Influence of Early Childhood Education on Language Development and Visualization Process Skills of Primary One Pupils in Jos Metropolis Nigeria

Agnes S. Ojile (Ph.D)

Department of Educational Foundations,
Faculty of Education, University of Jos, Jos, Nigeria
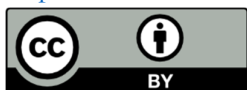Corresponding Author: ojileagnes@yahoo.com +2348061291853

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Abstract

The aim of this paper is to investigate the influence of early childhood education on language development and visualization process skills of primary school pupils. The ex-post facto research design was adopted in the study. A sample of 500 participants consisting of 250 pupils who have experienced early childhood education and another 250 who have no experience of early childhood education were used in the study. Two research questions and two hypotheses were formulated for the study. The instrument used for data collection was the attention and memory recall tests. The research questions were answered using mean score and standard deviation while t-test for paired sample was used to test the hypotheses. The findings of the study revealed that children who were exposed to early childhood education tend have better language development and visualization process skills than their counterparts who were not exposed to such education. Based on the findings of the study, it was recommended early childhood education should be made free and accessible to every Nigerian child. Also, instructional materials for teaching language

development and visualization should be provided in adequate proportion to meet the educational needs of the children.

Introduction

Cognitive development refers to the way a child perceives things and gains understanding of his or her world through the interaction of genetic and learned factors. This includes memory recall, language skill, attention, mathematical skills and visual processing skills (Akose, 2008). Mathematics skill is one of the essential skills in the cognitive development of children (Schiller, 2009). This is because Mathematics is one of the most important elements for the advancement of science and technology. Cases of poor mathematics skills abound among primary one pupils without any experience of early childhood education. For instance, there was a case of primary one pupil in a public primary school who stated in his mathematics continuous assessment test and 1 + 1 = 11 instead of 2. It is on this basis that this research is premised to ascertain whether early childhood education contributes to the development of language development and visualization process skills among primary one pupils.

Language skill deals with the process by which children come to understand and communicate language during early childhood (Miedel & Reynolds, 2009). Infants start without language, yet by 10 months, babies can distinguish speech sounds and engage in babbling. Some research (Mussen, Conger & Kagen, 2009; Miedel & Reynolds, 2009) have shown that the earliest learning begins in uterus when the fetus starts to recognize the sounds and speech patterns of its mother's voice. Usually, productive language is considered to begin with a stage of preverbal communication in which infants use gestures and vocalizations to make their intents known to others. According to a general principle of development, new forms then take over old functions, so that children learn words to express the same communicative functions which they had already expressed by preverbal means.

Mezieobi (2006) states that from birth up to the age of five, children develop language at a very rapid pace. The stages of language development are universal among humans. However, the age and the pace at which a child reaches each milestone of language development vary greatly among children. Thus, language development in an individual child must be compared with norms rather than with other individual children. In general girls develop language at a faster rate than boys. More than any other aspect of development, language development reflects the growth and maturation of the brain. After the age of five it becomes much more difficult for most children to learn language. According to James (2010), receptive language development (the ability to comprehend language) usually develops faster than expressive language (the ability to communicate). Two different styles of language development are recognized. In referential language development, children first speak single words and then join words together, first into two-word sentences and then into three-word sentences. In expressive language development, children first speak in long unintelligible babbles that mimic the cadence and rhythm of adult speech. Most children use a combination these styles.

Hamman (2012) observed that from birth on, children are programmed to develop speech and language. The first five years are most critical but language development continues throughout early childhood and on into adolescence. During the first five years stimulation of language development is important as the brain is both developing new nerve cells as well as multiple connections between nerve cells to serve the function of language both expressive and receptive. Lack of stimulation during this time could result in a child making slower progress or end up with poor communication skills.

According to Halfon (2001), in the early stages of language development, the brain is programmed to attend to speech sounds and begin to mimic them. Early on babies like to make sounds up on their own. Later they attempt to repeat sounds/words that they are exposed to from their environment. Children usually say their first words between nine and 18 months old. The most common first words are either *"mama"* or *"dada"*. What's kind of interesting is no matter what language children are raised in, the first words usually reference either mother or father. By the age of 18 months a child usually has a vocabulary of 50 to 150 words. By two they can probably use over 300 words and understand about 1,000 words. By about 18 months children begin to put a couple of words together to form a sentence sometimes referred to as "telegraphic speech" such as "Mommy ball" or "Mommy throw ball".

Goodman (2005) observed in that around 3 years of age, children begin to use language for all kinds of things. They are not only trying to get things by asking they are talking about past experiences and even beginning to use it to pretend. By preschool (4 ½ years) they are beginning to understand and use the rules of language to express possession of something, connect thoughts and quantify. Language is becoming more like that of adults. Ezirim (2004) observed that in nursery and primary school children continue to expand their use of oral language but are also learning to read a write. As children progress through middle school and high school they continue to expand their vocabulary and refining their grammatical skills and write in more complexities as well as continue to develop reading comprehension skills.

In a related development, Osakwe (2009) observed that at age five most children can do the following: follow three consecutive commands, talk constantly, ask innumerable questions, use descriptive words and compound and complex sentences, know all the vowels and consonants and use generally correct grammar. Osakwe further noted that six-year-olds usually can correct their own grammar and mispronunciations. Most children double their vocabularies between six and eight years of age and begin reading at about age seven. A major leap in reading comprehension occurs at about nine. Ten-year-olds begin to understand figurative word meanings.

Furthermore, another important skill to be considered in the cognitive development of children is the visual processing skill. Visual process skill refers to the visual cognitive skills that allow people to process and interpret meaning from the visual information that we gain through our eye sight. Visual processing plays an important role in spelling, mathematics, and reading (Evans, 2004). Visual processing also include the ability to identify a form even though part of it is not visible and the ability to remember what one sees. Visual processing skills play an important role in learning how to form letters. These skills are also important for copying, sizing, spacing,

and orienting letters and words correctly. It helps children guide their movements based on visual information.

At the nursery school level, children are taught how to identify objects through visualization and this gives them a firm root in the development of visual processing skill. During early childhood education process, children are taught the basic objects found at home, in the school, in the kitchen and in other places such as markets and their neighbouring surroundings. Akose (2008) noted that children achieve 70% of their mental and personal development during the early years. Akose maintained that children who participated in early childhood education have better development in cognitive and emotional skills and are more successful in completing useful activities, problem solving and applying inquiry and observational skills than children who did not participate in early childhood education. However, James (2009) found that about 69% of Nigerian children in Northern Nigeria aged 0-5 years do not receive any form of early childhood education. Does it mean that the cognitive development of such children will lag behind than that of those who participated in early childhood education? In the light of the foregoing, the present study sets out to investigate influence of early childhood education on mathematics and visual processing skills of primary one pupils in Plateau State, Nigeria.

STATEMENT OF THE PROBLEM

The poor state of language and visualization process skills among primary one pupils in Nigeria is of great concern. Many pupils cannot carry out simple mathematics exercise such as addition, subtraction, division and multiplication. Lack of a solid foundation in early childhood education could be the main reason responsible for the poor language development skill of primary one pupils.

According to statistics from Plateau State Universal Basic Education Board – PSUBEB (2016) over 69% of children in Plateau State do not attend any form of early childhood education. Early childhood education is a foundation for subsequent development in the life of a child, but where over 69% of Nigerian children are out of this programme, their cognitive potential may remain untapped. The researcher in this study is therefore interested in finding out whether Early Childhood Education has any significant impact on language development and visualization process skills of primary one pupils in Plateau State. Thus, the necessity of the question as to whether early childhood education contributes significantly to the development of language development and visualization process skills of the children is prompted.

RESEARCH QUESTIONS

The following research questions were answered.

i. To what extent does early childhood education influence the language development skill of Primary One pupils?

ii. To what extent does early childhood education influence the visualization process skills of Primary One pupils?

HYPOTHESES

The following hypotheses were tested.

i.   There is no significant difference between language development skills mean scores of Primary One pupils exposed to early childhood education and those not exposed to early childhood education.

ii.   There is no significant difference between the visualization process skills mean scores of Primary One pupils exposed to early childhood education and those not exposed to early childhood education.

METHODOLOGY

The design for this research work was the ex-post facto design. The population for this study was made up of all primary one pupils in the 22 public primary schools in Jos metropolis with a population of 2,201 primary one pupils (consisting of 1,034 pupils with early childhood education experience and 1,169 pupils without experience of early childhood education). The sample for this study consisted of 22% of the population which is 500 primary one pupils from five schools in Jos metropolis. Out of this sample, 250 primary one pupils who have benefited from early childhood education were selected to constitute the sample of pupils with early childhood education while the other 250 pupils who were not exposed to early childhood education constituted the sample of pupils without early childhood education.

In selecting the sample of schools for this research, the researcher made use of probability sampling technique. The schools were selected on the basis that they have both primary one pupils who attended nursery schools and those who did not attend nursery school learning in an inclusive setting. In this study, the participants were drawn based on their experience of early childhood education. 250 pupils who have experienced early childhood education constituted the first group while another 250 pupils who have no experience of early childhood education constituted the second group. The researcher's choice of probability sampling is because it accords every member of the population an equal chance of being sampled thus avoiding any form of bias.

The instruments used for data collection in this study were the Language Development and Visualization Process Skill Tests. The language development test tested the language skill of primary one pupils who have undergone early childhood education and those who have not. The test consisted of two sections: A and B. Section A had 10 questions drawn from a comprehension passage. The language development skill test consisted of 10 questions. The test sought to test pupils' skills in word pronunciation, vocabulary and general use of language.

The visualization process test consists of two sections: section one and section two. Section one consists of twenty-six question items which seeks to examine the visual processing skills of pupils with early childhood education experience and those without it. The researcher arranged the English alphabet A-Z scattered in a table and the pupils are expected to identify the alphabets and circle them. Section B consists of pictures of familiar objects which the pupils were asked to identify items such as table, desk, pencil, book, scissors, eraser and shapes. Examples of items used to assess visual processing skills include objects and figures identification from a puzzle table and identification of basic classroom materials such as desk, chairs, erasers and sharpeners among

others. The data collected for this research was computed through the use of mean, standard deviation and t-test statistics. The research questions formulated in the study were answered using mean, standard deviation while the hypotheses were tested using the t–test for paired samples. The t-test statistical tool is chosen due to its ability to compare differences between mean scores of two groups. That is, the group with Early Child Education (ECE) and the group without Early Child Education.

FINDINGS

Research Question One

To what extent does early childhood education influence the language development skill of Primary One pupils?

Table 1: The Difference in Language Development Skills Mean Scores of Primary One Pupils with ECE and those without.

Group	N	$\overline{\text{X}}$	SD	$\overline{\text{X}}$ diff
With ECE	250	76.36	22.29	37.43
Without ECE	250	38.93	24.69	
Overall	**500**			

Table 1 reveals that the mean performance of Primary One pupils exposed to ECE in the language development skill test was 76.36 while the mean performance of Primary One pupils without ECE on the same test was 38.93. The overall mean of the two groups was 56.49 which was just slightly above the standard mean though the SD for the two groups were almost at the same level. The mean differential was 37.43, indicating a wide gap between the performances of the two groups in language development skill tests. The implication of this finding is that early childhood education has significant influence on the language skills of primary one pupils. This is evident in the higher performance of pupils exposed to ECE as compared to their counterparts who had no exposure to ECE.

Research Question Two

To what extent does early childhood education influence the visualization process skills of Primary One pupils?

Table 2: The Visualization Process Skills Mean and Standard Deviation of Primary One Pupils with ECE and those without.

Group	N	$\overline{\text{X}}$	SD	$\overline{\text{X}}$ diff
With ECE	250	94.08	12.19	49.99
Without ECE	250	44.09	29.79	
Overall	**500**			

Table 2 revealed the visual processing skills mean scores of pupils with early childhood education and those without in Jos metropolis. The mean scores of Primary One pupils with ECE was 94.08 and 44.09 for those without ECE, while the overall mean was 69.09. The mean differential of 49.99 was high indicating that Primary One pupils with ECE performed better than those without ECE

exposure. Table 11 shows the SD of scores of pupils not exposed to ECE (SD = 29.79) had greater variation than that of the Group exposed to ECE (SD = 12.19). This implies that ECE helped to improve the Primary One pupils' visual processing skills. This was further illustrated using bar chart as shown in figure 6. The implication of this finding is that early childhood education has great influence on the visual processing skill of Primary One pupils. This is evident in the high performance of pupils exposed to early childhood education as compared to their counterparts without exposure to such education.

Hypothesis One

There is no significant difference between the language development skill mean scores of Primary One pupils based on their exposure and non-exposure to early childhood education.

Table 3: Summary Table for t-test Analysis of Mean Difference between Language Development Skills of Pupils with ECE and those without.

Group	N	Mean	SD	Df	t	p-value	Decision
Group A (with ECE)	250	95.11	10.39				
				498	14.56	.000	Reject H_0
Group B (without ECE)	250	62.36	34.00				

p < 0.05

Table 3 shows that t = 14.56 at 498 degrees of freedom and p < 0.05, indicating that the mean score of Group A ($\overline{X}$ = 95.11) was greater than the mean score of Group B ($\overline{X}$ = 62.36). The mean differential is high (32.75) and therefore significant. Since the p-value (0.000) is less than 0.05 level of significance, the null hypothesis was rejected. This implies that there is a significant difference between the mean language development skill of pupils exposed to ECE and those not exposed to.

Hypothesis Two

There is no significant difference between the recall skill mean scores of Primary One pupils based on the exposure to early childhood education.

Table 4: The Results of t-test Analysis for Difference between the Visualization Process Skills Mean Scores of Pupils with ECE and those without.

Group	N	Mean	SD	Df	t	p-value	Decision
With ECE	250	94.08	12.19				
				498	24.56	.000	Reject H_0
Without ECE	250	44.09	29.79				

p < 0.05

The results in Table 4 shows that a significant difference exists in the visualization process skills mean scores of the Primary One pupils with ECE and those without. The p-value was less than the 0.05 level of significance, indicating that the visual processing skills mean score of 94.08 for Primary One pupils exposed to ECE was greater than the mean score of 44.09 for Primary One pupils not exposed to ECE. The mean differential of 49.99 is high and therefore significant. Since the p-value (0.000) is less than 0.05 level of significance, the null hypothesis is not upheld because the data did not provide sufficient evidence to retain the null hypothesis. Hence, it was concluded

that primary one pupils exposed to ECE have better visual processing skills than those not exposed to ECE.

DISCUSSION OF FINDINGS

From the analysis of research question one, it was discovered that early childhood education helped to enhance the language development skills of primary one pupils in Jos metropolis. This finding is in agreement with the findings of Adesina (2009) who discovered that children who attended nursery school perform better in mathematics at the primary school level than tho0se who did not attend nursery school. This finding is contradicts the finding of Osai (2001) and Magnuson (2004) who discovered that early childhood education does not affect language development skills of primary one pupils..

In a related development, the finding of research question two revealed that early childhood education helps to improve the visualization process skills of primary one pupils. This finding supports the findings of Osakwe, (2009) who found that helps in development of motor skills but the finding contradicts the findings of Campbell (2002) who discovered that there is no significant relationship between the visual processing of elementary school children who passed through the head-start programme and those who did not.

Hypothesis one which states that there is no significant difference between the language development skill mean scores of Primary One pupils based on their exposure and non-exposure to early childhood education was tested using t-test for independent samples statistics and the result shows that a significant difference exists between the mathematics learning skills mean score of primary one pupils exposed to and those not exposed to early childhood education with $t(498) = 15.85$, $p < 0.05$, indicating that the mean score of pupils exposed to ECE ($\overline{X} = 73.16$) was greater than the mean score of pupils without ECE ($\overline{X} = 39.82$). The mean differential (33.34) is very high, indicating that there is a significant difference since the p-value of 0.000 is less than 0.05 level of significance, the null hypothesis was rejected, since the data did not provide sufficient evidence to accept the null hypothesis. Hence, it was concluded that there is a significant difference between the language development skills mean score of primary one pupils exposed to and those not exposed to early childhood education. This means that ECE helped in improving the language development skills of primary school pupils. This finding is in consonance with the findings of Heckman (2000) who discovered that children who passed through early childhood education have better language development than their counterparts who did not pass through such an education.

Hypothesis two which states that there is no significant difference between the visualization process skill mean scores of primary one pupils based on the exposure to early childhood education was using t-test for unrelated samples statistics and the result shows that $t(498) = 24.56$, $p < 0.05$, indicating that the visual processing skills mean score of Primary One pupils exposed to ECE (94.08) is greater than the mean score of primary one pupils not exposed to ECE (44.09). The mean differential of 49.99 is high and therefore significant. Since the p-value (0.000) is less than 0.05 level of significance, the null hypothesis is rejected. This is because the data did not provide sufficient evidence to retain the null hypothesis. Hence, it was concluded that Primary One pupils exposed to ECE had higher visual processing skills than those not exposed to ECE. This finding is in conformity with the findings of Fabiyi (2007) and Osakwe (2009) who discovered that pupils who are exposed to early childhood education have better visualization processing skills than those

who were not exposed to such education. However, this finding refutes Ige, (2011) who found that early childhood education experiences did not affect the development of visual processing skills in children.

CONCLUSION

The aim of a study of this nature is to ascertain the influence of early childhood education on the language development and visualization process skills of primary one pupils in Jos metropolis. Based on the analysis of data collected and the interpretations of the findings, it was discovered that early childhood education has great influence on the language development and visualization process skills of primary one pupils. Pupils who were exposed to early childhood education had better achievement score in language development and visualization process tests than their counterparts who were not exposed to such education. It was therefore concluded that early childhood education improves the cognitive development of pupils especially in the area of language development and visual processing.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made to ensure the effectiveness of early childhood education and cognitive development of children in Jos metropolis:

1. **Enrolment of children in early childhood education:** Due to non-enrolment in early childhood education, many children do not get to develop all their basic cognitive skills. Parents are therefore advised to enroll their children in nursery schools to acquire some basic cognitive skills rather than sending them directly to primary one.
2. **Recruitment of qualified teachers:** Given the importance and influence of early childhood education on the cognitive development of children, only qualified teachers trained in the field of early childhood with at least NCE should be recruited to teach in nursery schools. Teachers' training and qualification is of great importance to the standard of early childhood education.
3. **Funding and Quality Assurance:** It is being recommended that funding of early childhood education be made a joint responsibility of the government and the private sector. It is known that government alone cannot fund education in all the levels of the educational system. However, in the critical years like the nursery school years, funding is necessary to establish control and enforce standards.
4. Early childhood education should be made free and compulsory for every Nigerian child.
5. The early childhood education curriculum in Nigeria should be restructured to meet the cognitive and social needs of children.

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