean achievement score of 7.72 and standard deviation score of 2.83 while those taught computer using foreign language (English language) had a mean achievement score of 7.26 and standard deviation score of 3.21.

Research Question 3

What is the interaction effect of using local and foreign languages (Igbo language) over the use of foreign language (English language)?

Data collected for male and female students in both the treatment and control groups were used to answer this research questions.

Summary is presented in Table 3.

Table 3: Interaction effect of using local and foreign languages (Igbo language) over the use of foreign language (English language)?

	Experimental Group		Control Group		Mean Difference	N
Group	**Mean Score**	**SD**	**Mean Score**	**SD**		
Male	8.08	3.12	7.38	2.88	0.60	150
Female	7.72	2.83	7.26	3.21	0.46	150
Mean Difference	0.36	0.19	0.12	0.67	0.14	00

The result on table 3 above showed that male students taught computer using local languages (Igbo language) had a mean achievement score of 8.08 and standard deviation score of 3.12 while those taught computer using foreign language (English language) had a mean achievement score of 7.38 and standard deviation score of 2.88. The mean difference in favour of male students taught computer using local language is 0.60. This is a slight increase in the achievement of male students taught computer using local language. On the female side those taught computer using local languages (Igbo language) had a mean achievement score of 7.72 and standard deviation score of 2.83 while those taught computer using foreign language (English language) had a mean achievement score of 7.26 and standard deviation score of 3.21. The mean difference in favour of female students taught computer using local language is 0.46. This is also a slight increase in the achievement of female students taught computer using local language.

Down the table show that male students achieved higher than female students, in both experimental and control groups. This results is an indication that use of local language (Igbo

Language) in teaching and learning computer will favour better understanding of the lesson especially on male students.

Hypotheses

H0₁: There is no significant difference in the mean performance of students taught computer using local language (Igbo language) over those taught using foreign language (English language).

Table 4: Analysis of co variance for students the mean performance of students taught computer using local language (Igbo language) over those taught using foreign language (English language).

Source of variation	Type III Sum of squares	Df	Mean square	F. Value	F. probability	Decision
Corrected model	7.884	4	2.086	11.850	0.000	
Intercept	26.758	1	25.958	158.296	0.000	
Pretest	0.089	1	0.089	0.543	0.436	Rejected
Posttest	1.005	1	1.005	5.282	0.015	
Error	12.534	73	0.152			
Total	1062.000	78				
Corrected Total	19.834	77				

Result on table 4 showed that for hypothesis 1, the alpha level (0,05) is greater than the significance of F. value (.000). The decision rule is to reject the null hypothesis when the alpha level is greater than the significance of F. value. Based on the decision rule, the researcher rejects the null hypothesis and concludes that there is a significant difference in the mean performance of students taught computer using local language (Igbo language) over those taught using foreign language (English language).

H0₂: There is no significant difference in the mean performance of male and female students taught computer using local language (Igbo language) over the use of foreign language (English language).

Table 5: Analysis of co variance for students the mean performance of male and female students taught computer using local language (Igbo language) over the use of foreign language (English language).

Source of variation	Type III Sum of squares	Df	Mean square	F. Value	F. probability	Decision
Corrected model	7.284	2	3.186	13.840	0.000	
Intercept	24.753	1	24.753	178.322	0.000	
Pretest	0.089	1	0.089	0.563	0.436	Rejected
Posttest	1.005	1	1.005	2.278	0.015	

Error	13.574	83	0.487
Total	983.000	88	
Corrected Total	18.671	87	

Result on table 5 showed that for hypothesis 2, the alpha level (0,05) is greater than the sig. of F value (.000). The decision rule is to reject the null hypothesis when the alpha level is greater than the significance of F Probability. Based on the decision rule, the researchers rejects the null hypothesis and concludes that there is a significant difference in the mean performance of male and female students taught computer using local language (Igbo language) over those taught using foreign language (English language).

Summary of Finding

This study recorded the following findings:

1. The study showed that students taught computer using local languages (Igbo language) had a mean achievement score of 7.90 and standard deviation score of 2.70 while those taught computer using foreign language (English language) had a mean achievement score of 7.32 and standard deviation score of 3.05. The mean difference in favour of students taught computer using local language is 0.58. This result shows a slight increase in the achievement of students taught computer using local language.

2. It also exposed that male students taught computer using local languages (Igbo language) had a mean achievement score of 8.08 and standard deviation score of 3.12 while those taught computer using foreign language (English language) had a mean achievement score of 7.38 and standard deviation score of 2.88 while female side those taught computer using local languages (Igbo language) had a mean achievement score of 7.72 and standard deviation score of 2.83 while those taught computer using foreign language (English language) had a mean achievement score of 7.26 and standard deviation score of 3.21.

3. The study went further to show that male students achieved higher than female students, in both experimental and control groups. This results is an indication that use of local language (Igbo Language) in teaching and learning computer will favour better understanding of the lesson especially on male students.

4. The study rejected the null hypothesis and states that there is no significant difference in the mean performance of students taught computer using local language (Igbo language) over those taught using foreign language (English language) and concluded that there is a significant difference in the mean performance of students taught computer using local language (Igbo language) over those taught using foreign language (English language).

5. The study rejected the null hypothesis and states that there is no significant difference in the mean performance of male and female students taught computer using local language (Igbo language) over those taught using foreign language (English language) and concluded that there is a significant difference in the mean performance of male and female students taught computer using local language (Igbo language) over those taught using foreign language (English language).

Discussion of Findings

Effect of using local languages (Igbo language) in teaching computer

The main discovery of this study is that students taught computer using local language (Igbo language) performed better than those taught using foreign language (English language). The result is with Ghasemi et al, 2011 that computer as a medium for language learning has been acknowledged by many educators in the past years. Using computers for language learning has proved not only interesting but also positive and stimulating for many language teachers and learners. While Garba et al (2019), states that Language is an important tool that every human uses as a specific and common means of expression, communication and conveyance of different thought. It is also important as the way of impacting knowledge, instruction, and teaching at in our outside classroom.

Conclusion

In conclusion this study compare performance secondary school students when taught computer using local and foreign languages (Igbo language) and when taught using foreign language (English language). The study showed that students taught computer using languages (Igbo language) performed better than those taught using foreign language (English language).

The study also showed that both male female students taught computer using local languages (Igbo language) performed better than both male and female taught using foreign language (English language).

The study went further to show that male students achieved higher than female students, in both experimental and control groups. This results is an indication that use of local language (Igbo Language) in teaching and learning computer will favour better understanding of the lesson especially on male students.

Recommendations

Based on the results of this study, the researcher made the following recommendations:

1. That computer teachers in secondary schools should inculcate the use of using local languages in teaching the subject as it will improving the understanding of what is taught by the students especially in Igbo speaking states.

2. That schools administrators should create enabling environment and also provide the necessary teaching material and assistance for computer teachers to teach computer using local languages.

3. Experts or professionals in computer studies should help create or develop local names for some of the computer terminologies that have not been given local names so as to facilitate the full use of local language in teaching it.

4. Workshops and seminars should be organized for computer teachers on how, why and way to use local languages in teaching computer especially in primary and secondary schools in Igbo speaking states.

5. Computers and other instructional materials for teaching the subject should be provided by the education administrators for practical use in teaching and learning of the computer.

REFERENCE

Abonyi, S. O. (2003) Instrumentation in Behavioral Research. A Practical Approach. Fulladu *Publishing Company 20/22 Osadebe St Ogui New Layout Enugu.*

Aluko. K. O. (2008) Teaching Chemistry in Secondary Schools: A Case for Cooperative Instructional Strategy. Ethiop. J. Educ. & Sc. Vol. 3 No. 2 March, 2008

Augusto C. & Emilia C. (2016) Handbook of Language and Communication: Diversity and Change. Handbooks of Applied Linguistics (HAL), vol. 9. Berlin – New York: Mouton de Gruyter; pp.525-554.

Babak et al (2011) The capabilities of computers for language learning. Published by Elsevier Ltd. doi:10.1016/j.sbspro.2011.11.012 Procedia Social and Behavioral Sciences Procedia - Social and Behavioral Sciences 00 (2011) 000–000 www.elsevier.com/locate/procedia WCETR 2011

Benseler, et al (1980) Methodological trends in college foreign language instruction. Modern Language Journal (Madison, Wis), 64, 1 (1980), 88-96.

Chatbor AI (2024) Online ask me anything.

Chenliang Deng (2022) A Review on the Research of Computer-assisted Language Learning in Language Teaching, Social Attitudes and Some Other Academic Circles A Review on the Research of Computer-assisted Language Learning in Language Teaching, Social Attitudes and Some Other Academic Circles.

ESSEB (2021). Ebonyi state secondary Education Board

Garba et al (2019) Importance of Language in Teaching and Communication. International Journal of Research and Innovation in Social Science (IJRISS) |Volume III, Issue VIII, August 2019|ISSN 2454-6186 www.rsisinternational.org Page 513

Ghasemi, et al (2011), The capabilities of computers for language learning Young Researchers Club, Toyserkan Branch, Islamic Azad University, Toyserkan, IRAN1

Higman, F. (1980), The barriers made bridgeable by language. Times Higher Educ ation Supplement (London), 413 (3 October 1980), 9-10.

Nweke, S.I., & Nwachukwu, J. N.(2018). Effective Approach to Mathematics Education Delivery; A road map to National Development. Journal of Mathematics Panel Vol. 20. pg 59 - 67.

O'Connor, M.M., Kanja, C.G and Baba, T. (Eds) (2011); The open ended approach in Mathematics Education: A First step toward classroom practice in Kenya setting. Nairobi: SMASSE project JICA - MOEST.

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