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Student-Teacher Ratio and Internal Efficiency of Public Secondary Schools in Ondo State, Nigeria

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Abstract: *The study examined the student-teacher ratio and internal efficiency of public secondary schools in Ondo State, Nigeria. The study adopted a descriptive research design of the survey type. The population for this study consisted of all 258 public secondary schools in Ondo State, while the sample size consisted of 200 teachers and 20 principals selected in 20 public secondary schools in Ondo State. Two research instruments were used for the data collection. The instruments tagged 'Student -Teacher Ratio Questionnaire" (STRQ), and inventory specifically designed and administered to the principals (or Vice-Principals) to request the enrolment of students from JSS.1 to SSS III. Face and content validity of the instruments were ensured by experts, while the test-retest method of reliability was adopted to determine the reliability coefficient of 0.81 for the STRQ. The data collected were analysed using descriptive and inferential statistics. The hypothesis was tested at 0.05 level of significance. The finding revealed that there was a significant relationship between the student-teacher ratio and internal efficiency of secondary schools. It was recommended that government and school administrators should ensure that teachers are made available for students to reduce overpopulated classes, and teachers should be provided with opportunities to attend seminars, conferences, and training that will equip the teachers to apply innovative ideas in the classrooms. The Teaching Service Commission should ensure that experienced teachers are employed in public secondary schools in the State. This will enable the teacher to monitor the students when the class size is not so large.*
Keywords: dropout rate; internal efficiency; promotion rate; repetition rate; student-teacher ratio.

INTRODUCTION

Education as a dynamic system requires certain inputs from time to time to carry out the curricular activities designed for the achievement of the school goals. Education is an investment as well as an instrument that can be used to achieve a more rapid economic, social, political, technological,

scientific, and cultural development in a country. Secondary school education is a transitional level that stands between primary and tertiary education. This level of education provides a basis for acquiring insights, skills and competences required at the higher levels of education and in the labour market. Education is the bedrock of the development of any nation. This is the reason that a government invests heavily in the education of its citizens. Secondary education, a subset of the education level, is very necessary in human formation. (Ajayi, Ekundayo & Osalusi, 2010).

It is not gainsaying that secondary education is unique in the educational development of a child, being the link between primary and tertiary education. The knowledge, skills, values, and traits that a child acquires at this stage will complement those acquired at the primary level and when these are combined, will prepare such a child for tertiary education. Just as the physical and social development of the average child is beset with many problems, so the development of education in any given society is hampered by a variety of problems.

Researchers observed a problem of internal efficiency resulting from wastage in secondary schools. It seems that many students tend to go through the school system without making any positive impact. Many students appear to spend extra years in the school system, thereby constituting wastage. Internal efficiency is the relationship between the outputs and inputs of an education system. Internal efficiency is defined as the comparison of learning, a non-monetary outcome of education to the cost of education inputs (Okinyi, Nyerere & Kariuki, 2021). The internally efficient educational system turns out graduates without wasting any student-year or without dropouts and repeaters. When students repeat a class for one or more than one year, it tends to constitute wastage in the school system. This is in view of the fact that the space which could have been occupied by a newly enrolled or promoted student would have to be retained for a repeater, and the dropout or student who leave the school before completing the given cycle or academic year are also wasting the education resource, some time they may not bring back the school material to the school, there by siphoning more funds from government in terms of continued teaching of the repeaters in the same class for more than one year.

Internal efficiency in education has two dimensions: the flow of students through the system with a minimum of wastage and the quality of learning at given levels or periods. Wastage in the flow of students manifests quantitatively in the dropout, promotion and repetition rates, while the quality of learning is determined by the input - output analysis of the education system. The internal efficiency of any school depends upon the way it is managed. Wastage in education generally is conceived when resources given to education are not utilized to produce the output at the stipulated time (Adeleke, 2015). The indicators of internal efficiency used by Afolabi (2006) are the wastage rate and graduation rate. Wastage is caused by unsuccessful school leavers, who leave the school system before they complete their courses. Wastage may occur between class levels, and among those students who repeated the class and those who dropped out of the system. The graduation rate is caused by those who left the school system completing their courses without wasting school resources. Internal efficiency is a milestone of each organisation, basically, an educational institution. It gives a mirror of the operation system of an organisation. If educational

institutions are more efficient internally, they have good results and the students who pass from such schools get good jobs for their bright future. Internal efficiency is affected by various factors, especially drop-out, repetition, promotion, and cycle completion (Yang, 2014). The internal efficiency in education is measured through cohort analysis of a cycle. The cohort analysis simply tells the history of a particular level of education to the time the group of students left the level. As such, it can show the extent to which the educational system is able to use its raw materials (students) in the production of output (graduates). In this regard, the cohort analysis would show the flow rate in the system, such as the promotion rate, repetition rate and the dropout rate of students. When the system can see the students through the system in the shortest possible period, then the system is efficient. Moreover, when the wastage rate of the system is low, the system is said to be efficient. The smaller the wastage rate, the more efficient the system (Kolawole & Ogbiye, 2020).

The problem of wastage resulting from repetition and dropout calls for a study of the student-teacher ratio in public secondary schools in Ondo State. The researcher observed that the student-teacher ratio in most secondary schools in Ondo State is not encouraging. A single teacher seems too responsible for many students, which leads to less individual attention, lower learning outcomes and increases teacher burnout. There are instances where some schools will only have one teacher to handle three or four subjects in a class. There is even a situation where the only available subject teacher will handle additional related subjects. This seems to cause secondary schools not to be effectively managed.

Adeyemi (2008) described the student-teacher ratio as an educational tool that can be used to describe the average number of students per class in a school. It is often simply considered as the respective population of each class. Students form and maintain relations with peers and teachers in school, and the former has been demonstrated to be related to internal efficiency. Teacher-student ratios are the sum of the activities that characterise in-class and out-of-class teacher-student interactions (Verger, Altinyelken, and Novelli, 2018). In the school context, both students and teachers form beliefs and opinions about each other. Such beliefs and perceptions may form institutional cultures that have a bearing on student-teacher ratio and internal efficiency.

It appears that where the factors influencing internal efficiency of secondary schools are effective, internal efficiency seems to be high, and where the factors influencing internal efficiency are not effective, the internal efficiency of the school seems to be low. It is against this background that this study examined factors influencing the internal efficiency of public secondary schools in Ondo State. Student teacher ratio is the number of students per teacher, or in other words, the average number of students a teacher instructs in a school (Graue and Rauscher, 2013). The researcher observed that the student-teacher ratio in most secondary schools in Ondo State is not encouraging. A low teacher-student ratio suggests that each teacher must be responsible for a small number of students, and it gives a higher relative access to students. A lower student-teacher ratio signified smaller classes, which have the tendency to enable the teacher to pay more attention to individual students, which may result in a better promotion rate and reduce repetition rate, and drop-out rate.

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Research Questions

The following research questions were raised for this study.

1. What is the promotion rate, repetition rate, dropout rate, and completion rate in Ondo State public secondary schools?
2. What is the growth rate of the student-teacher ratio (STR) in Ondo State secondary schools?

Research Hypotheses

The following research hypothesis was formulated for the study:

There is no significant relationship between the student-teacher ratio and internal efficiency of public secondary schools.

METHODOLOGY

The study adopted a descriptive survey research design. The population for this study consisted of all 258 public secondary schools in Ondo State, while the sample size consisted of 20 selected secondary schools in Ondo State. The sample consisted of 200 teachers and 20 principals selected from 20 secondary schools. Simple random and proportionate sampling techniques were used to select the sample for this study. The 20 schools were selected using the Simple random sampling techniques. A proportionate stratified random sampling technique was used to select the number of teachers. Two instruments were used to collect data, tagged "Student-Teacher Ratio Questionnaire" (TSRQ), and an inventory designed and administered to the principals or vice–principals to request the enrolment of students from JSS1 to SSS III. Face and content validity of the instruments were ensured by experts in educational management and test and measurement, while the test-retest technique of reliability was adopted and a reliability coefficient of 0.81 for TSRQ. The data collected was analyzed using Pearson Product-Moment Correlation. The hypotheses formulated were tested at 0.05 level of significance.

RESULTS

Research Questions

Research Question 1: What is the promotion rate, repetition rate and dropout rate in Ondo State Public Secondary schools?

In computing the promotion rate, repetition rate and dropout rate among students in the schools, the following formulas were used (Akinwumiju, 1995):

1. Promotion Rate

   The promotion rate (pt) is the number promoted divided by the enrolment in the previous year. In equation form, the promotion rate is:

   $P^i_t = \frac{P^{t+1}}{E^i_t} \times \frac{100}{1}$

   Where:

   P^i_t = promotion rate

P^{t+1} = Number of students promoted to grade i+1 in year t+1.
E^i_t = Enrolment in grade 1 in year t. (previous year)

2. Repetition Rate
The repetition rate is the relationship between students repeating a particular grade and the total enrolment in the same grade of the year before. In equation form, the repletion rate is:

$R_t = \frac{R^i_{t+1}}{E^i_t} \times \frac{100}{1}$

Where:
R_t = repetition rate
R^i_{t+1} =number of repeaters in year t+1 in given class i
E^i_t = total student enrolment in the former year in class i.

3. Dropout Rate
The dropout rate is the ratio between those students who give up their studies during a particular grade and total enrolment in the grade in the same year. In equation form, the dropout rate is:

$d_t = \frac{E^i_t - [P^{t+1} + R^i_{t+1}]}{E^i_t} x \frac{100}{1}$

$d_t = \frac{D^{1+1}_t}{E^1_t} \times \frac{100}{1}$

D_t = dropout rate
E_t^1 = enrolment in the present year
P_t = promotion rate
R_t = repetition rate

Using the formulas, the promotion rate, repetition rate and dropout rate for the cohort of 8772 students at junior secondary schools in Ondo state, Nigeria, were computed. The findings are shown in Table1.

To answer this question, the three-year cycle cohort analysis of students admitted into class one in the 2020/2021 academic session to 2022/2023 was followed progressively in Table 1:

Table 1: Students flow rate in selected secondary schools in Ondo State from 2020/2021 to 2022/23 academic session.

	JSS 1	**JSS 2**	**JSS3**		
	2020/2021	**2021/2022**	**2022/2023**		
No Examined	8772	8459	7996	7044	6071
Promoted	8235	7743	7241	6206	5839
Promotion rate	94.11	91.54	90.57	88.10	96.18
Repeaters	415	453	529	786	200
Repeaters rate	4.73	5.35	6.61	11.16	3.29
Dropout	102	263	226	28	08
Dropout rate	1.16	4.11	2.82	0.74	0.13
Graduates			6604	-	-
Graduate rate			82.6	-	-

Table 1 shows the student flow rates in selected secondary schools in Ondo State. The promotion rate shows a fluctuating trend from JSS1 in 2021 to JSS3 in 2023. The repetition rate increases throughout the 3years of schooling from 4.73% in JSS1 (2021) to 5.35% in JSS2 (2022) and 6.61% in JSS3 (2023). The dropout rate was at a fluctuating trend throughout the schooling period from 2021 to 2023. In the overall analysis, the table shows that the promotion rate was high throughout the schooling period, while the repetition and dropout rates were at a low level.

Research Question 2: What is the growth rate of the student-teacher ratio (STR) in Ondo State public secondary schools?

Table 2: Growth rate of student-teacher ratio in Ondo State

Year	**Enrolled**	**No of Teacher**	**STR**	**ANN Growth**	**Average**
2020/2021	8772	612	14.33	-	
2021/2022	8459	667	12.68	+1.65	
2022/2023	7996	682	11.72	+0.96	
Average	8409	654	12.86	-	+1.31

Table 2 shows the growth rate of the student-teacher ratio in secondary schools in Ondo State. The student-teacher ratio was not stable from 2020/2021 to 2022/2023 academic session. The student-teacher ratio was 14.33 in 2020/2021, while it was 12.68 in the 2021/2022 academic session. There was a decrease in growth rate to 11.72 in 2022/2023. The general increase in growth rate of student enrolment almost corresponded with the increase in growth rate of teachers. The average annual growth rate of the student-teacher ratio was 1:31 in selected secondary schools in Ondo State during the period of the study. From the analysis, the average STR was below the requirement of the national policy on education (NPE) in Nigeria, which specified 40 students to 1 teacher. This implies that teachers were underutilised in the secondary schools.

Hypothesis 1: There is no significant relationship between student-teacher ratio and internal efficiency of secondary schools in public secondary schools in Ondo State.

In testing this hypothesis, responses to items 1-5, Section B of the factors influencing internal efficiency of secondary school questionnaire, and the internal efficiency coefficient obtained from the inventory on students' flows were subjected to statistical analysis involving the use of PPMC at 0.05 level of significance. The result obtained is presented in Table 3.

Table 3: Relationship between students-teacher ratio and internal efficiency of secondary schools.

Variable	N	Mean	SD	r-Cal	P-value
Student-teacher ratio	18	15.12	2.55	0.812*	.000
Internal efficiency	18	67.57	12.69		

*p<0.05

Table 3 shows the r-cal as 0.812 with a p-value of 0.000. The result is significant at 0.05 level of significance. Thus, the null hypothesis was rejected. This implies there was a significant relationship between the student-teacher ratio and internal efficiency of secondary schools.

DISCUSSION

The analysis of the data collected for this study was conducted. The study revealed the cohort analysis of students who enrolled in 2020/2021 and showed that some students were added in JSSII. This might be a result of students repeating JSSII in 2021/2022. From Table 1, it was revealed that the promotion rate was high throughout the period of 3 years of schooling by the flow rate of students, while the repetition rate and dropout rate were low. The finding was consistent with the findings of Adeyemi (2012), who found high promotion rates and low repetition and dropout rates in secondary schools in Ondo State, Nigeria. The finding was also in consonance with that of Adeleke (2011). The finding suggests that the wastage rate in the schools was at a low level and the level of internal efficiency of the schools was high. This is an indication that as student progresses to higher classes, some tend to repeat the same class and spend additional years in the schools beyond the normal 3-year period of secondary schools' education in the State. This finding was in line with that of Amaonye, Unachukwu and Anachuna (2020) who found that through repetition rate, students spend extra years in the school system, which constitute to wastage. This shows that the more students repeat classes, the more they might dropout from school.

The study revealed a significant relationship between student-teacher ratio and internal efficiency of secondary schools in Ondo State, Nigeria. The finding was consistent with the findings of Adeleke (2011) and Adeyemi (2012), that the larger the number of teachers in the schools, the higher the internal efficiency of the school. A better student-teacher ratio could enable the teacher to pay more attention to individual students, which may result in a better promotion rate and reduce repetition and drop-out rates. This finding is aligned with the finding of Egwunatum, Akpotu, Samuel and Nwosu (2021) that internal factors such as class size ratio and student-teacher ratio were strong enough to cause a drastic increase in dropout rate.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made:

1. It was recommended that there should be a prudent and continuous recruitment of teachers into all secondary schools in the State. This will reduce the workload of the available teachers and eventually improve the internal efficiency of secondary schools.
2. The state government should endeavour to effect proper management of teachers to make them stay on the job in a bid to improve the internal efficiency of the schools.
3. The recommended class size of 1:40 should be maintained in public secondary schools. This will enable the class teachers to engage individual students with close monitoring that may result in better promotion rates and reduce repetition and dropout rates

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