

A Comparative Study of Pupils' Performance in Quantitative Aptitude Test in Public and Private Primary Schools

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KEYWORDS Public and Private School Pupils. Performance. Quantitative Aptitude Test

ABSTRACT The study compared performance of pupils in public and private primary schools in quantitative aptitude test. Sample consisted 640 final-year pupils, aged between 9 and 13 years (public=320, private=320) selected from 64 schools (public=32, private=32) across the 16 local government areas of Ekiti State based on stratified random sampling technique. Data were collected using aptitude test and analysed using means, standard deviation and t-test, tested at 0.05 level of significance. Results showed that pupils in private schools both in urban and rural, performed significantly better than pupils in public schools suggesting the need for effective monitoring of instructional activities of teachers in public schools to avoid failure of achieving the objective of primary Mathematics education which emphasises pupils' proficiency in numeracy and logical reasoning.

INTRODUCTION

Primary education has been acknowledged as the foundation on which the whole bulk of what is learnt through formal education stands. As posited by Onoh and Obodo (2001), a child who acquires a very sound primary education is likely to remain literate or numerate to some extent, even if the opportunity for him or her to go beyond that level is elusive. Conversely, it is an uphill task building a strong educational structure on a weak primary education otherwise the entire educational structure would collapse. It follows, therefore, that for the goals of education at all levels to be effectively achieved, the goals of primary education must be achieved optimally.

Perceptibly, the Federal Government of Nigeria (FGN) has, in the last decade, made concerted efforts at revamping the ailing primary education in the country. This is informed by the introduction of the Universal Basic Education (UBE) into the primary and junior secondary school system in Nigeria. One of the specific objectives of the UBE is to prepare the pupils for the appropriate levels of literacy, numeracy, manipulative and life skills needed for laying sound foundation for the lifelong education among others (FME 1998). It is believed that a literate or numerate society is better able to result in productive, democratically-minded, active and healthy society (Aluede 2006).

In an effort to achieve the stated objectives of the UBE, the Federal Government made the

programme tuition-free and compulsory for all school age children (Obayan 2000). Besides, teachers are regularly trained and retrained to meet the challenges of the modern techniques of teaching and learning (National Teachers' Institute NTI 2006; Oyedele 2009). However, studies by Adekola (2004), Oladosu (2006), Ajayi and Faremi (2006) and Ebonugwe (2008) respectively reported that most parents and guardians in Nigeria currently prefer sending their children or wards to private primary schools where fees are paid as against the public primary schools that are tuition-free. Ironically, the indigent parents who are supposed to take the advantage of the free education obtainable in public primary schools also join the vogue of sending their children to private primary schools. This development is intriguing and has generated much debate in educational circles as to whether sending pupils to private primary schools is an asset in terms of classroom achievement. More formally stated, are the pupils in private primary schools better equipped academically than their counterparts in the public schools?

It has long been reported (Williams et al. 1980; Ogunlade 1985; Ajayi 1999) that the type of school attended by an individual is likely to have some educational implications on him or her either positively or negatively. Indeed, Ogunlade (1985) stated that a genius who attends an institution devoid of basic facilities for teaching and learning may find it difficult to display his or her ingenuity maximally whereas

an average intelligent child who attends an institution where facilities for teaching and learning are available in quantity and quality may perform brilliantly.

Lately, it could be observed that most public primary schools in Ekiti State are renovated, saturated with well-certificated teachers and visibly, provided with adequate instructional facilities for teaching and learning. Despite these, most parents, both in the urban and rural areas in Ekiti State, seem to prefer sending their children to private primary schools. In fact, walking along the major and minor streets in towns and villages in Ekiti State, one would find varieties of private primary schools, some in rented apartments with pupils chanting and reciting poems and so on. Prejudice aside, some of the private schools seem to be ill-equipped in terms of human resources and yet parents patronize them. One begins to wonder what could have been the attractive force.

Meanwhile, Adekola (2004) gave two speculative reasons why private primary schools flourish in Nigeria. First, the general impression that pupils in private primary schools have better oral grammatical expressions than those in the public primary schools, and second, most private primary schools have vehicles to convey their pupils to and fro schools. In another dimension, Oladosu (2006) noted that many parents regard it as a prestige sending their children to fee-paying institutions since no parents would like to be tagged poor. This is interesting but the major issue in the foregoing is the question of quality assurance of the pupils in terms of academic achievement because recent reports about pupils' abysmal performance in the Senior School Certificate Examination (SSCE) conducted by the West African Examinations Council (WAEC) and the National Examinations Council (NECO) has been traced to poor foundation at the primary school level (Adegbuyi 2010; Nurudeen 2010). Relatedly, Ajayi and Faremi (2006) and Ebonugwo (2008) reported that many parents and guardians withdraw their children and wards from the public schools to enroll them in private schools due to incessant strikes by teachers in the public schools, the factor which the parents consider as inimical to the educational development of the pupils. Notwithstanding, the question remains, are the pupils in public and private primary schools comparable academically, especially in quantitative aptitude?

Quantitative aptitude in this context refers to the pupils' ability to solve a set of mathematical reasoning questions readily. In the literature, most aptitude tests are designed and administered to predict how well an individual would profit from a training programme or special skills (Chase 1978; Obe 1984; Kolawole 1993). Sometimes, aptitude tests are administered to make decision about a group or groups of testers (Uwakwe 1992). Sometimes also, the results of pupils in tests or examinations are used as an indicator of school performance (Kolawole 2010). Therefore, in the present study, the focus is on quantitative aptitude of the pupils with a view of determining their status in line with the objective of primary Mathematics which emphasises necessary skills in numeracy and logical thinking (FME 1998).

Purpose of the Study

The purpose of the study was to compare the quantitative aptitude of pupils in public and private primary schools as well as determining whether differential quantitative aptitude would exist between pupils in public and private primary schools in urban and also in the rural areas.

Research Questions

The following research questions were raised to guide the study:

1. Is there any difference between performance of pupils in public and private primary schools in quantitative aptitude test?
2. Is there any difference between performance of pupils in public and private primary schools in urban areas in quantitative aptitude test?
3. Is there any difference between performance of pupils in public and private primary schools in rural areas in quantitative aptitude test?

Research Hypotheses

The following hypotheses were tested at 0.05 level of significance:

H_{O_1} : There is no significant difference between performance of pupils in public and private primary schools in QAT.

H_{O_2} : There is no significant difference between

performance of pupils in public and private primary schools in urban areas in QAT.
 HO₃: There is no significant difference between performance of pupils in public and private primary schools in rural areas in QAT.

- (a) 1 (b) 5 (c) 6 (d) 22 (e) 30
 (4) $\frac{20}{9}$
 (a) 2 (b) 9 (c) 11 (d) 20 (e) 29
 Time allowed was 1 Hour.

METHODOLOGY

The study was a survey type in an attempt to describe the performance of pupils in public and private primary schools in quantitative aptitude test.

Sample and Sampling Technique

The sample for the study consisted of 640 final-year pupils, aged between 9 and 13 years (public=320, private=320). They were selected from 64 primary schools (public=32, private=32) across the 16 local government areas of Ekiti State based on stratified random sampling technique. The strata recognized location of school (urban/rural) and school type (public/private). Each participating school was allowed to present the best 10 Mathematics pupils, irrespective of sex, for the study.

Research Instrument

The instrument for collecting data was a 50-item multiple choice Quantitative Aptitude Test (QAT) developed by Kolawole (1993) and validated by the researcher. The validation included item analysis-difficulty indices of items ranging from 0.30 to 0.90 using 33 $\frac{1}{3}$ % upper and lower classes, discriminatory indices ranging from 0.25 to 0.87 and reliability coefficients of items ranging from 0.32 to 0.76 using item-total correlation.

Sample Items Include

Sample I: The letters a,b,c,d,e,f,g,h,i are represented by the numbers 1,2,3,4,5, 6,7,8,9 respectively.

- Use the above information for items 1 to 2
 (1) What letter does '38' represent?
 (a) gb (b) bg (c) ch (d) hc (e) ei
 (2) What number does 'die' represent?
 (a) 414 (b) 415 (c) 451 (d) 459 (e) 495

Sample II: $3\zeta 2 = \frac{5}{1}$, $14\zeta 7 = \frac{21}{7}$, $5\zeta 0 = \frac{5}{5}$
 Use the above information for items 3 to 4
 (3) $6\zeta 5 = \frac{11}{7}$

Data Collection and Analysis

Data were collected using research assistants and analysed using means, standard deviations and t-test tested at 0.05 level of significance.

RESULTS

Hypothesis 1: There is no significant difference between performance of pupils in public and private primary schools in QAT

Data were analysed using means, standard deviations and t-test comparison as presented in Table 1.

Table 1: t-test comparison, performance of pupils in public and private schools in QAT

Variables	N	Mean	SD	df	t _{cal}	t _{tab}
Public	320	17.1	3.78	638	22.2	1.96
Private	320	26.8	6.82			

Maximum score = 50
 P<0.05 (significant results)

Table 1 shows that the mean scores of pupils in public and private schools were 17.1 and 26.8 respectively with standard deviations of 3.78 and 6.82 respectively. The t-test calculated was 22.2 and table value at 0.05 level of significance was 1.96. Since t_{cal}>t_{tab}, this implies that there was significant difference between performance of pupils in public and private schools in QAT. By comparison, pupils in private schools (mean=26.8) performed significantly better than those of public schools (mean=17.1).

Hypothesis 2: There is no significant difference between performance of pupils in public and private primary schools in urban areas in QAT

Data were analysed using t-test as presented in Table 2.

Table 2 shows that the mean scores of pupils in public and private schools in urban areas were 21.3 and 23.8 respectively with standard deviations of 3.41 and 5.03 respectively. The t-calcu-

Table 2: t-test comparison between performance of pupils in urban public and private schools in QAT (urban areas)

Variables	N	Mean	SD	df	t_{cal}	t_{tab}
Public	160	21.3	3.41	318	5.21	1.96
Private	160	23.8	5.03			

P<0.05 (significant results)

lated was 5.21 while t-table at 0.05 level of significance was 1.96. Since $t_{cal} > t_{tab}$, it implies that there was significant difference between performance of pupils in public and private schools in urban areas in QAT with private school pupils having better performance than public school pupils.

Hypothesis 3: There is no significant difference between performance of pupils in public and private primary schools in rural areas in QAT

Data were analysed using t-test as presented in Table 3.

Table 3: t-test comparison of performance, public and private schools in QAT (rural areas)

Variables	N	Mean	SD	df	t_{cal}	t_{tab}
Public	160	12.9	3.81	318	33.5	1.96
Private	160	29.8	5.12			

P<0.05 (significant results)

Table 3 shows that the mean scores of pupils in public and private schools in rural areas in QAT were 12.9 and 29.8 respectively. The t-calculated was 33.5 and table value at 0.05 level of significance was 1.96. Since $t_{cal} > t_{tab}$, then significant difference existed with pupils in private schools outperforming those in public schools.

DISCUSSION

The study compared performance of pupils in public and private primary schools in quantitative aptitude test. Results in Tables 1, 2 and 3 showed that private school pupils performed significantly better than their counterparts in public schools. In Table 1, the t-calculated=22.2 was high and the spread of scores for pupils in private schools ranged from 20 (40%) to 33 (66%) while those of public schools ranged from 13 (26%) to 21 (42%). Logically, the worst pupils in private schools were the best pupils in

public schools. Undoubtedly, the performance of pupils in public schools in quantitative aptitude test negates the tents of the Federal Ministry of Education (1998) on UBE which advocates for quality basic education in Nigeria, the factor which probably scares some parents from sending their children to public primary schools, which supports the view of Adekola (2004) and Oladosu (2006).

The results in Table 2 also showed that pupils in private schools in urban areas outperformed their counterparts in public schools in QAT as t-calculated =5.21 was significant at 0.05 level of significance. Though, the result was significant, the spread of scores between the two groups seems to be similar in baseline as scores of pupils in public schools ranged from 18 (36%) to 25 (50%) and that of private schools ranged from 19 (38%) to 29 (58%). Perhaps, pupils in public schools in urban areas have access to coaching or get exposed to quantitative aptitude test through their interaction with pupils in the private schools which might have influenced their performance. Moreover, there is likelihood that the instructional activities of teacher in public schools in urban areas are well monitored by the education agencies, thus putting them under pressure to teach as reflected in the moderate performance of the pupils. However, the results in Table 3 showed that the scores of pupils in public schools in the rural areas ranged from 9 (18%) to 17 (34%) while those of private schools ranged from 25 (50%) to 35 (70%). The t-calculated=33.5 was too high to assume that pupils in public schools in the rural areas are hardly exposed to mathematical reasoning problems. This poor performance in QAT as exhibited by pupils in public schools is unhealthy for the growth of science and technology in Nigeria, the factor which might have been responsible for the abysmal performance of students in SSCE Mathematics conducted by WAEC and NECO as pointed out by Adegbuyi (2010) and Nurudeen (2010). Despite the assumption that private schools are ill-equipped in terms of human resources, their pupils outperformed those in public schools which calls for a review of the UBE programme in the public schools.

CONCLUSION

It could be concluded in this study that pupils in private primary schools have better quan-

titative aptitude than their counterparts in the public schools. Moreover, pupils in private primary schools in both urban and rural areas performed significantly better than their counterparts in the public schools.

RECOMMENDATIONS

The following recommendations were made from the findings of the study:

1. Education authorities should effectively monitor teachers' instructional activities in the public schools, especially in the rural areas to avoid failure of the objective of primary Mathematics education which emphasises pupils' proficiency in numeracy and logical reasoning.
2. Government should employ competent Mathematics teachers, possibly graduates, to handle Mathematics at all levels of primary schools to develop pupils' ability to solve mathematical problems with ease.
3. The current long vacation retraining programme for primary school teachers organised by the National Teachers' Institute in Nigeria should emphasise competence in Mathematics to enable teachers teach the subject effectively.
4. Stakeholders in private primary schools should not relent in their efforts to ensure quality education in their schools, especially Mathematics education for the future growth of science and technology in Nigeria.

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