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School Environment and Methods of Teaching as Correlates of Language Skills Achievement of Pre-Primary School Pupils in Edo State Nigeria

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Abstract

The study investigated the effects of school environment and methods of teaching on language skills achievement of pre – primary school pupils in Edo State. It also investigated the interaction effects of Montessori and played methods and urban and rural environments on pupils' achievement in listening, speaking, reading and writing skills. Three urban and three rural areas which were selected from two Local Government Areas (LGAs) were used for the study. Six pre - primary schools were purposively selected for the study. A total of 228 kindergartens 2 pupils intact classes were used for the study which lasted for eight weeks. The study was a pretest, posttest, quasi- experimental control group design with independent variables as methods and school location while achievement in Language Skills Achievement Test (LSAT) was the dependent variable. Descriptive statistics and Analysis of Covariance (ANCOVA) were used to analyze the data obtained while the Multiple Classification Analysis (MCA) was used as post-hoc test for further significance. Three research questions were answered with three hypotheses, tested at 0.05 level of significance. Results showed that the Montessori Method of teaching pre –primary pupils was more effective than the play method. Similarly, urban school pupils achieved higher than their rural counterparts. There was also a significant interaction effect of methods and school location on pupils' academic achievement in Language skills. It was therefore recommended that the Nigerian Government should adopt the Montessori Method as a dominant method of teaching pre – primary school pupils and that pre – primary school owners should provide materials adequately for teaching and learning.

Keywords: School Environment, Teaching Methods, Language Skills Achievement, Pre-Primary Pupils

Introduction

Early childhood education is the education given to children between ages 3 - 5 plus. It is the formative period of their lives that is very crucial. Education for these young learners is based on the psychological foundations and learning theories of early educational and developmental psychologists like Froebel, Rousseau, Piaget,

Montessori and Dewey, who believed that the child has innate tendencies which can unfold when properly guided through contact with varied activities within the environment.

Froebel, an educational psychologist, pioneered the kindergarten system which created freedom of activities for children to fully exhibit their hidden potentials. According to John (2004), Maria Montessori originated the "activity method" through which the young learner is exposed to learning experiences which will challenge him to actively participate in learning activities. Children need a language to perform well in schools and this can only come through adequate practices in the Language Arts.

The Language Arts according to Fisher and Terry (1995) entails the communication skills of listening, speaking, reading and writing. They emphasize speech as the primary medium of communication and that a child employs this skill first when he starts to talk. In agreement, Dolzhykova (2014) explains that young children as learners of language, young children possess their own level of psychological ambiance which cuts across their disposition to things around them in terms of their attitude, aptitude and way of thinking.

John (2004) reiterates that the foundation of learning to read is laid in the early years of attentive listening. Through listening exercises, children learn to ignore distractions; they learn to attach their experiences and sensations to words and how to transform those words into sentences. Children's attention span is short so listening activities should be explicit, brief and interesting.

The ability to speak has a powerful influence on the life of any individual. Nursery pupils in their formative age should come in contact with models that have the basic knowledge of sound patterns. This will create mastery which will help curb deep-rooted pronunciation problems at the primary school level. Early introduction to basic principles of spoken language through daily activities will enhance fluency and develop reading interest.

According to Okorodudu and Okorodudu (2002) when children are exposed to reading materials early enough, a good foundation for subsequent educational levels is laid. Pre - primary schools must offer children the opportunities for extensive and varied reading by providing a spacious, well ventilated, well-lit and attractive classroom; library facilities, electronic gadgets and other sensory aids that will enhance reading interest and even usher them into a world of writing. Writing at this stage should be relevant to the background, interests and experiences of the children.

The child must be assisted to commit to memory the shape of the letters and their sounds, develop the muscular skill necessary for using the pencil with control, and learn to obey the principles of effective writing Schmitz (2012). A good measure of exposure through interactions with learning materials in each of the language skills established early will enhance academic achievement in school.

The theoretical framework for this study is anchored on Howard's (1983) "theory of multiple intelligences" Atkinson, Atkinson, Smith and Bern (1990). Howard postulates that our intelligence derives from our biological traits as well as the environment in which we are raised. He reiterates that "the environmental conditions which determine how a child's intellectual potentials develop include the quality of stimulation, in terms of availability of learning resource that will challenge him to learn and develop hidden potentials. For the purpose of high academic achievement of school pupils, many studies in Nigeria are advancing the need to match the learners with learning materials for active participation in class activities Ezema (2002) and Akpochafo (2001).

Environmental influence on educational attainment is an issue that begs for attention. In the different studies conducted by Akpochafo (2001) and Adeyinka (2019) on primary and junior secondary school students respectively, they found that the favourable urban conditions characterized by municipal amenities like electricity, roads, water, factories, recreation centres, all provide conducive learning environment for students. On the other hand Dolzhykova (2014) and Okorodudu & Okorodudu (2002) believed that in spite of the unattractive and poor living conditions in rural locations, children are close to nature and through interaction they learn concepts. Estein (2001) and Adeyinka (2019) also highlighted one vital element of the Montessori

Method as "the prepared environment" through which information passes to the child. The richer the learning environments the greater the opportunities exist to listen, talk, read and write. This friendly atmosphere is characterized by the ever-busy hum of activities in the classroom where the use of learning materials involves many psycho-motor activities like walking, carrying, pouring, listening, speaking, reading and writing and particularly, the constant use of the hands.

The play method of teaching is very popular with almost all nursery schools but the fact is that a majority of the teachers inter-use it with Montessori Method. With the play method, concepts are taught most often with little or no contact with learning materials while Montessori Method emphasizes sense training through interaction with learning materials Schmitz (2012). When teaching is done collectively due to inadequacy of learning materials it is play method because a true Montessori class emphasizes individualization of instruction with each child using his/her learning aid that will help to select responses to sense stimuli. In a play school, suitability of learning environment is compromised in many cases (Seldin, 2002). Ezema (2002) also looked at the influence of play method on the achievement of pre-primary pupils in mathematics using the Montessori Method for the experimental group. When they were enhanced with adequate learning aids they performed better than the control group which had inadequate learning aids. Montessori Method was preferred to play method teaching but shortage of instructional materials that pupils need to interact within this region makes the achievement of the desired results difficult.

Statement of the Problem

Method of instruction is one factor which influences pre – primary pupils' performance in the communication skills. The National Policy on Education (2014) stipulates that: government shall establish pre-primary sections in existing public schools and encourage both community/private efforts in the provision of pre-primary education. Beyond this policy statement, what major practical contributions have government made to ensure that standards are upheld? To a large extent; government does not recognize the nursery school as the foundation of formal education hence the approved system of education in Nigeria, the Universal Basic Education (UBE) starts from 9 year basic (primary 1 to junior secondary 3). The hue and cry about the fallen standard of education as evidenced in the poor standard of students' performances both in internal and external examinations across levels of education are quite worrisome to educationists and researchers, One way to tackle the poor performance is to reexamine the quality of instructional methods and quality of learning at the foundational level of formal education in Nigeria. When the quantity of instructional aids is either inadequately utilized or indiscriminately distributed, quality performance cannot be guaranteed hence this study investigated method and school location as factors for Language skills achievement in pre – primary school education in Edo State.

Purpose of the Study

1. To find out the effect of Montessori and play methods of teaching on academic achievement in language skills of pre – primary school pupils.
2. To find out if the use of the Montessori Method enhances pupils' performance in listening, speaking, reading and writing skills.
3. To investigate the interaction effect of methods and school location on pupils' academic achievement in language skills.

Research Questions

The following questions guided the study:

1. Was there any difference in the academic achievement of pre - primary school pupils in language skills when taught with Montessori and play methods?
2. Was there any significant difference in the academic achievement of urban and rural school pupils when taught with Montessori and play methods?
3. Did methods and school location have any interaction effect on pre - primary pupils' academic

achievement in language skills?

Research Hypotheses

The following hypotheses were formulated for the study:

1. There was no significant difference between Montessori and play methods as shown in the academic achievement of pre – primary school pupils in language skills.
2. There was no significant effect of school location on pre – primary school pupils' academic achievement in language skills when taught with the two methods.
3. There was no significant interaction effect of methods and school location on pre – primary pupils' academic achievement in language skills.

Research Design

This study adopted the quasi-experimental pretest-posttest control group design (Design 10: Campbell and Stanley, 1960). This design was chosen because:

- i. The control group and the experimental group did not have pre-experimental sampling equivalence; and
- ii. Intact classes of non-randomized subjects were used for the study.

The research examined the effects of the three independent variables of the Montessori Method, play method of teaching and control condition, on one dependent variable which was the academic achievement in the posttest measurement. The intervening variables were urban and rural school locations.

Population/Sample

The target population for this study was all the kindergarten II pupils in the 52 government approved and functional private pre - primary schools in Edo South Senatorial District. The sample comprised three schools from urban and rural environments in Egor and Ikpoba-Okha local government areas respectively. Two hundred and twenty eight (228) kindergarten II pupils in their intact groups who were purposively selected from sixteen schools in Egor and eight in Ikpoba-Okha Local Government Areas were used for the study.

Instrumentation

The research instrument for this empirical study was a self-made evaluation instrument titled the Language Skills Achievement Test (LSAT). It was a 25-item mixed questions based on the topics taught during the period of experimentation, as contained in the scheme of work. The test items were weighted four (4) points each and covered topics in the Language skills as follows:

- Listening Skill	5 items	20%
- Speaking Skill	8 items	32%
- Reading skill	7 items	28%
- Writing Skill	5 items	20%
- Total	25 items	100%

Considering the age of the testees (4 years), speaking and reading skills weighed more because of their egocentric disposition. At this stage of development, their attention span for listening and writing is short; they dialogue and monologue a lot. Reliability of LSAT was ensured through a pilot study. A school each from urban and rural settings in Uhumwode Local Government Area was randomly selected with seventy-two kindergarten II pupils in their intact classes. The data collected was analyzed using the Kuder Richardson formula 21 and a reliability coefficient of 0.76 was obtained.

Control Measures

Every experimental research sets out to ensure that results are reliable and valid. Some measures used to minimise possible reactive effects of experimental procedures were:

- Testing: a pre-test was administered on all the subjects to determine their entry levels. They were also too young to understand what the exercise was all about, so a second administration of the test was not a problem.
- Maturation: changes within the subjects due to passage of time were controlled for with a control group which experienced similar changes as the experimental groups.
- Instrumentation: LSAT was the same for pre-test and post-test; administered by same teachers who use the same marking guide for assessing pupils.
- Experimental bias: the use of multi – choice objective tests with option controlled bias.

Descriptive statistics like mean, standard deviation and variance were computed for the pre-test and post-test scores, to sort the differences in the performance of the subjects. Secondly, Analysis of Covariance (ANCOVA) was used to test the hypotheses relating to group differences.

Presentation of Results and Discussion

Data generated from the 228 respondents were tabulated as follows:

Research Question I

Was there any difference in the academic achievement of pre – primary school pupils in language Skills when they were taught with Montessori and play methods?

Table I: Descriptive Statistics of Pre-test, Post-test Mean Scores of Pupils according to Methods

METHODS	GROUPS	N	X	SD	X GAINED
Montessori	Pretest	78	56.40	9.16	25.09
	Posttest		81.49		
Play	Pretest	75	47.80	14.03	12.73
	Post-test		60.53		
Control	Pretest	75	39.45	7.09	18.90
	Post-test		58.35		

Table I showed the pretest posttest mean scores of pupils according to methods. The Montessori group recorded the highest posttest mean score of 81.49 (SD=10.00); the play group 60.53 (SD=14.95); and control group with the least mean score of 58.35 (SD = 12.70). This order could be attributed to the effect of treatment on experimental groups. However, the mean score gained showed Montessori leading with 25. 09, the control group was next with 18.90 and the play group with the least mean gained at 12.73.

Research Question 2

Was there any significant difference in the academic achievement of Urban and Rural school pupils when taught with Montessori and Play Methods?

Table 2: Comparison of Post-test Mean Scores of Urban and Rural School Pupils According to Methods

METHODS	ACHIEVEMENTS ACCORDING TO SCHOOL LOCATION	
Montessori	82.31 (42)	80.53 (36)
Play	64.73 (40)	55.74 (35)
Control	57.05 (37)	59.61 (38)

The table two revealed that the urban school subjects performed better than the rural school pupils in the post-test achievement test in both Montessori and Play groups. Montessori urban scored 82.31 while the rural school scored 80.53; the play group (urban) obtained 64.73 and (rural) obtained 55.74. Surprisingly, the rural pupils in the control group did better than their counterparts in urban schools with scores 59.61 and 57.05 respectively. This could be attributed to the rural environment which they were exposed to which might have helped them 10 know the sounds of animals, their names and habitats, some of which were items in the test instrument. Statistical explanations were given in respect of research question 3 which dealt with the interaction effect of methods and school location as tested in the hypothesis shown on table 2.

H01: There was no significant difference between Montessori and Play Methods as shown in the academic achievement of pre - primary school pupils in Language Skills.

Table 3: Analysis of Covariance (ANCOVA) Showing Difference in Treatment Groups

Sources of Variation	Sum of Squares	Df	Mean Square	F	Significance of F
Covariates/protest	41255.29	1	41255.29	629.45	.000
Main effects	6309.31	2	3154.66	48.13	.000
Groups	6309.31	2	3154.66	48.13	.000
Explained	47564.60	3	15854.87	241.90	.000
Residual	14681.38	224	65.54		
Total		227	274.21		

*p < .05 level of significance

From table 3, $f(2,226) = 48.13$, $F < .05$ which clearly indicated that the hypothesis should be rejected, It invariably meant that there was significant difference between Montessori and play methods as shown in the academic achievement of nursery school pupils in Language Arts, Consequently, the Montessori Method proved to be a better method of teaching the Language Arts to nursery school pupils than the Play Method.

H02: There was no significant effect of school location on pre - primary school pupils' academic achievement in Language Skills when taught with methods.

Table 4: ANCOVA summary table for Effect of School Location on Pupils' Achievement using Methods

Source of Variation	Sum of Squares	df	Mean Square	F	Significance of F
Corrected model/covariates	47637.44	6	7939.57	128.41	.000
Intercept/main effect	4905.16	1	4905.16	79.33	.000*
Groups x location	598.072	2	299.04	4.84	.009*
Error/Residual	13664.494	221		61.830	
Corrected total	61301.930		227		

*p < .05 level of significance

Table 4 showed $f(1, 227) = 79.33$; $P < .05$. The hypothesis was rejected because the ANCOVA summary established the fact that school location played an important role in the study and therefore had significant effect on the pupils' academic achievement in Language Skills using methods. The table also showed a significant interaction between methods and school location with $F(2,226) = 4.84$; $P = .05$.

The Multiple Classification Analysis (MCA) table 5 substantiated the position of ANCOVA.

Table 5: MCA post-test by school location, methods with pretest N = 228, Grand Mean =66.9

Variable + Category	N	Unadjusted Deviation	Eta	Adjusted for Independent Covariate	Beta
Methods					
Montessori	78	14.61		6.62	
Play	75	-6.51		-6.49	
Control	75	-8.72	.64	-0.31	33
Location					
Urban	119	1.59		-1.26	
Rural	109	-1.73	.10	1.38	.08

Multiple R = .88 Multiple R₂ = .77

The table showed that the pupils from the rural school had an adjusted score of 1.38 as against the urban school pupils with -1.26. The Montessori Method recorded an adjusted score of 6.62, followed by the control group with -0.31 and play group with -6.49. The Montessori Method was therefore a superior method of teaching pupils the Language Arts. Finally, the multiple R² of 77% showed a high degree of the effect of school environment on the academic achievement of pre - primary school pupils.

(HO₃: There was no significant interaction effect of methods and school location on nursery pupils' academic achievement in Language Skills.

Table 6: ANCOVA Summary Table for Interaction Effect between Methods and School Location on Pupils' Achievement in Language Skills

Source of Variation	Sum of Squares	df	Mean Square	F	Significance of F
Corrected model/covariates	49986.15	12	4165.51	79.15	.000
Intercept/main effect	5161.74	1	5161.74	98.07	.000*
PRE	18417.80	1	18417.80	349.94	.000
Methods/Location	533.99	2	266.99	5.073	.007*
Error	11315.777	215	52.632		
Corrected total	61301.930				

Table 6 showed $f(1, 227) = 98.07, P < .05$ which meant that there was significant main effect of methods and school location on the pupils' academic achievement in language Skills. From the table, $F(2, 226) = 5.07, P < .05$ showed that there was significant interaction of methods and school location with the pupils' academic achievement in language skills; therefore, the null hypothesis was rejected.

Summary of Research Findings

From the analyses shown on tables 1-6, the following findings were made:

1. There was significant difference in the academic performance of pre - primary school pupils in language skills between Montessori and Play Methods.
2. The treatment had significant effect on the academic achievement of the pupils in the experimental groups.
3. The Montessori Method was more effective than Play Method of teaching language skills to pre – primary school pupils in the urban schools than in the rural schools.
4. The mean score gained showed that pupils in the control group did better than those in the Play group.

- This may be attributable to the eclectic nature of the teaching method used in the control class.
5. Urban school pupils performed better than rural school pupils in language skills.
 6. There was also a significant interaction of methods and school location on pupils' achievement in language skills.

Discussion/Conclusion

The analysis presented in tables 1 and 3 showed significant differences in the achievement of pre – primary school pupils in Language Skills in both the Montessori and Play Methods. Consequently, the experimental groups gained more than the control group and this difference in performance can be attributed to the effect of treatment which was not extended to the control group. The enhanced performance of the Montessori group after treatment was the result of the interaction between learners and learning experiences. This agreed with Howard in Atkinson et al. (1990) who believed that the environmental conditions that determine how a child's intellectual potentials will develop included the quality of stimulation in terms of availability of learning materials that will challenge him to learn and develop his hidden potentials. Akpochofo (2001) and Adeyinka (2019) in their various studies also advocated the need to match the learners with learning experiences through active participation in class activities.

The findings from research question 2 as shown on table 2 revealed the peak performance of the urban pupils against their rural peers as shown by the mean scores. This was confirmed by the findings from HO2 as shown on table 4 which revealed that school location had significant effect on pre - primary education in terms of achievement in Language Skills. Though no literature was found on any empirical study conducted for this level of scholars, in agreement with this research findings, studies by Akpochofo (2001) and Adeyinka (2019) on junior secondary school students respectively, confirmed that the general disposition of urban environment enhances learning.

Students in urban centres tend to perform better than their rural peers because of the availability of qualified teachers and enhanced learning environment. They found that urban centres were favourably disposed to a good supply of adequately trained teachers, resource personnel and experts who can make learning easier and more fascinating.

Surprisingly however, the MCA on Table 5 showed that the subjects from the rural environment recorded an adjusted mean score as high as 1.38 as against -1.26 obtained by the urban school subjects. This result agreed with the studies of Akpochofo (2001) and Ezema (2002) whose works though at secondary school level respectively, lent credence to the fact that rural school students did better than their urban mates. They particularly argued that the unattractive and deprived nature and living conditions in the rural areas notwithstanding, rural children lived very close to nature. They had the advantage of knowing many names of fruits, of animals, their habitats and their reproductive styles because they see them in their natural state unlike their, urban counterparts who most probably and nearly always too, saw many of the items in their artificial form either frozen or already dressed in readiness for consumption.

Method of teaching is an important factor for the development of the language skills in pre – primary education. The essence of this level of education is to train the child; to help the child develop the head, the heart and the hands through exposure to organised learning activities with learning materials. Table 1 showed a clear difference in the mean score gained by the Montessori group as against the least mean score gained in the Playgroup. This definitely implied that instructions in the language skills of listening, speaking, reading and writing were better understood when learners were matched with learning materials as stipulated by the Montessori Method. Table 3 also showed that treatment techniques had a significant effect in the achievement of pupils. This finding corroborated the work of Ezema (2002) who found that exposure of pre -primary pupils to learning materials in an experimental group enhanced their participation in class activities which led to significant achievement in mathematics.

The play method was not effective as shown by the mean score gained on tables 1 and 3, most probably because of the non-availability of a variety of learning materials; the unchallenging nature of the learning environment as against the enriched Montessori environment where, within and outside the classroom a rich display of items suggests learning. The better performance of the control group against Play group suggested that the eclectic method used in the control group gave them the advantage.

In conclusion, the significant difference in the mean score gained by the Montessori group and those of the control and Playgroup empirically put the Montessori Method as the best method to use when teaching the language skills in pre – primary schools.

Recommendations

1. The language skills acquisition are the golden key which open doors to various fields of study, so learning aids that will foster language development in children should be richly provided and used.
2. Classroom libraries should be equipped with varied materials to promote reading habits and interest in the children.
3. The Montessori Method of teaching, in its real sense, should be the approved method of teaching children, as it exposes them to listening. It gives them opportunities to talk about issues and it trains them to write.
4. To ensure compliance with government's policy on standards, the Ministry of Education through its inspectorate arm should visit pre – primary education centres regularly.

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