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THE EFFECT OF AGE ON PUPILS' ACADEMIC ACHIEVEMENT: A COMPARATIVE ANALYSIS OF PRIVATE AND PUBLIC PRIMARY SCHOOL CHILDREN IN FAKO DIVISION, SOUTH WEST REGION OF CAMEROON

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Abstract:
This study examined the relationship between age and pupils achievement in mathematics and English in public and private primary schools in Fako Divion, South West Region of Cameroon. Based on the objective, two hypotheses guided the study. The study adopted a cross – sectional survey design. The population of the study consisted of class two and three pupils constituting a sample of 297 pupils purposively selected as follows: 163 from private schools and 134 from public schools who had been in the selected schools for a minimum of two years. Tests were administered on a score of 20 which took into consideration the curriculum of each class. Data were analyzed using mean and standard deviation as well as the Spearman's rho and Kruskal Wallis tests. Statistics were presented at 95% confidence interval with alpha set at 0.05 levels accepting 5% margin of error. Results revealed a significant relationship between age and pupils achievement in mathematics and English as well as a significant difference in this relationship by school type with performance being higher in private schools than those in public schools. Recommendations were made amongst which is the respect of school entry age.

Keywords: age, achievement, school type, primary school, Cameroon

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1. Introduction

Primary Education is seen as the foundation for future educational opportunities and lifelong skills. These skills enable people to effectively participate in the social, economic and political activities of their communities. It frees human beings from a state of ignorance and helps to reduce the negative effects of poverty, relating in particular to health and nutrition. As a foundation to a well-educated and high quality workforce primary education is vital to a country's economy (Webster, 2000). Yet a 2010 study conducted in Cameroon by the Ministry of Basic Education (MINEBUB) among primary schools reported that 49% of Cameroonian children in the third year of primary school struggled to read, while 27% could not read at all, demonstrating the urgent need for Cameroon to improve the quality of its education (World Bank, 2014). Also, findings from a study carried out by Endeley (2016) in the English-speaking subsystem of education in Cameroon revealed that the literacy level in the upper primary school was significantly low and a similar study also revealed that mathematics achievement is generally low (Endeley, 2017). These two subjects are fundamental in achieving educational opportunities and lifelong skills. Among factors that affect achievement in primary school, age has received very little attention. In Cameroon the entry age for primary school is six years. Yet a significant number of children attend primary school before the entry age. Research reveals that students who are older when they enter school perform better than their younger classmates (Gagné and Gagnier, 2004). This may affect the achievement of primary school pupils. Thus the study aimed at examining the relationship between age and pupils' achievement in Mathematics and English in public and private schools in Fako Division of the Southwest region of Cameroon.

2. Review of Literature

Over the years, research findings have revealed that academic achievement has numerous determinant factors, one of which is School entry modalities (Olayemi, 2009; Cameson and Wilson, 2011). Exactly when children enroll in kindergarten varies around the world (Meisels, 1992). School entry is set at 6 in Russia, Switzerland, Australia, Japan, and Germany. In Sweden, children enter school at age 7, in England they begin school between 4 and 5 years of age, and in New Zealand children begin school on their fifth birthday, rather than on a specific uniform date in the fall, although school entry also varies across the United States (Stipek, 2000). However, research has revealed age-of-entry effects in the later elementary school grades. The Cameron and Wilson study found out that among fourth graders, the oldest children (with September-January birth dates) outscored the youngest children (with May-September birth dates). Elder and Lubotsky (2009) concluded that students that start school at a younger age tend to have some disadvantages in the beginning, which fade away with progression in school. Hence age could be a predictor of success (Abubakar and Oguguo, 2011). Crawford et al (2007) in a study carried out in England and another

study by Kawaguchi (2011) in Japan concluded that students that begin school younger perform worse than their older counterparts in primary school's results and that the relative age effect declines in the following years. Stipek (2002), examined the effects of age of entry to school on children's success in school. He compared children in the same grade who have different birthdays. Results indicated that relatively older children have a modest academic advantage over younger ones in the first few grades of school, but that this advantage typically disappears. Older children tend to show more advanced developmental skills than younger children. Changes in age of entry can have effects on the percentages of children who meet certain academic or skill standards and can boost a district's standing on certain metrics (Vecchiotti, 2001). Thus age has a considerable influence on achievement, especially the entry age of students.

Theoretically, according to Piaget's Theory of Moral Reasoning (1965), socio-emotional learning abilities also come with age (Hudson, 2011). Therefore, the content, the teaching methods and strategies should be connected to child's cognitive learning abilities, if not socio-emotional learning will not take place. Piaget's theory of cognitive development has great influence on teaching methods and strategies with respect to age. Piaget believed that, children develop steadily and gradually throughout the varying stages and that, experiences in one stage forms the foundation for movement to the next (Berk in Ojose, 2009). This implies if a child fails to understand previous information, it will be difficult for the child to understand subsequent information especially in mathematics and language were study materials are delivered chronologically.

Piaget identified four stages of cognitive development in children that explain how children learn with respect to their ages. These include the sensorimotor, preoperational, concrete operational and formal operational stages (Ojose, 2009). This study takes into consideration the third stage, that is, the concrete operational stage (7-11 years) since learners in class two and three falls within this age group (7 and 8years respectively). According to Piaget, the concrete operational stage is marked by the start of logical thinking. Children begin to understand basic mathematical problems such as addition, subtraction, multiplication and division (Andrew, 2014) and language skills accelerate dramatically (Ojose, 2009). This implies mathematic and language skills are very important for children at this stage which also has a foundation from the previous stage and will influence their academic achievement at the subsequent stage.

2.1 Statement of the Problem

A significant number of primary school pupils in the English sub-system of education in Cameroon cannot read and write and do not perform well in mathematics. This threatens the well-educated and high quality workforce Cameroon hopes to have in order to attain emergence. Among other factors that may account for the drop in performance, school age has received very little attention. Many parents tend to send their children to primary school before the stipulated 6years of age with the belief that children of nowadays seem to know more, thanks to technology and knowledge explosion. However, they may not be cognitively ready for certain types of learning.

Thus the study aimed at examining the relationship between age and pupils' achievement in Mathematics and English in public and private schools in Fako Division of the South West region of Cameroon. Findings of this study may go a long way into minimizing wastage by solving the problem of poor achievement through the sensitization of parents and teachers.

2.2 Research Hypotheses

Two hypotheses guided the study as follows:

1) There is no significant relationship between age and pupils' achievement in Mathematics and English.
2) The relationship between age and pupils' achievement does not differ significantly between public and private primary schools.

3. Material and Methods

The study adopted a descriptive cross – sectional survey design. The chronological age and academic achievement of class two and three pupils was analyzed based on their performance in English and mathematics. Tests were administered on a scale of 20, in collaboration with the teachers of these classes taking into consideration the curriculum of each class. The sample was made up of 297 pupils, 163 from private schools and 134 from public schools. The purposively selected sample consisted of pupils who had been in the selected schools for a minimum of two years, excluding those with disability and those who have English as a second language. A random selection of participants found in these intact groups was also made. Data were analyzed using both the descriptive and inferential statistics. The descriptive statistical tools used were mean and standard deviation. The inferential statistical tools used were the Spearman's rho test and Kruskal Wallis test. Statistics were presented at 95% confidence interval with alpha set at 0.05 levels accepting 5% margin of error.

4. Results and Discussion

Table 1 below shows the frequency of total number of pupils who participated in the study with respect to their various classes.

Table 1: Distribution of pupils by class

Class	Frequency	Percentage
Class two	140	47.1
Class three	157	52.9
Total	297	100.0

Among the 297 pupils sampled, 157(52.9%) were in class three and 140(47.1%) were class two pupils. This population was selected from private and public schools as seen in table 2 below.

Table 2: Distribution of pupils by school type

Class	Frequency	Percentage
Public primary	134	45.1
Private primary schools	163	54.9
Total	297	100.0

From table 2 above, 163(54.9%) pupils were from private primary schools and 134(45.1%) from public primary schools. Table 3 below depicts the age range of classes two and three pupils.

Table 3: Case summary of class two and class three pupils' age

	Class Three	Class Two
N	157	140
Mean	8.07	7.41
Median	8.00	7.00
Mode	8.00	7.00
Minimum	7.00	6.00
Maximum	11.00	9.00
Std. Deviation	.793	.905

Among the 157 class three pupils that were qualified and sampled for the study, their average age was 8years. The youngest pupil was 7 years old and the oldest was 11 years old. The median age was 8 and the age of many of the pupils were 8 (mode). The difference in the pupils' ages was high with a standard deviation value of .793.

Among the 140 class two pupils that were qualified and sampled for the study, their average age was 7. The youngest pupil was 6-year-old and the oldest was 9-year-old. The median age was 7 and the age of many of the pupils were 7 (mode). The difference in the pupils' ages was high with a standard deviation value of .905.

Hypothesis 1:

Table 4: Comparing class two pupils performance in English by age

Age	N	Mean/average mark
6 years	15	11.41
7 years	77	11.68
8 years	23	13.29
9 years	25	15.67

Kruskal Wallis Test=18.451, df=3, P=0.002, <0.05.

Class two pupils' performance in English on a score on 20, was found to significantly vary by their age (P=0.002, <0.05). Findings showed that class two pupils performance in English was found to significantly increase with their age. For instance, the average performance for pupils who were 6 years of age was 11.41. For pupils who were 7 years of age, the average mark score was 11.68 which were slightly higher. The pupils who

were found to score higher were 9 year olds with an average mark of 15.67, followed by pupils who were 8 years of age with an average mark score of 12.29.

Table 5: Comparing class two pupils performance in Mathematics by age

Age	N	Mean/average mark
6 years	15	10.26
7 years	77	11.47
8 years	23	13.58
9 years	25	14.98

Kruskal Wallis Test=12.512, df=3, P=0.037, <0.05.

Class two pupils' performance in Mathematics just like with English language was found to significantly vary or influence by their age (P=0.037, <0.05). Findings showed that class two pupils performance in Mathematics was found to significantly increase with age. For instance, the average performance for pupils who were 6 years of age was 10.26. For pupils who were 7 years of age, the average mark score was 11.47 which were slightly higher. The pupils who were found to score higher were 9-year-olds with an average mark of 14.98 very close to 15, followed by pupils who were 8 years of age with an average mark score of 13.58.

Table 6: Correlation statistics showing the relationship between class two pupils' performance in English and Mathematics by age

Test statistics		Age	Marks in English	Marks in Mathematics
Spearman's rho	R-value	1.000	.484*	.514**
	P-value	.	.030	.000
	N	140	140	140

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).
a. Class = Class two

Using the correlation test, findings equally showed that there is a significant, positive and strong relationship between class two pupils age and their performance in English and Mathematics (P <0.05) and pupils' performance in English and Mathematics was found to significantly increase by increase in their age.

Table 7: Comparing class three pupils' marks in English by age

Age	N	Mean/average mark
7 years	36	11.48
8 years	81	14.96
9 years	34	15.81
10 years and above	6	16.98

Kruskal Wallis Test=40.143, df=3, P=0.000, <0.001.

Also, class three pupils' performance in English on a score on 20, was found to significantly vary or influence by their age as well with P <0.001 which is far <0.05. Findings showed that class three just like class two pupils' performance in English was

found to significantly increase with their age. For instance, the average performance for pupils who were 7 years of age was 11.48. The pupils who were found to score higher were those 10 years and above with an average mark of 16.98, followed by pupils who were 9 years of age with an average mark score of 15.81 and then pupils who were 8 years of age with an average performance of 14.96.

Table 8: Comparing class three pupils' marks in Mathematics by age

Age	N	Mean/average mark
7 years	36	11.06
8 years	81	11.29
9 years	34	14.64
10 years and above	6	15.60

Kruskal Wallis Test=50.562, df=3, P=0.000, <0.001.

Also, class three pupils' performance in Mathematics (on a score on 20) was found to significantly vary by their age as well with (P <0.001) which is far (<0.05). Finding showed that class three just like class two pupils performance in Mathematics was found to significantly increase with their age. For instance, the average performance for pupils who were 7 years of age was 11.06. The pupils who were found to score higher were those 10 years and above with an average mark of 15.60, followed by pupils who were 9 years of age with an average mark score of 14.64 and pupils who were 8 years of age with an average performance of 11.29.

Table 9: Correlation statistics showing the relationship between class three pupils' performance by age

Test statistics		Age	Marks in English	Marks in Mathematics
Spearman's rho	R-value	1.000	.487*	.774**
	P-value	.	.000	.000
	N	157	157	157

**. Correlation is significant at the 0.01 level (2-tailed).
a. Class = Class three

Using the correlation test, finding equally showed that there is a significant, positive and strongly relationship between class three pupils age and their performance in English and Mathematics (P<0.001) which is far (<0.05) with finding revealed that class three pupils performance in English and Mathematics was found to significantly increase by increase in their age.

Findings from hypothesis one reveal that there is a relationship between pupils' age and academic achievement. Older children seem to perform better than younger children in the same grade. These findings are in line with those of Abubakar and Oguguo,(2011), Elder and Lubotsky (2009) and Stipek (2002). This means for a pupil to perform well in school he /she must be cognitively ready. Piaget believed that, children develop steadily and gradually throughout the varying stages and that, experiences in one stage forms the foundation for movement to the next (Berk in Ojose, 2009).

Contrary to these authors and present study, Lincove and Painter (2006) studied student entrance age in kindergarten and subsequent eighth grade, tenth grade, and twelfth grade achievement scores, and found that "young and older students had similar eighth-grade achievement". Additionally, they found that the younger students outperformed the older students on tests in both the 10th and 12th grades (Lincove and Painter, 2006).

In addition to the above, this study found a disparity in achievement between pupils in public and private school of the same age; pupils in private schools performed significantly higher in mathematics and English than those in public schools. Findings also revealed that, irrespective of class and age, pupils in private schools performed significantly higher in mathematics and English than their counterparts in the public schools as seen in hypothesis two below.

Hypothesis 2:

Table 10: Comparing class two pupil's performance in English by school type

School type	Age	Mean/average mark	Statistical test
Public primary	6 years	10.53	Kruskal Wallis Test=25.897 P=0.032
	7 years	11.59	
	8 years	13.53	
	9 years	13.98	
Total	**66**		
Private primary schools	6 years	11.23	Kruskal Wallis Test=34.761 P=0.000
	7 years	11.64	
	8 years	14.85	
	9 years	15.36	
Total	**74**		

When class two pupils' performance in English was compared by school type and by age, findings showed that in public primary school, class two pupils' performance was found to be significantly higher with age (P=0.032, <0.05) with pupils aged 9 scoring significantly higher, followed by pupils aged 8 years. Meanwhile pupils who were 6 years of age had the least average mark. The same trend was observed with pupils from private schools whereby their performance was also found to significantly increase by age with (P<0.001) which is far <0.05). Also, by comparing the performance of the class two pupils by school type and by their age, findings showed that pupils from private primary school of the same age like pupils from public primary schools performed higher than pupils from public primary schools.

Table 11: Comparing class two pupil's performance in Mathematics by school type

School type	Age	Mean/average mark	Statistical test
Public primary	6 years	10.53	Kruskal Wallis Test=25.897 P=0.012
	7 years	11.59	
	8 years	13.53	
	9 years	13.98	
Total	**66**		
Private primary schools	6 years	11.23	Kruskal Wallis Test=34.761 P=0.000
	7 years	11.64	
	8 years	14.85	
	9 years	15.36	
Total	**74**		

When class two pupils' performance in Mathematics just like English language was compared by school type and by age, finding showed that in public primary school, class two pupils performance was found to significantly increase with age (P=0.012, <0.05) with pupils aged 9 and 8 scored significantly higher, than pupils who were 7 years of age with an average mark of 11.59 meanwhile, pupils 6 years of age had the least average mark of 10.53. The same trend of finding was observed with pupils from private schools whereby their performance was also found to significantly increase by age with (P<0.001) which is far (<0.05). Also, by comparing the performance of the class two pupils by school type and by their age, finding showed that pupils from private primary school of the same age like pupils from public primary schools performed higher than pupils from public primary schools.

Table 12: Comparing class three pupils' performance in English by school type

School type	Age	Mean/average mark	Statistical test
Public primary	7 years	11.89	Kruskal Wallis Test=24.671 P=0.021
	8 years	12.49	
	9 years	13.89	
	10 years	14.67	
Total	**68**		
Private primary schools	7 years	12.68	Kruskal Wallis Test=37.531 P=0.001
	8 years	13.15	
	9 years	14.56	
	10+	16.78	
Total	**89**		

Also, when class three pupils' performance in English was compared by school type and by age, finding showed that in public primary school, class three pupils performance was found to significantly increase with age just like class two pupils (P=0.021, <0.05) with pupils age 10 years scored significantly higher, followed by pupils aged 9 and 8 meanwhile pupils who were 7 years of age had the least average mark. The same trend of finding was observed with pupils from private schools whereby their performance was also found to significantly increase by age with (P=0.001, <0.05). Also,

by comparing the performance of the class three pupils' by school type and by age, finding showed that pupils from private primary school of the same age like pupils from public primary schools performed higher than pupils from public primary schools.

Table 13: Comparing class three pupils' performance in Mathematics by school type

School type	Age	Mean/average mark	Statistical test
Public primary	7 years	10.01	Kruskal Wallis
	8 years	12.89	Test=41.519
	9 years	13.12	P=0.019
	10 years	14.67	
Total	**68**		
Private primary schools	7 years	11.67	Kruskal Wallis
	8 years	13.61	Test=78.828
	9 years	14.69	P=0.000
	10+	16.18	
Total	**89**		

When class three pupils' performance in Mathematics was compared by school type and by age, finding showed that in public primary school, class three pupils performance was found to significantly increase with age just like class two pupils (P=0.019, <0.05) with pupils age 10 years scored significantly higher, followed by pupils aged 9 and 8 meanwhile pupils who were 7 years of age had the least average mark. The same trend of finding was observed with pupils from private schools whereby their performance was also found to significantly increase by age with (P<0.001) which is far (<0.05). Also, by comparing the performance of the class three pupils by school type and by age, finding showed that pupils from private primary school of the same age like pupils from public primary schools performed higher than pupils from public primary schools.

Table 14: Comparing pupils' performance in English by school type irrespective of class and age

School type	N	Mean/average mark
Public primary	134	13.34
Private primary schools	163	16.27
Total	297	

Mann-Whitney U=10226.500, P=0.034

Also, when pupil's performance in English was compared by school type, irrespective of their class and age, finding showed that pupils from private primary school performed significantly higher than pupils from public primary school (P=0.034, <0.05). The average for pupils from primary school was 13.34 and for those in private school, it was 16.27 on a scale of 20.

Table 15: Comparing pupils' performance in Mathematics by school type irrespective of class and age

School type	N	Mean/average mark
Public primary	134	14.66
Private primary schools	163	16.14
Total	297	

Mann-Whitney U=23126.411, P=0.004.

Comparing pupil's performance in Mathematics was compared by school type, results revealed that, irrespective of their class and age, finding showed that pupils from private primary school performed significantly higher than pupils from public primary school (P=0.004, <0.05). The average for pupils from primary school was 14.66 and for those in private school, it was 16.14 on a scale of 20.

Findings from hypothesis two shows that the relationship between age and achievement of pupils also differ significantly by school type with the private schools performing better than the public schools. This can be explained by the fact that even though teachers in public schools in Cameroon are trained, learning conditions including remedial classes, discipline and favourable home background conditions can explain the performance of pupils in private schools. The control system applied in private secondary schools reported to be of well organized. Discipline is reported to be highly maintained in private schools compared to public schools (Kivenule, 2015). Implications include the fact that pupils' from private schools have a firmer foundation than those of public schools and may be able to to effectively participate in the social, economic and political activities of their communities (Webster, 2000).

5. Conclusion

The study concluded that, there is a significant positive relationship between classes 2 and 3 pupils and their achievement in mathematics and English in both private and public primary schools in the Fako Division, South West Regions of Cameroon. Therefore age and by extension maturity is an important determinant in success in school. In addition, pupils of private schools of same age like those of public schools performed significantly higher than pupils of public schools.

5.1 Recommendations

Based on the findings and discussion, the following recommendations were made:

The Ministry of Basic Education should put in measures to control school entrance age of both private and public schools. This can be done through regular inspection of schools by inspectors of education. The minimum age for registering pupils for First School Leaving Certificate and Common Entrance Examinations should be 11 years which is the minimum age for class six pupils. Also parents need to be educated on the need to respect school entry age and head teachers sanctioned for not implementing the policy regarding school entry age.

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