

INTERACTION EFFECTS OF LOCATION AND GENDER ON PUPILS' READING ACHIEVEMENT IN READING COMPREHENSION IN PRIMARY SCHOOLS IN ANAMBRA STATE

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ABSTRACT

The purpose of this study was to determine the effect of location and gender on pupils' reading comprehension achievement in primary schools in Anambra state. One research question and two hypotheses guided the study. The design used in the study was quasi-experimental design involves non-randomized control group pre-test, post-test, non-equivalent control group with an experimental group receiving treatment. The study was conducted in primary schools in Anambra State. The population of the study comprised all the 37,190 primary five pupils (19202 males and 17988 females) in the 1068 public primary schools in Anambra state for 2020/2021 academic session. The sample size for the study consisted of 200 (88 males and 112 females) of primary five pupils drawn from four intact classes. 101 pupils for experimental group (42 male and 59 females) and 99 pupils for control group (46 male and 53 females). Purposive sampling technique was used to draw 40 public primary schools while simple Random sampling was used to draw four intact from the forty public primary schools in the area of the study; two schools each from Awka south L.G.A and two from Anaocha L.G.A. The researcher used Reading Comprehension Achievement Test (RCAT) instrument for collection of data in this study. Three experts validated the instrument, the RCAT, lesson plan with the title of the study, purpose, scope, research questions and hypotheses before distribution. Two from Early Childhood and Primary Education, and one from Measurement and Evaluation, all in Faculty of Education, Nnamdi Azikiwe University Awka. The validators examined the items, language and ascertained the extent to which the languages were clear and items suitable for responses. In establishing the reliability of the instrument, the researcher conducted a pilot study with 25 primary school pupils in Enugu State. The obtained scores were used to estimate the reliability co-efficient of the instrument using Kuder Richardson (k-R-20) and will be yielding a reliability index of 0.91". The experiment lasted for 6 weeks. The extraneous variables which could have affected the result of the study were effectively controlled. The data were analyzed using mean and standard deviation as well as ANCOVA. The Mean and Standard Deviation were used to answer the research question while Analysis of Covariance (ANCOVA) was used to test the null hypotheses at (0.05) level of significance. The extraneous variables were controlled by the ANCOVA from the dependent variables. The study revealed the interaction effect did exist on gender and location of the pupils in reading comprehension. It was among others recommended that teachers should strive to develop themselves in knowledge-



diverse instructional strategies in order to keep learners engaged and motivated throughout the learning process.

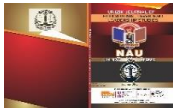
Keywords: Learners' Generated Questions; Conventional Method; Reading Achievement; Urban and Rural Primary Schools; Male and Female Pupils.

Introduction

Education is recognized as the nation's greatest asset towards the quick development of its economic potentials, sociological, governmental and human resources, hence it focuses on the integration of the individual into the society. The knowledge, skill and competency acquired from the school help the individual to understand the economic and political situation of their nation and that will influence their present and future standard of living. In Nigeria, education is an instrument for improving knowledge, talent, potentials and skills of individuals towards enabling them contribute to the sustained improvement of personal wellbeing in particular and development of the society at large. In Nigeria, education is provided at primary, secondary and tertiary levels. The focus here is in primary level.

Primary school education is education given to children between 6-11 years and above (FRN, 2013). Primary school education as the foundation laying level of education in nations of the world improves the mini structural framework on which the quality of other levels of education is anchored, Ogunode et al (2021). Children go to primary school to learn how to read and write; which is the formal environment where education takes place. Anisiobi, wadi and Ushang (2023) opine that basic education is the foundational level where students acquire basic numeric and literacy skills. The objectives of primary education as specified in Nigeria National Policy on Education (NPE,2013) are: to inculcate permanent literacy and numeracy, and ability to communicate effectively; to lay a sound basis for scientific and reflective thinking; to give citizenship education as a basis for effective participation in and contribution to the life of the society; to mould the character and develop sound attitude and morals in the child; to develop in the child the ability to adapt to the child's changing environment; to give the child opportunities for developing manipulative skills that will enable the child function effectively in the society within the limits of the child's capacity and to provide the child with basic tools for further educational advancement, including preparation for trades and crafts of the locality. A child exposed to primary education stand a chance to gain literacy which is more of reading and writing.

Reading comprehension is the act of understanding what was read and the ability to process text, understand its meaning, and to integrate it to what the reader already knows. Okika, Anyamene and Anyachebelu (2021) described reading comprehension as ability to understand word meaning in a text. Onuoha and Okon (2022) noted that reading comprehension means the ability to read, process and understand the meaning of a text, message or any written or printed material or document. Reading comprehension is the process whereby readers make meaning from the text using several reading skills. Reading comprehension is the ability to identify how and where to supply one's reading resources in order to increasingly achieve one's goals in a comprehension situation. Elleman and Oshund (2019) see reading comprehension as the perceiving of the vocabularies which are used in a written text and making a relationship between them to achieve a comprehensive understanding. Elleman and Oshund further held that reading



comprehension is a complex skill because it needs other skills such as vocabulary and decoding skills (Huyen 2022). In the context of this study, reading comprehension is a skill that enables a reader to understand and give meaning to a text. Several teaching methods are employed by teachers to ensure that learners learn very well.

Teaching method refers to the style of instructional delivery adopted by a teacher for teaching. Shofoyeke (2014) opined that teaching methods can be defined as practical application of teaching principles based on the nature of the subject and their learning needs. However, most primary school teachers in Anambra state seem to use conventional teaching method for teaching.

Conventional teaching method is a method that is practically used by most teachers in Nigeria to impart knowledge to learners. It is basically a teacher-centered teaching method that pays little or no attention to the learners because teachers' intention is to cover the scheme of work, whether the learners understand the subject or not. Menakaya et al (2022) noted that apart from being teacher centered, the conventional teaching method appears not to activate student's prior reading knowledge of reading. This type of teaching strategy requires little or no critical thinking. It makes provision for limited information, because as long as there are no adequate interactions between teacher and learners, knowledge or experiences are not appropriately shared within them. Conventional teaching method is an instructive process because the teacher gives all the information, required. For Ruiz, Mintzer, and Leipzig in Igbo, Apeh and Ojonugwa (2020), in conventional method, the learners are extrinsically motivated by the desires to get good grades, please the teacher and to acquire rewards. It is basically pencil, paper, board, chalk and textbooks representation. This is supported by Achuonye (2015), who observed that conventional method is very prevalent in primary schools in Nigeria. The reason for utilizing conventional teaching methods includes: it saves time, permits flexibility, adaptability and versatility.

Despite the reasons for utilizing the method, it has some disadvantages. In conventional method, learners are more passive than been active, the cooperation and interactions between the teachers and the pupils are minimal. Yap (2016), stressed that in conventional teaching method, instructor initiate discussions in the classroom and focus exclusively on knowing the content in textbooks and notes. The author added that this method of teaching limit the room for more creative thinking and also rarely consider individual difference. Similar to this Feider and Silverman cited in Farha (2016) argued that conventional teaching method makes pupils uninterested in class, discouraged, bored and do poorly in test. The result has been poor students' achievement.

Achievement refers to the accomplishment, attainment or expertise gained following a period of study, training or practice. Tuckman, in Eneh (2015) said that achievement is the realization of one's potential in an activity or task. Achievement is the degree of success or accomplishment in a given area of endeavour and a score on an achievement test. According to Dorgu and Igbojinwaekwu (2016) achievement in academics is the score or grade pupils obtain after a period of academic exercise and assessment. Similarly, Eneh (2015) refers to achievement as success in activities after personal effort has been invested on a goal-oriented exercise. The word achievement is mostly used to measure success in different endeavors such as business, arts, education etc. Bossaert, Doumen, Buyse and Verschueren (2011) defines achievement as success in meeting short- or long-term goals after a programme or activity. This means that academic achievement is built on a child's consistency towards learning. Okpala and Okigbo (2021) define academic achievement as total of a learner's performance in a given standard test over specified time period of time. In the context of this study, achievement means success in any discipline or



given academic area. At this juncture, it is important to note that the short comings of the conventional method have led to some innovative teaching strategies such as learners generated question strategy.

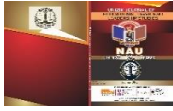
Donggil (2016) established that ‘learner-generated questions’ was a core method for improving learners’ achievement in reading and performance, particularly by encouraging learners to interact with texts while seeking answers to the questions; the interaction process provided opportunity for comprehension. In this regard, Hirsch (2006) observes that as learners seek answers to their questions, they actively interact with texts in order to understand comprehension passages. Such interaction makes the reading process active and learner-centered, which is not only vital for improving achievement in reading comprehension, but also for lessening dependency on teachers and preparing learners for academic excellence. Therefore, learner-generated questions as observed are intended to allow learners display deeper understanding of objectives and develop their interest independently in learning. In the context of this study, learner generated questions are questions generated by pupils while reading a text to facilitate understanding and encoding of information to the memory.

Learner-generated questions play important roles in meaningful learning and learning motivation. Apart from teaching method, several other factors like gender and location can affect learners’ academic achievement.

Gender is a socially constructed role, behaviors, activities, and attributes that a given society considers appropriate for men and women. Myers (2012) defines gender as the characteristics, whether biological or social; influenced by which people define male and female. Menakaya et al (2022) define gender as a social attribute designated to an individual as male or female. The term gender in this study simply refers to male and female. The researcher also observed that gender plays significant roles in aspects of reading comprehension to comprehend. Identifying gender as a factor in reading comprehension, Pradani (2021) established that, female folks are much good in reading than the male folks. Odual (2013) argues that while the male students are displaying superiority in arithmetic, the female has mathematics phobia but are naturally good in language. Odunuga (2017) presses that it might be difficult to correct this ill among the female gender because these limitations may take its root from the genetic make-up of the female gender. Genetic makeup battles with environment as Junaid (2015) supported the claim and insist that females are doing better in reading than males.

Location is one of the factors that affect reading comprehension achievement. According to Amadi, (2018). Location’ refers to the geographical setting in which a school is situated and such a setting could be rural or urban. Rural schools are located in the interior constituency of a state while urban schools are located in the township area of a state. He also stated that Rural-urban location of schools has been found to be one of the important predictors of differences in pupils’ academic achievement.

The independent variable presented in the study are teaching method (conventional teaching method and learners generated questions), gender (male and female) and location (rural and urban) while reading comprehension will be the content for treatment. The effects of the treatment were observed in the dependent variables (reading comprehension achievement). Gender and location are used as moderating variables to explain clearly the relationship between the dependent and independent variable. In addition, the interaction of location and gender on reading



comprehension achievement using learners' generated question will be observed. Gender is a characteristic of sex: boy/girl, male/female. It refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men and women. Gender according to Myers (2012) refers to the characteristics, whether biological or social; influenced by which people define male and female. The term gender in this study simply refers to male and female. The researcher observed that gender plays significant roles in aspects of reading comprehension to comprehend. In accordance with Shafi and Loan (2010) that gender is a major factor impacting students reading habits. Gambrell and Marinak cited in Junaid (2015) supported this claim and insist that females are doing better in reading than males. Similarly, Adnan and Akram (2013) insisted that there exists a remarkable difference in reading habits of male and female children. In the same vein, Thaibat (2016) hold that achievement among students is higher among children who participates fully in reading and comprehension class as well as, well noticed among female children than males. It is on this relevance of gender as a variable that the need to explore further in this present study arises. For the purpose of this study, gender refers to male and female children.

Onuorah (2021) carried out a study aimed at improving reading comprehension achievements of pupils in public primary schools in Anambra State using reflective instructional technique. The study employed the quasi-experimental pre-test-post-test control group design. Thirty-three pupils each were assigned to the experimental and control groups respectively. The sample comprise of 33 pupils (50%) assigned to the control group and another 33 pupils (50%) assigned to the experimental group, 15 (45.5%) were males while 18 (54.5%) were females and for the control group, out of 33 pupils, 15 (45.5%) were male while 18 (54.5%) were females. The sample selected using multistage sampling technique comprised pupils in primary four and five classes. The instrument used for data collection was the Reading Comprehension Achievement Test (RCAT). The instrument was validated by experts. A trial test was carried out outside the study area. The reliability of the instrument was determined using test-retest method and the instrument was considered reliable (Pearson $r=0.73$). Data were analyzed using mean and standard deviation to answer the research questions and ANCOVA (analysis of covariance) to test the null hypothesis at 0.05 level of significance. Results of the analysis showed that the reflective instructional technique led to improvement in the reading comprehension achievement of pupils in public primary schools in that the experimental group had a significant increase in reading comprehension achievement scores at the post-test. There was no significant influence of pupils gender on their reading comprehension achievement scores after benefiting from the intervention, $F(1,65) = .259$, $P = .613$. Result further show that there was no significant interaction effect of the instructional technique and gender on the pupils reading comprehension achievement scores, $F(1, 65) = .228$, $P = .634$. One of the study implications is that teacher librarians can collaboratively work with other teachers to improve pupils reading comprehension achievement in primary schools.

Scholars and researchers hold the assumption that a child's academic achievement may be greatly influenced either by the environment in which he lives, the school location and method of teaching used by the teachers for teaching, and as a result of the poor reading ability, there is, therefore, the need for instructional approach that make pupils reading comprehension achievers. It is against these backups that the researcher examined the effect of learners- generated questions on reading comprehension achievement of rural and urban pupils in Anambra state.



Research questions

1. What is the mean Achievement Score of rural and urban pupils taught reading comprehension using learner's generated questions?
2. What is the interaction effect of gender and location on the pupils reading achievement scores in reading comprehension?

Hypothesis

There is no significant interaction effect of gender and location on the pupils reading achievement scores in reading comprehension in primary schools in Anambra State.

Research Method

The design used in the study was quasi-experimental design involves non-randomized control group pre-test, post-test, non-equivalent control group with an experimental group receiving treatment. The design is diagrammatically represented as follows:

Diagrammatical representation of the quasi-experimental design

Group	Pre-test	Treatment	Post-test
Experimental Group	O1	X1	O2

Control Group	O1	X2	O2
Where	O1 is pre-test		

X1 is treatment using Learners-generated question

O2 is post-test

X2 is conventional method of teaching (No treatment)

The study was conducted in primary schools in Anambra State. The population of the study comprised all the 37,190 primary five pupils (19202 males and 17988 females) in the 1068 public primary schools in Anambra state for 2020/2021 academic session. The sample size for the study consisted of 200 (88 males and 112 females) of primary five pupils drawn from four intact classes. 101 pupils for experimental group (42 male and 59 females) and 99 pupils for control group (46 male and 53 females). Purposive sampling technique was used to draw 40 public primary schools while simple Random sampling was used to draw four intact from the forty public primary schools in the area of the study; two schools each from Awka south L.G.A and two from Anaocha L.G.A. The researcher used Reading Comprehension Achievement Test (RCAT) instrument for collection of data in this study. Three experts validated the instrument, the RCAT, lesson plan with the title of the study, purpose, scope, research questions and hypotheses before distribution. Two from Early Childhood and Primary Education, and one from Measurement and Evaluation, all in Faculty of Education, Nnamdi Azikiwe University Awka. The validators examined the items, language and ascertained the extent to which the languages were clear and items suitable for responses. In establishing the reliability of the instrument, the researcher conducted a pilot study with 25 primary school pupils in Enugu State. The obtained scores were used to estimate the reliability co-efficient of the instrument using Kuder Richardson (k-R-20) and will be yielding a reliability index of 0.91".



Experimental procedure

Introductory letter was presented for permissions from the schools' authorities to enable the researcher use their pupils and their lesson period and class teachers once in a week for 6 weeks. One week of briefing was organized for the English teachers of the sample schools used for the study. For the Experimental group, the English teacher was briefing on how pupils will use learners – generation question strategy for reading comprehension achievement. The briefing was as follows:

Familiarity with Learners- generation questioning strategy and comprehension activities. The instructional process, assessment and evaluation procedures.

Learners generating question prompts identification, interaction patterns and teachers attitudes towards the pupils was made clear to the teacher.

At the end of the experimental period, pupils in the two groups took the same RCAT post-test which was used to know the deference in learning outcome.

Control of Extraneous Variables

In order to ensure that any change in behaviour of the pupils would be as a result of training, the researcher adopted the following strategies to ensure that extraneous variables, which could affect the result of the study, were controlled:

Experimental bias: To avoid experimental bias, the pupils were taught by their regular teachers, to prevent the researcher from being personally involved in administering the research materials.

Pre-testing: Pre-test, is the act of administering research test to pupils before the commencement of a study, which may sensitize them to become aware of or suspicious of the purpose of the post-testing aspect of the experiment. Therefore, research assistants were disallowed to read the test questions.

Teacher variable: Errors that might arise as a result of teacher differences were controlled by organizing a pre-experimental conference for the research assistants. Separate conference was organized for teachers in the same groups. The research assistants were exposed to practical demonstration of the training strategies, especially in the use of learners-generated questions in teaching. The essence of the conference is to enable the research assistants acquire the competencies for presenting the experimental conditions, thereby establishing a common instructional standard among research assistants. The research assistants conducted the experiments in their respective schools and during normal school English periods in the timetable. The study was monitored and supervised by the researcher to ensure a uniform approach as specified in the lesson plan for each group.

Inter-group variables: The intact-classes were used for the study in order to eliminate the errors of non-equivalence arising from non-randomization of subjects. Analysis of covariance (ANCOVA) was used for data analysis; further corrected the non-equivalence among research subjects.



Subject's interaction: The researcher was not select treatment and control groups from the same school to ensure that the pupils in the treatment and control groups would not mix-up at all. This is to reduce the errors that might arise from interaction and exchange of ideas among research subjects

Method of Data Analysis

The data was analyzed using mean and standard deviation as well as ANCOVA. The Mean and Standard Deviation were used to answer the research question while Analysis of Covariance (ANCOVA) was used to test the null hypotheses at (0.05) level of significance. The extraneous variables were controlled by the ANCOVA from the dependent variables.

Research question 1: What is the mean Achievement Score of rural and urban pupils taught reading comprehension using learner's generated questions?

Table 1: Mean Achievement Scores of rural and urban pupils taught reading comprehension using learner's generated questions

Group	Pretest			Post-test			
	N	Mean	SD	N	Mean	SD	meandiff
Rural	45	29.51	11.74	45	50.64	15.67	21.13
Urban	54	36.61	10.23	54	42.56	16.97	5.95

Table 1 result showed mean achievement score of primary five pupils' taught reading comprehension using learners generated question in the rural area to be 29.51 and 50.64 for pretest and post-test respectively with 15.18 mean difference while those with the same learners generated question in the urban area had mean achievement scores of 36.61 and 42.56 for pretest and post-test respectively with mean difference of 5.95. The result revealed that primary five pupils in the rural area taught reading comprehension using learners' generated questions improved in their achievement score than their counterparts in the urban area.



Research question 2: What is the interaction effect of gender and location on the pupils reading achievement scores in reading comprehension?

Table 2: Mean interaction effect of gender and location on the pupils reading achievement scores in reading comprehension.

Gender	Location	N	Mean	SD	Interaction effect
Male	Rural	21	50.29	14.23	18.00
	Urban	21	32.29	11.66	
Female	Rural	24	50.96	17.14	1.87
	Urban	33	49.09	16.70	

Table 2 revealed that the interaction effect of gender and location on reading achievement of male pupils are taught reading comprehension in the rural and urban was 18.00 in favour of the rural males while interaction effect on reading achievement of female pupils taught reading comprehension in the rural and urban was 1.87 in favour of the rural females.

Hypothesis: There is no significant interaction effect of gender and location on the pupils reading achievement scores in reading comprehension in primary schools in Anambra State.

Table 3: Analysis of covariance interaction effect on gender and location on the pupils reading achievement scores in reading comprehension in primary schools in Anambra State.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Decision
Corrected Model	5272.908 ^a	4	1318.227	5.528	.000	
Intercept	21622.262	1	21622.262	90.677	.000	
Pretest	37.509	1	37.509	.157	.693	
Gender	1827.380	1	1827.380	7.663	.007	
Location	1975.527	1	1975.527	8.285	.005	
Gender * Location	1569.764	1	1569.764	6.583	.012	Significant
Error	22414.748	94	238.455			
Total	239293.000	99				
Corrected Total	27687.657	98				

a. R Squared = .190 (Adjusted R Squared = .156)

Table 3 result shows that there is a statistically significant interaction effect of gender and location on the pupil's achievement scores in reading comprehension in primary schools. This is so because; the p-value (.012) is less than the level of significant (0.05). Based on the above, the null hypothesis was rejected. The researcher therefore concluded that there is a statistically significant interaction.



Summary of the findings

Findings of the study were summarized as follows:

1. There was improvement mostly among female students in reading comprehension using the learner's generated questions than male pupils.
2. Female pupils performed better than their male counterparts in reading comprehension using the learners' generated questions in the rural area.
3. There was improvement mostly among urban male pupils in reading comprehension using the learner's generated questions than female pupils.
4. Interaction effect did exist on gender and location of the pupils in reading comprehension.

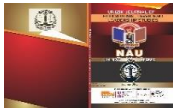
Discussion of findings

Efforts were made in this study to ascertain the mean Achievement Scores of interaction effect of gender and location on the pupils reading achievement scores in reading comprehension in primary schools in Anambra state. The result revealed that the interaction effect of gender and location on reading achievement of male pupils taught reading comprehension in the rural and urban was 18.00 in favour of the rural males while interaction effect on reading achievement of female pupils taught reading comprehension in the rural and urban was 1.87 in favour of the rural females.

This is in line with the study of Akinwunmi (2017) on the effects of gender and school location on the Ekiti State secondary school student's achievement in reading comprehension in English language. The study adopted pre-test, post-test and control quasi-experimental research using two experimental groups and one control group. The sample for the study comprised 270 Senior Secondary class two students (SSSII) selected from nine public senior secondary schools across the three senatorial district of the State using multi-stage sampling procedure that incorporated stratified random sampling and purposive sampling (with sex and location of school as stratification variables). The study showed that there was significant difference in the achievement of males and females between the experimental and control group. The study found that students in urban schools performed better than the rural schools in reading comprehension, inferring word meanings between the experimental and control groups. Based on the research findings, it was recommended that rural schools should be improved upon in terms of social facilities that could aid teaching. Also, students should be encouraged to read wide irrespective of school location and gender. The result of the above shows that there is a statistically significant interaction effect of gender and location on the pupils' achievement scores in reading comprehension in primary schools. This is so because; the p-value (.012) is less than the level of significant (0.05). Based on the above, the null hypothesis was rejected. The researcher therefore concluded that there is a statistically significant interaction.

Conclusion

Based on the findings, it was concluded that learners' generated question strongly has effect on the reading comprehension achievement of male and female primary five pupils in Anambra State. Both male and female students that was subjected to the test improved after the treatment but the females improved more when learners generated questions were used,



Recommendations

Based on the findings of the study, the following recommendations were made:

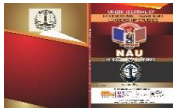
1. Language teachers should create learning atmospheres that are conducive for learning in order to enhance the development of students' learning experiences irrespective of the location of a school or gender of the learners.
2. Teachers should strive to develop themselves in knowledge-diverse instructional strategies in order to keep learners engaged and motivated throughout the learning process.
3. Primary school curriculum planners should bring in learning experiences that would ensure that male and female pupils are exposed to different activities mostly in English language to ensure that male pupils compete favourably with female pupils.
4. Educational policy makers and school administrators should be prepared for the challenge of educating all the learners on how to use learners' generated questions on reading comprehension.

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