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Effect of Early Childhood Education Programme on Cognitive Development of Young Children in Oyo State

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Abstract

The study investigated the effect of early childhood education on primary school pupils' cognitive achievement. Two hypotheses were postulated. The sample consisted of one hundred public primary two school pupils randomly selected from six schools within Akinyele Local Government Area in Ibadan, Oyo State, Nigeria. Fifty of the sampled pupils had pre-school education and fifty pupils did not attend pre-school. The two validated instruments used to collect the data were English Studies Achievement Test (ESAT)=.62 and Mathematics Achievement Test (MAT)=.71 respectively to assess the cognitive ability of the pupils. The data collected were analyzed using t-test. The study found that pupils who attended pre-school performed better in English Language ($t=5.07$, $df=98$; $p<0.05$) and Mathematics ($t=4.06$, $df=98$; $p<0.05$) tests than pupils who did not attend pre-school. It is therefore recommended among others that parents and all education stakeholders should invest confidently in this level of education and take full advantage of pre-school programme and facilities for their children's development and life-long learning.

Key Words: Childhood, Pre-school education, child development, cognitive development, stimulation.

Introduction

The positive effects of early childhood and care education to the academic development and future well-being of children cannot be over-emphasized. However, there are some people who believe that early education does not necessarily have impact on children's education and that giving education to children before primary school level is a waste of time and resources since children who do not go to nursery school also do well.

Nevertheless, there is widespread agreement that early childhood and care education programmes can produce short-term gains in disadvantaged children's achievement on standardized tests of intelligence and academic ability and that some pre-school programmes have reduced later grade retention and special education placement (Barnett, 1995). This reason perhaps has increased the demand for a systematic child upbringing in many countries today (Robert, Barnett, Burchmal and Thornburg, 2009).

In Nigeria, presently, pre-school education is recognized in the National Policy on Education (FGN, 2004). In its provision for pre-primary education, the policy defines Pre-Primary Education as the education given in an educational institution to children prior to their entering the primary school. In order to underscore the importance of pre-school education in Nigeria, the Federal Government of Nigeria has also included it in the blueprint on Basic Education (FME, 2000). The blueprint refers to it as Early Childhood and Pre-primary Education and defines it as education which covers the period from zero to less than six years of age.

The objectives of Early Childhood and Pre-primary Education according to the blueprint on Basic Education include:

- i. ensure that infants and children receive initial parental care;
 - ii. prepare children in readiness for formal schooling;
 - iii. provide adequate care and supervision for the children while their parents are at work;
 - iv. inculcate in infants and children good health habits and personal hygiene;
 - v. impart in children the rudiments of numbers, letters, colours, shapes and forms;
 - vi. socialize and orientate children to positive societal norms and relationship;
 - vii. Familiarize children with their physical, social and cultural environments.
- (FME, 2000)

The same objectives are written in National Policy on Education on section titled Pre-Primary Education but framed in different ways. Also, the strategies to implement the objectives are put down. This shows the concern of the Federal Government to Early Childhood Education. However, the government of Nigeria does not involve herself in the provision of this level of education as it does in primary level and post-primary level. The provision is largely by private effort while government controls, supervises and monitors the schools. This is not to say that there are no government-owned pre-school institutions in Nigeria.

In other words, government is not exercising direct control on this level of education and as such, has made this vital formative level of education vulnerable to substandard pre-schools all over the country in spite of many empirical evidence that has demonstrated both the short-term and long-term effects of early education (Camili, Vargas, Ryan and Bernett, 2010; Robert, Barnett, Burchmal and Thornburg 2009; Howes, Burchimal, Pianta, Bryant, Early, Clifford and Barburian, 2008).

Moreover, research work has shown that most children make successful transitions from kindergarten to primary school when exposed to pre-school education (Olatunji, 1986). Studies have examined the immediate and short-term effects of early childhood and care education programmes of various types. These

studies are found in two largely separate streams of researches, one on the effects of ordinary child care on children from all backgrounds and the other on the effects of early childhood and care education programmes specially designed to improve the cognitive development of economically and otherwise disadvantaged children (Lamb and Sternberg, 1990; Zaslow, 1991).

Initially, research on child care focused on potential negative effects on the mother-child relationship and the child's socialization with less attention to cognitive development (Barnett, 1995). More recently, child care research has begun to examine the effects of variations in both the quality of non-parental care and the child's home environment and family circumstances. Thus, higher quality childcare has been found to be associated with better cognitive and social development both while children are in childcare and during the first few years of school (Helburn and Culkin(1995).

Some studies have found that age at entry to or years of experience in child care during the pre-school years influenced the reading and Mathematics achievement of children at ages five and six, but differently for children from high- and low- income homes. For children from impoverished homes, earlier entry and/or more years in care produced a larger effect on reading scores than fewer years. Conversely, effects were negative for children in the highest-income families (Barnett, 1995; Caughy, Dipietro and Sirobino,1994).

In this regard, there have been arguments on the role of early education in enhancing children's competencies. The argument made in many circles including policy-makers, advocacy, programme planning and development is that early childhood and care education is a means to address concerns that an unacceptably large number of children are already, by 5 years of age, lacking in competences fundamental to their school success – notably in the areas of spoken language and literacy (Duncan, Dowsett, Claessens, Magnuson, Huston and Klebanov, (2007); self-regulation (Zaslow, Reidy, Moorehouse, Halle, Calkins and Margle, (2003); social-relational competence (Fantuzzo, Bulotsky-Shearer, McDermott, McWayne, Frye and Perlman, (2007) and early Mathematics (Cross, Woods and Schwengruber, (2009).

Research have shown that the long term effects of early gaps in achievement and social functioning are so pronounced that effective and efficient intervention targeted toward these gaps in the pre-school period are essential not only to the developmental success of children but also to the economic and social health of communities (Barnett, 2008; Barnet and Masse, 2007; Heckman, 2006). It is viewed that early childhood and care education is a means by which policy makers can address these issues as both small experimental studies and quasi-experimental studies of large scale programmes have shown consistently positive effect of

exposure to pre-school education (Howes, Burchmal, Pianta, Bryant, Early, Clifford and Barburian, 2008; Barnet, Howes and Jung, 2008; Ramey and Ramey, 2004).

However, despite significant investment over the past decade in the expansion and improvement of educational programmes such as Universal Primary Education, (UPE), Universal Basic Education (UBE) and Special Education in Nigeria, the development which education should have offered us through early childhood and care education is still very low. For instance, the National Policy for Integrated Early Childhood Development in Nigeria (FGN, 2007) showed that 2% of children age 0-5 years is attending any form of organized childcare programme or pre-school. This percentage is very small in view of large number of children in Nigeria.

An Education For All assessment conducted recently which involved six regional conferences also corroborated the report above which documented that of the more 300 million children under 6 years of age fewer than a third benefited from any form of early childhood education (FME Report, (2008). Furthermore, Odelola (2007) asserted that in Nigeria presently, the provision of the Universal Basic Education (UBE) programme is centred on the segment of the Nigerian children that are in school and that the out-of-school children constitute a larger percentage of the total number of children in the country. These categories of children include those who are never enrolled in school and abused and the street children.

Worst still, the existing pre-school institutions in Nigeria are not helping matter as many of the pre-school institutions have been reported to lack pre-primary professional trained teachers, standard and quality, effective quality control, uniformity in curriculum guidelines among others (Obanya, 2007, 2004; and Osanyin, 2002).

In effect, early childhood and care education in Nigeria as a scaled-up asset for fostering learning and development of young children is not yet being realized to many pre-school children (Amosun, 2010; FME, 2000); National Centre for Educational Statistics, 2000; Jacobson-Chernoff, Flanagan, Mcphee and Park, 2007).

Many studies have examined pre-school education long-term effects providing into elementary school and beyond (Karoly, Kilburn and Cannon, (2005). Analysis of multiple studies revealed significant lasting benefits in learning, less grade repetition and special education placement, higher rates of high school graduation and improved social behaviour (Camili, Vargas, Ryan and Bernett, 2010; Aos, Lieh, Mayfield, Muller and Pennucci, 2004).

Taiwo and Tyole (2002) investigated the effect of pre-school education on academic performance of Botswana children. The study indicated that pupils

with pre-school education experience significantly out-performed their counterparts without such experience in all the school subject areas surveyed by the study.

From the researches reported above, it could be said that majority of these evidence is from foreign countries; much work has not been done on the effect of early childhood education in our context. It is necessary to investigate therefore the effect of early childhood education on the cognitive development of Nigerian children.

Statement of the Problem

In spite of the benefits that early childhood education gives to children from low and high socio-economic background in their academic activities, there are some people who believe that early education does not necessarily have impact on children's education and that it is a waste of time and resources since children who do not go to nursery school also do well. However, literature have shown that by 5 years of age, children without quality early childhood education are already lacking in competences fundamental to their school success. Therefore, the study aimed at finding out the effect of early childhood care and education programme on cognitive development of primary school pupils. Based on the stated problem the investigation sought to test two hypotheses at the .05 level of significance.

Hypotheses

HO₁: There will be no statistically significant differences in the academic achievement mean scores of children with or without pre-school in English Studies.

HO₂: There will be no statistically significant differences in the academic achievement mean scores of children with or without pre-school in Mathematics.

Methodology

The study involved 100 primary two pupils, 50 with pre-school education and 50 without pre-school education on selected tasks in English Studies and Mathematics. Purposive sampling technique was used to select 6 schools that participated in the study in Akinyele local government area, Ibadan, Oyo State. The technique is used in order to select schools with pupils with and without pre-school education using preliminary investigation.

Instruments

In order to gather the data used in this study, two instruments were used. They are:

- (i) English Studies Achievement Test (ESAT)
- (ii) Mathematics Achievement Test (MAT)

Both instruments were designed and validated by the investigator. The English Studies Achievement Test (ESAT) is a 20 item questions which covered areas the children have been taught in their various schools and classes. It was designed to test object identification, reading and writing within the grasp of primary two pupils. The second instrument that is Mathematics Achievement Test (MAT) is 20 item questions which also covered areas the pupils already learnt. It tested pupils' knowledge of addition, multiplication, subtraction and division. The instruments were subjected to field test in another local government other than the selected areas. The Kudder Richardson 21 (KR21) formula was used to test the reliability of the instruments and it yielded a coefficient of .62 and .71 respectively.

Procedure

The investigator visited the schools after the selection of the school in order to discuss the purpose of the study with the school head-teachers and the primary two teachers that were involved. All the class teachers were intimated on the roles they are to play in their classes during the administration of the instruments (ESAT and MAT). The investigator with the assistance of the class teachers administered the instruments. The teachers were instructed not to give any undue assistance except the reading and explanation of questions and instructions when it was necessary. The investigator personally vetted and scored the responses of the pupils. The responses were later analyzed using t-test.

Results

The results of the study are presented in tables one and two below.

Table 1: Standard Deviation and t-test Comparison of Achievement Mean Scores of Pupils with Pre-school Education and Pupils without Pre-School Education in English Studies

Groups	N	\bar{X}	SD	df	t_{cal}	t_{crit}	Decision
WPE	50	12.98	5.75	98	5.07	1.98	S*
NPE	50	7.86	4.08				

S* denotes significant at 0.05

As shown in Table 1, children who attended pre-school performed better in English Studies Achievement Test than children who did not attend pre-school, since the observed value (5.07) is greater than the critical value (1.98). It then implies that the test is significant. This therefore negates the null hypothesis H_{01} . The null hypothesis is hereby rejected.

The result can then be interpreted that there is a significant difference in the achievement mean scores of pupils with and without pre-school education.

Table 2: Means, Standard Deviation and T-test Comparison of Achievement Mean Scores of Pupils with Pre-school Education and Pupils without Pre-School Education in Mathematics

Groups	N	\bar{X}	SD	df	t_{cal}	t_{crit}	Decision
WPE	50	11.84	3.66	98	4.084	1.98	S*
NPE	50	8.36	4.71				

S* denotes significant at 0.05

As shown in table 2, children who attended pre-school performed better in Mathematics achievement test than children who did not attend pre-school. Since the observed value (4.084) is greater than the critical (1.98). It means that the test is significant. The result is not in accordance with the null hypothesis H_0 . The null hypothesis is therefore rejected.

The result can be interpreted that there is a significant difference in the achievement mean scores of pupils with pre-school and pupils without pre-school education background.

Discussion

The purpose of this study was to investigate whether or not there would be differences in the cognitive achievement of pupils who attended pre-school and those who did not attend pre-school in English Studies and Mathematics.

The findings from the study have revealed significant differences in both English Studies and Mathematics achievement of pupils with and without pre-school education background. Based on the findings above, the null hypotheses for the study are rejected. These results suggest that pre-school education has served the purpose of stimulating cognitive development of the children in English Studies and Mathematics.

These findings are supported by literature both foreign and local. For example, Camili, Vargas, Ryan and Barnett, 2010; Cross, Woods and Schwengruber, 2009). These studies confirmed significant effects and benefits in learning, higher academic achievement, less grade repetition and special education placement, higher rates of high school graduation and improved social behaviour.

Doris (1995) also submitted that pre-school effects can be transmitted in that it eased transition to first grade and that pre-school children's IQs, marks, and achievement test scores were higher. Olatunji (1986) also found significant difference between the mean scores of children who have been exposed to nursery education and those without nursery education in primary one, two and three.

The reason for the upper hand gained by pre-schoolers over non-pre-schoolers may be that the pre-school environment stimulated the young children cognitively and prepared them for schooling in primary school. Their exposure to

school-related activities in pre-school enhanced and facilitated their cognitive development leading to their higher academic achievement than their counterparts who did not attend pre-school.

Recommendations

The findings of this study should encourage parents to take full advantage of whatever reputable pre-school facilities available in their locality and to invest confidently in this level of education.

Since the pre-school years are important for later cognitive development and that at this stage of child's development, the child is probably more malleable and more receptive to environmental influences and to teaching and learning than at any other period, it is recommended that educational policy-makers treat this level of education with greater consideration than they have done in the past.

In view of the huge costs involved in the provision of qualitative pre-school education and the government commitment to other educational levels, government should assume responsibility in the area of provision and administration.

Government should implement all the strategies documented in the National Policy on Education on pre-primary education.

Conclusion

Based on the findings above, it could therefore be concluded that pre-schooling is an important level of education in the determination of primary school pupils' academic achievement. Moreover that empirical evidence testifies to the powerful effects that early education can have on children's life chances and ultimate well-being because educational stratification begins in earnest during these years. Providing pre-school programmes to help children develop their cognitive development can yield large returns, especially for children from economically disadvantaged families.

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