Relationship between School-Based Variables and the Achievement Level in Secondary Schools in Ekiti State

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Abstract

The study found out the relationship between school-based variables (such as class size, school size, student-teacher-ratio and teachers' qualification) and the achievement level in selected Junior Secondary schools in Ekiti State. The study adopted the *expost facto* research design. All secondary schools formed the population while a validated inventory was used to collect data from a sample of 30 public schools which were selected through a stratified random sampling procedure. The data collected were analyzed using descriptive (frequency count and percentage) and inferential (Pearson product moment correlation method) statistics. The hypothesis raised in the study was tested at 0.05 level of significance. The number of pupils in a cohort who complete a given educational cycle is generally accepted as a measure of its output while the repeaters and dropouts constitute wastage. The study showed that the average annual growth rate in students' enrolment was 1.64%. Furthermore, findings showed that the average annual growth rate in class size, school size and STR were -1.2, 1.64 and -3.13 respectively. Findings also showed a higher percentage of qualified teachers employed. Degree plus teaching qualification, professional qualification plus PGDE and NCE graduates were 47.82%, 5.16% and 35.7% respectively. This forms 88.68% of the total teachers employed during the period of study. In addition, degree holders without teaching qualification and others were 8.80% and 2.52% respectively, and this forms 11.32% of the total teachers employed during the period of study.

In light of the findings, it was recommended that school managers should ensure appropriate school variables to reduce the level of wastage and improve achievement level of students of secondary schools in Ekiti State.

Keywords: achievement level, school-based variables, class size, school size, student-teacher-ratio, teachers' qualification

1. Introduction

Teachers, administrators, parents and the research community have been debating the relationship between school-based variables and the achievement level. This debate persists because of the powerful common sense appeal of the appropriate school-based variables to alleviate problems confronting the achievement level in Junior Secondary schools in the state.

The link between the school-based variables and achievement level persists because of the tension between the research findings and the cost of implementation. According to Olatunde (2010), as school size increases, the class size also increases. The issues that should be clarified more are what need to be improved upon, what school-based variable constitute for a better performance.

The researcher observed that large school size, overcrowded classrooms, unqualified teachers and students-teachers-ratio posed serious problems on the performance of students. Olatunde (2010) continued that, what number of students makes a large group and what should constitute a small group. The revised National Policy on Education specified maximum of 40 in secondary schools. However, these specifications are unrealistic in some areas as a result of dense population and shortage of classrooms. (Federal Republic of Nigeria, 2004)

Education as a dynamic system requires certain inputs from time to time to carry out curricular activities designed for the achievement of the systems' goals. Bisi, Kofoworola and Adegunle (2010) reported that the government had reviewed the 6-3-3-4 system and concluded that the system has failed to meet the expectations

of its promoters as well as its inability to adequately respond to many challenges facing education in Nigeria. Gbagi in Bisi et al. (2010) said the current system has failed to bring the desired change envisioned by its promoters and that it has not produced visible advantages. According to Kay (2011) in various other investigations conducted in the developed countries of the world, school-based variables have shown to affect achievement level far less than home variables, possibly because of such countries, the standard of the schools and teachers meet certain basic criteria. Wastage in education generally is conceived when resources given to education are not utilized to produce output at stipulated time. In education system, wastage occurs when the number of students produced is less than expected number. In junior secondary schools, students are expected to complete a cycle of three years. It was concluded that students repeat grades thereby adding to the number of student year without contributing to the output from the system. Olubor (2004) asserted that repetition has cost implication on the management of the educational system. The researcher observed that wastage may have been attributed to inadequacies in school production variables and these problems make it doubtful if the link between the school-based variables and the achievement level of secondary schools in Ekiti State has been performing as expected.

It is anticipated that the result of this investigation will provide insight to the performance of the students in junior secondary schools and will therefore contribute to the achievement level of secondary schools in Ekiti State. The findings could also lead to understanding the school-based variables that usually determine the achievement level secondary schools in Ekiti State with a view to channeling them towards improving the achievement level of students.

1.1 Purpose of the Study

This study examined the relationship between school-based variables such as class size, school size, students-teacher-ratio, teachers' qualification and the achievement level of secondary schools in Ekiti State with the view to ascertaining the aspects of the school-based variable(s) that needs to be improved upon in order to enhance the achievement level of students.

1.2 Research Questions

1)   What is the trend in student enrolments?

2)   What are the trends in class size, school size, teacher's qualification and student-teacher-ratio?

3)   What are the repetition, dropout, promotion, completer and wastage rates in selected secondary schools in Ekiti State?

1.3 Hypothesis

The following research hypothesis was formulated in the study:

There is no significant relationship between school-based variables and the achievement levels of secondary schools in Ekiti State.

2. Research Method

The *ex-post facto* research design was chosen for the study. All public secondary schools in Ekiti State form the population. There were one hundred and seven (167) secondary schools in the state, thirty (30) secondary schools were sampled from the three senatorial districts in Ekiti State. A number of school variables associated with attainment were identified for use in the exercise. A self constructed inventory titled "Data on School Records" was used in collecting data for the study. The data collected were analyzed using descriptive (frequency count and percentages) and inferential (Pearson product moment correlation) statistics method of data analysis. The hypothesis formulated was tested at 0.05 level of significance.

3. Results

The results of the study were presented based on the data generated from the research question and hypothesis raised.

3.1 Research Question 1

What is the trend in student enrolment?

Table 1. Trend in students' enrolment in secondary schools in Ekiti State (2005/2006–2007/2008)

CLASS	2005/2006	2006/2007	2007/2008
JSSI	4346	4473	4379
JSS II	3923	4034	4064
JSS III	3691	3819	3910
TOTAL	11,960	12,226	12,353
Annual Growth rate %	-	+3.06	+0.21
Average	-	-	+1.64%

Table 1 shows student enrolment from 2005/2006 to 2007/2008 academic sessions in 30 public secondary schools randomly selected from Ekiti State. It was observed that there was increase from 4346 in 2005/2006 to 4473 in 2006/2007 academic session and dropped back to 4379 in 2007/2008 academic session in a broad perspective, student enrolment for the three sessions was not stable. The table also shows the growth rate of 3.06% in 2006/2007 and sharply dropped by 0.21% in 2007/2008. The annual growth rate was 1.64% during the period of the study.

3.2 Research Question 2

What are the trends in class size, school size, teacher's qualification and student-teacher-ratio?

Table 2. The trend of class size of selected secondary schools in Ekiti State from 2005/2006 to 2007/2008 academic sessions

Year Variable	2005/2006	2006/2007	2007/2008	Average
Student enrolment	11,960	12,326	12,353	12, 213
No of furnished classroom	293	312	310	305
Class size	40.8	39.5	39.8	40.03
Annual growth rate %	-	-3.2	+0.8	-1.2
Average growth rate				-1.2

Table 2 reveals the growth rates in class size of Junior Secondary Schools in Ekiti State from 2005/2006 to 2007/2008 academic sessions. It was found that there was variation in the number of furnished classrooms from 293 to 312 in 2005/06 and 2006/2007 respectively but, later dropped to 310 in 2007/2008 due to either destruction by fire or rainstorm. The number of classrooms used to determine the class size and the class size were 40.8, 39.5, and 39.8 in 2005/06, 2006/07 and 2007/08 respectively. It was observed that 40.8 students in a class in 2005/2006 was an indication of overcrowded classroom. This can pose serious problems on the achievements level of students. From the table, the annual growth rate was not stable; it shows a decrease of -3.2% in 2006/2007 and increased of 0.8% in 2007/2008 academic session. By implication, average growth rate of -1.2 shows a decrease in class size as a result of perhaps, the relative increase in the number of furnished classrooms.

Table 3. The trend in school size of Junior Secondary schools in Ekiti State from 2005/2006 to 2007/2008 Academic Session

Year Variable	2005/2006	2006/2007	2007/2008	Average
Student enrolment	11,960	12,326	12,353	12, 213
No of school in the study	30	30	30	30
Average school size	398.66	410.86	411.76	409.09
Annual growth rate %	-	+3.06	+0.22	+1.64
Average Annual Growth Rate				+1.64

Table 3 indicates the average school size of selected secondary schools in Ekiti State during the period of the study. The table further revealed that schools size increased from 398 (2005/2006) to 411.76 (2007/2008) with growth rate of 3.06% and 0.22% respectively. The average growth rate was 1.64%. By implication, average growth rate of 1.64% shows an increase in school size and this might be as a result of increased awareness on the need for education.

Table 4. The supply of teachers in selected secondary schools in Ekiti State by qualification from 2005/2006 to 2007/2008 academic session

Teachers Qualification Categories	2005/2006	2006/2007	2007/2008	Total	Average
Degree plus teachers qualification e.g., B.Ed	238	250	275	763	254
Rate %	46.72	47.79	48.95	143.46	47.82
Professional qualification plus PGDE	48	44	49	141	47
Rate %	4.82	5	5.66	15.48	5.16
N.C.E Only	186	191	192	569	189
Rate%	36	36.44	34.07	107.1	35.7
Degree holder without teaching qualification	25	27	32	84	28
Rate%	9.27	8.29	8.87	26.41	8.80
Others	14	13	15	42	14
Rate%	2.60	2.5	2.44	7.54	2.51
Total	**511**	**525**	**563**	**1599**	**533**

Table 4 depicts the average total of 533 teacher in selected secondary schools in Ekiti State from 2005/06 to 2007/08 sessions. Out of 533 teachers employed, 472 teachers were qualified teachers who posses' degree plus teaching qualification, while teachers who possessed professional qualification plus PGDE and NCE graduate were 92% of the total teachers employed. This is adequate but not in a perfect situation.

Table 5. The student-teacher-ratio in selected secondary schools in Ekiti State from 2005/2006 to 2007/2008 academic sessions

Year Variable	Student Enrolment	Number of Teaching Staff	STR	Annual Growth Rate %	Average
2005/2006	11,960	511	23.41	-	
2006/2007	12,326	525	23.48	0.3	
2007/2008	12,353	563	21.94	-6.56	
Average	12,213	533	22.91	-	-3.13

Table 5 shows the growth rate of student-teacher-ratio (STR) in selected secondary schools in Ekiti State. The number of teachers supply increased steadily from 2005/2006 to 2007/2008 academic session. The student-teacher-ratio in secondary school was 23.41, 23.48 and 21.94 in 2005/06, 2006/07 and 2007/08 respectively and the average was 22.91. The standard student-teacher ratio as specified in the National Policy on Education (Federal Republic of Nigeria, 2004) was ratio 40 students to 1 teacher. From this analysis, the average STR was 22.94 and it falls below the requirement of NPE; this implies that teachers were underutilized.

In addition, average growth rate of -3.13 by implication shows a negative and this implies decrease in student-teacher-ratio annually.

3.3 Research Question 3

What are the promotion, repetition, dropout, completer's and wastage rates in selected secondary schools of Ekiti State?

In an attempt to analyze this research question, the cohort analysis of students admitted into class one in 2005/2006 to 2007/2008 academic sessions, the three years cycle were followed progressively in table 6 below:

Table 6. Students flow rate in selected secondary schools in Ekiti State from 2005/2006 to 2007/2008 academic sessions

	JSS1	JSS2	JSS3		
	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
No of Students examined	4346	4291	4186	381	123
No of Promotees	3991	4026	3918	305	106
Promotion rates	91.83%	93.82%	93.6%	80.05%	86.18%
No of Repeaters	300	160	164	19	-
Repetition rates	6.9%	3.23%	3.92%	4.99%	
No of dropouts	55	105	104	57	17
Dropout rate	1.27%	2.45%	2.48%	14.96%	13.82%
Graduate	-	-	3701	201	106
Completer rate	-	-	85.16%	4.62%	2.44%

Table 6 shows the student flow rate in the selected public junior secondary schools in Ekiti State.

Promotion rates in public junior secondary schools were 91.83%, 93.82%, 93.6% in 2005/06, 2006/07 and 2007/08 respectively.

Some of the students admitted into JSS I in 2005/06 repeated the class. The repetition rate was 6.9% in 2005/2006 and it decreased to 3.73 % in 2006/2007, also in 2007/2008 the repetition rate was 3.92%. The table revealed that the rate of repetition was not stable. Students were allowed to repeat twice in a class and such students gained automatic promotion to the next class. The study therefore, revealed that all repeaters ought to have graduated in 2009/2010 academic session as shown in the table above (because students have opportunity to repeat twice before gaining automatic promotion) while some students dropped out of the system finally. The cohort analysis revealed that 4008 were able to complete the cycle out of 4346 total enrolment in 2005/2006 academic session and this form 92% of the total enrolled.

Table 7. Wastage rates in selected public Junior Secondary Schools in Ekiti State

Session	Repetition Rate	Drop-out Rate	Wastage Rate
2005/2006	6.9%	1.27%	8.17%
2006/2007	3.73%	2.45%	6.18%
2007/2008	3.92%	2.48%	6.4%
2008/2009	4.99%	14.96%	19.95%

Table 7 shows the wastage rates in public Junior Secondary School in Ekiti State. The wastage rates were 8.17%, 6.18%, 6.4%, in 2005/2006, 2006/2007, 2007/2008 respectively. Some students could not meet up at the end of the normal three years cycle therefore the wastage rate in 2008/2009 was 19.95%.

3.4 Testing of Hypothesis

The null hypothesis raised in the study was tested as shown in table 8

Table 8. Relationship between the class size, school size, teacher's qualification, student-teacher-ratio and achievement level

Variables	N	r-cal	r-critical	Remark
Class size	30			
Achievement level	30	-0.212	±0.195	Significant
School size	30			
Achievement level	30	-0.437	±0.195	Significant
Teacher's Qualification	30			
Achievement level	30	0.384	±0.195	Significant
Student-teacher-ratio	30			
Achievement	30	-0.212	±0.195	Significant

Table 8 reveals the computed r of -0.212, -0.437, 0.384 and -0.212 for class size, school size, teacher's qualification, student-teacher-ratio respectively. It was observed that the computed r values for all the variables

were greater than r-critical at 0.05 level of significance as such null hypotheses were rejected. This implies significant relationship between the school-based variables and achievement level.

From the result, the trend of class size, school size, teachers' qualification and student-teacher-ratio calculated contributed positively to the achievement level of secondary schools in Ekiti State.

4. Discussion

From the results, it can be seen that student enrolment in selected Junior Secondary Schools in Ekiti State varied annually during the period of study. Student enrolment growth rate in 2006/2007 and 2007/2008 were 3.06% and 0.21% respectively. These were the academic sessions when the cohort of 2005/06 students were in JSS II and JSS III. This might not have been unconnected with the policy of some secondary schools in the state not to encourage mass promotion of students to senior secondary schools classes. There was variation in the class size within the period of the study and thus might be as a result of additional furnished classroom. The average class size was 40.03 which is a little bit higher than the requirement specified by the National policy on Education (FRN, 2004). These findings are against the findings of Olatunde (2010) who concluded that the larger the class size of students being taught, the lesser the performance of the students. Therefore, the findings was in agreement with the findings of Babalola (2003) who concluded that for an individual to progress within an educational system, it is dependent on his capabilities, willingness and preferences in relation to other students. The school size increased from 398 in 2005/2006 to 410 in 2006/2007, and also increased to 411 in 2007/2008 and these might be as a result of pupils transferring from school paying fees. In a broad perspective, 92% of the total teachers employed were qualified teachers who posse's degree plus teaching qualification, professional qualification plus PGDE and NCE graduate. This was supported by Fafunwa (1974) in Babalola (2003) that well qualified teaching staff is the first step in any attempt to train student and as such should be given first priority. The student-teacher-ratio varies annually, 23.41, 23.48 and 21.94 in 2005/2006, 2006/2007 and 2007/2008 respectively. The average student-teacher-ratio was 22.91 and it was below the requirement of National policy on Education that stipulated ratio 40 to 1. It is recognized that the lower student-teacher-ratio enhance positive impact on effective communication on teaching and learning processes. Generally, school variables contributed significantly to the achievement level of secondary schools in Ekiti State. The condition of the school variable is a clear manifestation of the performance. This makes it mandatory for the school managers to be more associated with the appropriate class size, school size, teacher's qualification and student-teacher-ratio. The appropriate school-based variables can reduce the level of wastage rates as the study revealed. Moreover, the study revealed that teacher's qualification contributed significantly to the achievement level. Also, it was identified that 7.9% of the total teachers employed were not qualified and this can contribute negatively to the teaching–learning process. To this end, qualified teachers should be emphasized to teach in the state secondary schools.

More so, increase in the capacity of students is necessary in order to reduce wastage.

5. Conclusion and Recommendations

It is worthwhile to conclude that school-based variables associated with the achievement level in the secondary school in Ekiti State. Frantic efforts are necessary to make the life of secondary school students meaningful through appropriate school-based variables. Therefore, school managers should ensure standard school variables to slow down the level of wastage rates and improve achievement level of students in the Secondary schools of the State. Moreover, the parameter of the National policy on Education in regards of the school variables should be emphasized while NCE graduate should be the minimum qualification to teach in secondary schools of the state; to enhance perfect efficiency for the nation's future.

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