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Teachers' Effectiveness and Students' Academic Performance in Public Secondary Schools in Delta State, Nigeria

Agharuwhe A. Akiri* and Nkechi M. Ugborugbo**

**Department of Educational Administration and Policy Studies, Faculty of Education, Delta State University, Abraka, Nigeria*
E-mail: agtakiri@yahoo.com
***Alegbo Senior Secondary School, Effurun, Delta State, Nigeria, P.O.Box 1085, Effurun, Delta State, Nigeria*
E-mail: nkeomu@yahoo.co.uk

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ABSTRACT This study determined the influence of teachers' classroom effectiveness on students academic performance in public secondary schools in Delta State, Nigeria. It was descriptive in nature and involved 979 teachers, made up of 450 males and 519 females, drawn from 72 out of the total of 361 public secondary schools in the State by stratified random sampling technique. Academic performance records of 50 students per teacher, which is 48,950 students' scores were also used. Two questionnaires and a rating scale were used to collect data for the study. Cronbach's alpha value of 0.98 and 0.79 respectively were obtained from the two questionnaires used for the study. Four hypotheses were tested at the 0.05 level of significance using correlation, simple regression, t-test, and single factor analysis of variance. The results showed that effective teachers produced better performing students. However, the observed differences in students' performance were statistically not significant. This could be due to the influence of student and school environment related factors which were not included in this study. It was concluded that teachers' effect is not the only determinant on students' academic achievement.

INTRODUCTION

The issue of poor academic performance of students in Nigeria has been of much concern to all and sundry. The problem is so much that it has led to the widely acclaimed fallen standard of education in Delta State and Nigeria at large. The quality of education depends on the teachers as reflected in the performance of their duties. Over time pupils' academic performance in both internal and external examinations had been used to determine excellence in teachers and teaching (Ajao 2001). Teachers have been shown to have an important influence on students' academic achievement and they also play a crucial role in educational attainment because the teacher is ultimately responsible for translating policy into action and principles based on practice during interaction with the students (Afe 2001). Both teaching and learning depends on teachers: no wonder an effective teacher has been conceptualised as one who produces desired results in the course of his duty as a teacher (Uchefuna 2001). Considering governments' huge investment in public education, its output in terms of quality of students have been observed to be unequal with government expenditure. Consequent upon the observed deterioration in the academic achievement, attitude and values of secondary school students in public secondary schools one wonders if the high failure rates and the poor quality of the students is not a reflection of the instructional quality in the schools. In other words the ineffectiveness of teachers in classroom interaction with the students could be responsible for the observed poor performance of students and the widely acclaimed fallen standard of education in Nigeria. This study was designed to determine if teachers' classroom effectiveness significantly had influence on the academic performance of students in public secondary schools in Nigeria. It was aimed at answering the question: "Does teachers' classroom effectiveness have significant influence on student academic performance?" In answering this question, the study determined and described the relationship between teachers' effectiveness and the academic performance of students. It also determined whether there is significant difference in the mean performance of students taught by ineffective and very effective teachers. Finally useful recommendations were made based on the results of the study. This study is significant because the results enabled the

researchers to proffer useful suggestions to the ailing problem of poor academic performance of students.

Research Hypotheses

The following research hypotheses were formulated and tested.

1. There is no significant relationship between teachers' effectiveness and students' academic performance.
2. There is no significant difference in the mean effectiveness rating of teachers and the mean academic performance of students.
3. There is no significant difference in the academic performance of students taught by ineffective, moderately effective and highly effective teachers.
4. There is no significant difference in the mean performance of students taught by highly effective teachers and those taught by ineffective teachers.

REVIEW OF RELATED LITERATURE

Teaching effectiveness has been accepted as a multidimensional construct since it measures a variety of different aspects of teaching such as; subject mastery, effective communication, lesson preparation and presentation (Onyeachu 1996). The influence of teachers' teaching effectiveness on the learning outcome of students as measured by students' academic performance has been the subject of several studies (Adediwura and Tayo 2007; Adu and Olatundun 2007; Lockhead and Komenan 1988; Schacter and Thum 2004; Starr 2002). The above studies suggest that effective teaching is a significant predictor of students' academic achievement. Therefore effective teachers should produce students of higher academic performance.

Poor academic performance of students in Nigeria has been linked to poor teachers' performance in terms of accomplishing the teaching task, negative attitude to work and poor teaching habits which have been attributed to poor motivation (Ofoegbu 2004). It has also been observed that conditions that would make for effective teaching such as resources available to teachers, general conditions of infrastructure as well as instructional materials in public secondary schools in Nigeria are poor (Oredein 2000). These prevailing conditions would definitely show a negative influence on the instructional quality in public schools, which may translate to poor academic performance, attitude and values of secondary school students.

Although teachers' strong effect would significantly influence students' academic achievement, other factors such as socio-economic background, family support, intellectual aptitude of student, personality of student, self-confidence, and previous instructional quality have been found to also influence students' examination score (Starr 2002) either positively or negatively. To this end, Blankstein (1996) had stated that students' grades and test scores are not good indicators of the quality of teachers' instruction. In support of this view, a study carried out in Nigeria by Joshua et al. (2006) showed that Nigerian teachers condemn the use of student achievement scores as indicators of teachers' competence, performance or effectiveness.

Since students' academic scores are not the only predictors of teachers' effectiveness, researchers have sought other fairer ways of evaluating teachers' effectiveness. Students, administrators, colleagues and the teachers' self evaluation have been used to evaluate teachers' effectiveness. Students' competence in the evaluation of the effectiveness of their teachers has been of great concern to researchers in education. However, studies have shown that students' ratings are valuable indicators of teachers' effectiveness (Barnett et al. 2003; Imhanlahini and Aguele 2006; Pozo-Munoz et al. 2000). Despite the fact that there are research reports in support of students' rating of their teachers' effectiveness, Nuhfer (2004) and Pozo-munoz et al. (2000) warned that students rating should be one of a comprehensive evaluation system and should never be the only measure of teachers' effectiveness.

The school administrators' evaluation has also been used to evaluate teachers' effectiveness. The accuracy of school administrators' evaluation of teachers' effectiveness has also been studied. Jacob and Lefgren (2006) found a positive correlation between a principal's assessment of how effective a teacher is at raising students' achievement and that teacher's success in doing so as measured by the value- added approach. The above study suggests that administrator's rating may also be one of a comprehensive evaluation system to measure teachers' effectiveness in secondary schools. The literature reviewed indicates that effective teachers

positively influence the academic achievement of students. However, students' related factors were also found to have influence either positive on negative on students' academic outcomes.

METHODS AND PROCEDURE

This study was a descriptive survey that employed an ex-post-facto design that involved the determination and description of the influence of teachers' effectiveness on students' academic achievement.

Sample and Sampling Procedure

The study was targeted at all teachers and students in government owned secondary schools in Delta State of Nigeria. A sample of one thousand one hundred and fifty (1,150) teachers was drawn from the total of eleven thousand, four hundred and ninety-nine (11,499) teachers in public secondary schools in the State, at the time of this study, by stratified random sampling technique. The teachers were drawn from seventy-two (72) out of a total of three hundred and sixty-one (361) public secondary schools in the State as at 2006/2007 school year. The seventy-two secondary schools used comprised eight (8) schools each from Urban, Semi-Urban and Rural locations in each of the three senatorial districts in the State. Stratification ensured an even distribution of subjects used in the study. Fifty students were also randomly drawn from each participating teachers students for the study.

Instrumentation

The instruments utilised for the study were two questionnaires and one rating scale. The questionnaires tagged Teacher Effectiveness Questionnaire I and II (TEQI & TEQll) were designed respectively for school administrators and students to evaluate the teaching effective-ness of the sampled teachers in each school. The questionnaires sought information on the teachers' effectiveness in the areas of subject mastery, lesson preparation and presentation, punctuality and attendance in class, clear communication, adequate use of instructional materials, creativity and resourcefulness, adequacy of teachers' evaluation of students' academic work and teachers' concern for students. The questionnaires contained twenty-two structured items whose scores were graded in a four-point modified Likert's scale with 4 being very high and 1 being very low in the attribute in question. The instruments were face validated, then construct validated by factor analysis using Statistical Package for Social Sciences (SPSS) version 12.0. Cronbach's coefficient alpha values of 0.98 and 0.79 were obtained for Teacher Effectiveness Questionnaires I and II respectively. The rating scale, tagged Student Academic Performance Rating Scale (SAPRS) was designed to enable the researcher evaluate the academic performance of students taught by the sampled teachers from 2002/2003 to 2004/2005 school years. The raw scores of fifty randomly selected students taught by each participant teacher were used to measure the academic achievement of each participating teachers' student. The researcher and research assistants obtained the students' raw scores from the academic records in the respective schools. The student scores were scaled from 1 to 4 using the quartile ranks. Scores in the first quartile corresponded to one point while scores in the fourth quartile corresponded to four points in a four-point Likert's scale.

Data Collection

The questionnaires were administered to the respondents on the spot. A total of nine hundred and seventy-nine (979) usable questionnaire sets were returned, a response rate of 85%. The researcher and research assistants obtained scores of a total of 48,950 students directly from the academic records in the sampled school. The distribution of subjects used for the study is shown in table I.

Data Analysis

The analyses used data from surveys and administrative records. The measures of teachers' effectiveness ranged from 1 to 4, with higher values corresponding to a greater quantity of a particular attribute. The students' scores were also scaled from 1 to 4 using the percentile ranks. Scores in the first percentile corresponded to one point, while scores in the fourth percentile corresponded to four points on a four point Likert's scale. The analysis centered on testing the three null hypotheses to determine and describe the influence of teachers' effectiveness on students' academic performance. Teachers

rated below 40 in the effectiveness measure are ineffective, between 40 and 69 are moderately effective while those rated 70 and above are highly effective. One factor analysis of variance (ANOVA), t-Test, Pearson Product Moment correlation and simple regression analysis were used to test the hypotheses. All hypotheses were tested at 0.05 level of significance or 95% certainty of prediction.

RESULTS

Hypotheses 1

There is no significant relationship between teachers' effectiveness and students academic performance. Pearson product moment correlation and simple regression analyses were used to test this hypothesis. The results are displayed in tables 2 and 3.

Table 2 shows that there is a very weak negative correlation between teachers' effectiveness and students' academic performance.

Table 3 shows that teachers' effectiveness contributed only 0.7% (R squared = 0.007; $p<0.05$) to the variance in student academic performance. This contribution is significant with a negative t value ($t=-2.7$; $p<0.05$). Therefore, the null hypothesis was discarded and it was concluded that there is a significant negative relationship between teachers' effectiveness and students' academic performance in public secondary schools in Delta State Nigeria. It is note worthy that 99.7% of the variance in students' academic achievement in this study is attributed to non-teacher effects.

Table 1: Distribution of the subjects used for the Study in Delta State

Senatorial district	*Urban*		*Semi-urban*		*Rural*		*Total*	
	Teacher	*Student*	*Teacher*	*Student*	*Teacher*	*Student*	*Teacher*	*Student*
Delta North	165	8250	79	3950	125	6250	369	18450
Delta Central	160	8000	132	6600	90	4500	382	19100
Delta South	135	6750	58	2900	35	1750	228	11400
Total	460	23000	269	13450	250	12500	979	48950

Source: Field Work, 2007.

Table 2: Summary of Pearson Product Moment Correlation between teacher effectiveness and student academic performance in public secondary schools in Delta State

Variables	*Number*	*Means*	*Std Dev*	*r*	*p*	*R*
TER	979	80.40	8.02	-0.10	<0.05	Not significant
SAPR	979	57.94	9.90			

TER = Teacher Effectiveness Rating; SAPR = Student Academic Performance Rating

Table 3: Simple regression analysis of teachers' effectiveness and students' academic performance in public secondary schools in Delta State

Model Summary					
Model	*R*	*R Square*	*AdjustedR Square*	*Std Error*	*Observationss*
	0.086	0.007	0.006	0.083	979
Anova					
		Sum of Squares	*df*	*Mean Square*	*F*	*Sig*
	Regression	0.050	1	0.050	7.308	0.007
	Residual	6.717	977	0.007		
	Total	6.767	978			
Variables in the Equation					
Unstandardized Coefficients					
		B	*Std Error*	*t-stat*	*Sig*
	(Constant)	1.828	0.027	68.401	0.000
	TER	-0.001	0.0003	-2.703	0.007

Predictor: Teachers' Effectiveness Rating (TER);
Dependent Variable: Students' Academic Performance (SAPR)

Hypothesis 2

There is no significant difference in the mean effectiveness rating of teachers and the mean academic performance of students. To test this hypothesis, one factor analysis of variance (ANOVA) was used. The result is displayed in table 4.

Table 4 shows that F-calculated (F=3043.758; p<0.051) is higher than F-critical (3.846). Therefore the null hypothesis was discarded and it was concluded that there is a very significant difference in the mean effectiveness rating of teachers and the mean academic performance of students. The mean teachers' effectiveness rating is significantly higher than the mean of students' academic performance in Delta State public secondary schools of Nigeria.

Hypothesis 3

There is no significant difference in the academic performance of students taught by ineffective, moderately effective and highly effective teachers. One factor analysis of variance was used to test this hypothesis. The result of this analysis is shown in table 5.

The result of the analysis shows that F-calculated (0.925, p<0.05) is lower than F-critical (3.005, p>0.05). This indicates that the mean difference of students' academic performance is not significant hence the null hypothesis was retained. It was concluded that there is no significant difference in the performance of students taught by ineffective, moderately effective and highly effective teachers in public secondary schools in Delta State, Nigeria.

Hypothesis 4

There is no significant difference in the mean performance of students taught by ineffective and highly effective teachers. To test this hypothesis t-test of two samples of unequal variances was used and the result is shown in table 6.

The result of the t-test analysis shows that there is no significant difference in the mean performance of students taught by ineffective and

Table 4: Single factor analysis of variance of teachers' effectiveness and students' academic performance rating in public secondary schools in Delta, State Nigeria.

Summary						
Groups	*Count*	*Sum*	*Average*	*Variance*		
SAPR	979	56720	57.9366701	97.9694004		
TER	979	78708	80.3963228	64.2783505		
Anova						
Source of variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	246921.4219	1	246921.422	3043.75772	0	3.846217
Within Groups	158678.3003	977	81.1238754			
Total	405599.7222	978				

TER = Teachers Effectiveness Rating; p < 0.05;
SAPR = Students' Academic Performance Rating

Table 5: Single Factor Analysis of variance of the Performance of Students Taught by Ineffective, Moderately Effective and Highly Effective Teachers in Public Secondary Schools in Delta State, Nigeria

Summary						
Groups	*Count*	*Sum*	*Average*	*Variance*		
INEFF	5	283	56.6	37.8		
MODEFF	69	3893	56.42028986	133.129582		
HIGEFF	905	52544	58.05966851	95.6070552		
Anova						
Source of variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	181.28405	2	90.64202484	0.92506573	0.396853	3.004946
Within Groups	95632.7895	976	97.98441547			
Total	95814.0735	978				

INEFF= Ineffective Teachers; MODEFF = Moderately Effective Teachers;
HIGEFF = Highly Effective Teachers; p < 0.05

Table 6: t-Test of the performance of students of ineffective and highly effective teachers in public secondary schools in Delta State, Nigeria

Variables	*Number*	*Mean*	*Variance*	*df*	*t-Stat*	*t-crit*	*P*	*Remark*
Ineffective	5	56.60	37.80	4	-1.05	2.78	0.35	Not significant
Highly Effective	905	58.06	95.61					

highly effective teachers. Therefore the null hypothesis was retained.

DISCUSSION

The study found that teachers who were rated as ineffective actually produced students of lower academic ability. However, the difference found in the mean performance of the students was statistically not significant. This agrees with the earlier studies of Adu and Olatundun (2007), Lockhead and Komenan (1988) and Maduka (2000), which indicated that effective teachers produced high performing students. It is noteworthy that the mean performance of students in this study was lower than the mean effectiveness rating of the teachers. This shows that the teachers are significantly more effective than what the academic performance of the students indicate. The reported level of students' performance may not be a good reflection of the quality of teaching in the schools. It may be more of the function of the quality of students and the environment of learning in public secondary schools. Generally, the students in public secondary schools in Delta State of Nigeria are from poor homes, with little or no educational materials at home. The parents of this set of students are often partially educated and sometimes they are illiterate. The students come into the schools with low intellectual ability and poor attitude to academic work. Therefore, the student factors may be more responsible for the reported level of student performance in these schools than teachers' effectiveness. The school environment is such that classrooms are overcrowded in urban schools, the infrastructure and facilities in these schools are inadequate and so it becomes impossible for good teaching and learning to take place. This poor state of schools makes students restive and uninterested in academic excellence. A possible consequence of this is that students' and school environment factors may have marked the actual influence of teachers' classroom effectiveness. This is especially noticed in the variation of performance of students of ineffective and moderately effectiveness teachers where the former produce students with higher mean performance contrary to expectation.

The results of this study is in agreement with the statement of Blankstein (1996) that students' grades and test scores do not reflect the quality of instruction because teachers' input is not the only factor that influences student academic performance in schools. Also in support of this study, Joshua et al. (2006) concluded that teachers condemn the use of students' scores to evaluate their effectiveness and performance. Starr (2002) had identified peer influence, race, ethnicity, gender, motivation, income, intellectual aptitude of the student, personality of student, self confidence, previous instructional quality received by student, house hold environment, and parental education as student related factors that influence the academic performance of students, in further support of these views. However, the study is not consistent with the studies of Schacter and Thum (2004) and Starr (2002), which found a high correlation coefficient between teachers' effectiveness and students' academic performance.

CONCLUSION

Teachers' classroom effectiveness has been found to have only a minimal influence on the academic performance of students in public secondary schools in Delta State, Nigeria. This is due to the fact that teachers' effect is not the sole determinant of students' academic outcome. Students' related factors such as intelligence, parental education, socio-economic status, and personality which vary over very wide margins in the study area may have significant effect in the academic performance of students in public secondary schools. School environment related factors such as class size, infrastructure and facilities available in the schools may also influence significantly on the academic performance of students and may be responsible for the observed low performance of students when compared with the effectiveness of their teachers.

RECOMMENDATIONS

Government should attempt to improve the attitude of students to academic work by providing libraries and laboratories for science practicals, so that the learning experiences of the students can become more meaningful and at the same time interesting. There is the need to build more classrooms and make more adequate provision for seats especially in urban schools to ease the problem of overcrowded classrooms and poor sitting arrangement that presently make teaching and learning difficult in public secondary schools. This will further improve effective classroom control for better teaching and learning to take place in the schools.

The school principals should endeavor to make necessary instructional materials available to teachers when needed. The staff rooms should also be conducive for teachers to adequately prepare their lessons. This will motivate teachers to do better in their interaction with students. The population of students admitted into the schools should be dependent on the available space and facilities. There should be a reasonable match between student population and available resources in the admission process. Finally, teachers should bring their teaching to the level of the students' aptitude and make classroom interactions more interesting so as to arouse the interest of the students to academic excellence. This would go a long way in solving the problem of poor academic performance of public secondary school students and the widely acclaimed fallen standard of education in Delta State Nigeria.

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