PHYSICAL RESOURCES ADEQUACY AND INTERNAL EFFICIENCY IN PUBLIC PRIMARY SCHOOLS IN EDO STATE

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Abstract
This study examined physical resources adequacy and internal efficiency in public primary schools in Edo State from 2009/2010 to 2015/2016 academic sessions. This study is a descriptive survey that adopted ex-post facto and correlational designs. At the time of the study, the population was 1,075 public primary schools in Edo State. The simple random sampling technique was used to select 108 public primary schools representing 10% of the population. Two checklists namely "Pupils Enrolment Progression Flow Checklist (PEPFC)" and "Physical Resources Adequacy Checklist (PRAC)" were the instrument used to collect data for the study. The data collected were analyzed using descriptive statistics, standard progression and Pearson r. The findings revealed that classrooms, pupils' desks and chairs, teachers' tables and chairs, chalkboards and toilets were inadequate as the determined benchmark was higher than the required quantity as at the period of the study. The level of the adequacy of the physical resources was moderate with 63.0%. The wastage value was low with wastage ratio of 1.2 which enhanced the internal efficiency of public primary schools in Edo State. In addition, the Pearson r revealed that there is no significant relationship between physical resources adequacy and internal efficiency of schools. It was recommended that the Edo State government should ensure that adequate physical resources are provided for schools to match the number of pupils enrolled to comply with the benchmark for school resource implementation and also that high internal efficiency is maintained by shifting all the doors against pupils' wastage in the public primary schools.

Key words: Physical, Resources, Adequacy, Internal Efficiency, Wastage.

Introduction

Physical resources are the essential materials provided for staff and pupils to enhance their productivity in the teaching and learning process in the school system. The adequacy of the physical resources largely determines the quality of instructions and performance of pupils in the school. These include: blocks of classrooms, chairs, desks, tables, instructional aids, toilets, water, libraries, laboratories, recreational equipment, storage space and other resources. Physical resources play vital role in the actualization of the educational goals and objectives

by satisfying the physical and emotional needs of the staff and pupils in the schools. They enhance comfort for the pupils, provide and maintain safe, clean and creative educational environment that are conducive to high achievements of the pupils. Physical resources are therefore the fundamental factors for better learning and achievement of the pupils.

The adequacy and appropriate utilization of physical resources in education promote fruitful teaching and learning outcomes since it stimulates and motivates pupils (Okorie, 2001). It is a key determinant of internal efficiency of the school system and also the overall atmosphere in which learning takes place and it bears direct relevance to the quality of education that pupils receive in schools. Internal efficiency of a school system can be regarded as the relationship of its inputs (resources) to its outputs (graduates). The inputs include classrooms, pupils, teachers, furniture, textbooks and others while the outputs are the graduates from that system. Therefore, the internal efficiency of the educational system is one, which turns out graduates without wasting much of pupil-years or with reduced dropouts and repeaters. Pupils seem to drop out of the primary school system or repeat class for a number of reasons: low quality of learning, discouragement from poor performance, poor school environment, inability to cope financially, transfer of parents from one area to another, failure to meet up with the requirements for promotion, lack of textbooks, and others, thus completing the course with additional number of year(s), hence leading to low internal efficiency rate in the system. Inadequate, deteriorating and lack of maintenance of these resources are likely to affect the teachers and pupils negatively in the teaching and learning transaction. If all these resources are taken into consideration, it will enhance internal efficiency in the public primary schools in Edo State.

Concept of Physical Resources

Physical resources according to Adeogun and Osifila (2008) include classrooms, furniture, chalkboards, textbooks, libraries, offices, toilets/latrines, charts, maps, laboratories, recreational resources among others. Akinsanya (2010) comiimenting on these resources said that they are important because the goal of any school depends on adequacy and utilization among others as they enhance proper teaching and learning. Akinsolu (2003) in her study on the provision and management of physical resources for primary education in Nigeria found that there is a gross inadequacy of resources for Nigerian primary schools with adequacy of required percentage ranging from as low as 1.5% to a maximum of 35.2%. Her study stressed the importance of physical resources in the management of education system. She insisted that stakeholders need to ensure adequate provision of physical resources in all levels of the educational system, be it primary, secondary and tertiary, to enhance learning and for improved productivity. She also affirmed that education

objective can only be achieved with adequate and relevant physical resources in schools.

Internal Efficiency in School

Internal efficiency according to Psacharopoulos and Woodhall (1995:205) "is concerned with the relationship between inputs and outputs within the education system or within individual institutions. As internal efficiency is measured in relation to the objectives of education, efficiency is judged by the way educational output is designed and measured". A system of education is judged to be internally efficient if there is optimal enrolment, no wastage (dropouts and repetitions), and presence of optimal class size. Internal efficiency of schools and other educational institution is achieved when educational resources are utilized in an optimal way. The "implication here is that there should be optimum enrolment of pupils in schools so that the resources can be fully utilized. The resources used in the schools should be properly utilized by the enrolled number" of pupils in order to realize internal efficiency (Kampicha, 2013:15).

Statement of the Problem

Despite the improvement in the provision of additional classrooms, desks and chairs for pupils, tables and chairs for teachers, chalkboards, toilets and others, this is without prejudice to the free bus transportation scheme for pupils in uniform in Edo State to encourage school attendance, it seems from observation that many pupils still dropout of school soon after enrolment. The incidence of dropout and repetition make the school system to be internally inefficient, as a result of wastage. The problem of this study therefore is centred on this unanswered question: Is there a relationship between physical resources adequacy and internal efficiency in Edo State public primary schools?

The objective of this study was to investigate the relationship between physical resources adequacy and internal efficiency in Edo State public primary schools. This study is significant because it will show the managers, stakeholders and government officials the actual level of adequacy of physical resources and internal efficiency in public primary schools in Edo State.

Research Questions

The following research questions were raised for the study.

1. How adequate were the physical resources in Edo State public primary schools?
2. What was the level of adequacy of the physical resources in Edo State public primary schools?
3. What was the internal efficiency of Edo State public primary schools?

4. To what extent was the relationship between physical resources adequacy and internal efficiency in Edo State public primary schools?

Hypothesis: There is no significant relationship between physical resources adequacy and internal efficiency in Edo State public primary schools.

Purpose of the Study

The purpose of this study was to investigate if there is a relationship between physical resources adequacy and internal efficiency in Edo State public primary schools. The study specifically,

- examined the adequacy of the physical resources in Edo State public primary schools;
- examined the level of adequacy of the available physical resources in Edo state public primary schools;
- determined the internal efficiency in Edo State public primary schools;
- investigated the extent of the relationship between physical resources adequacy and internal efficiency in Edo State public primary schools.

Methodology

The study is a descriptive survey that adopted the *ex-post facto* and correlational designs. The population of the study comprised all the public primary schools in Edo State between 2009 and 2016, which totaled 1,075 primary schools (SUBEB, 2015). 108 public primary schools were selected through simple random technique which constituted 10% of the population. Two checklists titled; "Pupils Enrolment Progression Flow Checklist (PEPFC)" and "Physical Resources Adequacy Checklist (PRAC)" were used to collect appropriate data for the study. The first checklist, "Pupils Enrolment Progression Flow Checklist" was made up of two sections. Section A sought for demographic information on the schools. Section B sought information on pupils' flow through various grades in the public primary schools from 2009/2010 to 2015/2016 academic sessions. The second checklist, "Physical Resources Adequacy Checklist (PRAC)" sought information on physical resources adequacy in Edo State public primary schools for 2014/2015 and 2015/2016 academic sessions. The pupils' enrolment progression flow checklist and physical resources adequacy checklist were administered to the head teachers of the sampled schools by the researcher and six trained research assistants.

- **Method of Data Analysis**

Descriptive statistics, such as ratio, mean and percentage were utilized to examine the adequacy and level of the available physical resources and display of tables. Standard progression method was used to determine the internal efficiency of the schools while Pearson Product Moment Correlational Co-efficient (PPMCC) was used to investigate the extent of the relationship between physical resources adequacy and internal efficiency of the schools.

Research Question 1: *How adequate were the physical resources in Edo State public primary schools?*

To find out the adequacy of the physical resources in Edo State public primary schools, the data obtained from 108 sampled schools were organized using the benchmarks of 35 pupils to one classroom, 2 pupils to one desk and chair, a table and a chair to one teacher, chalkboard to one classroom and 35 pupils to one toilet. The 2015/2016 school year data was used for the analysis since the supplies of these resources to schools are not always on yearly basis. The information in Table 1 showed the summary of the findings.

Table 1: Adequacy of physical resources in Edo State public primary schools (2009/2010 to 2015/2016).

Physical Resources	Quantity Required	Quantity Available	Bench Mark	Popula-tion	Determined Ratio	Remark
Classrooms	1,518	1,200	1:35	53,383	1:45	Inadequate
Pupils' Desks	23,772	10,272	1:2	53,383	1:5	Inadequate
Pupils' Chairs	20,519	10,269	1:2	53,383	1:5	Inadequate
Teachers' Tables	1,518	1,326	1:1	1,551	1:2	Inadequate
Teachers' Chairs	1,518	1,298	1:1	1,551	1:2	Inadequate
Chalkboards	1,518	887	1:35	53,383	1:60	Inadequate
Toilets	1,518	539	1:35	53,383	1:99	Inadequate

Source: Fieldwork (2015/2016)

The information in Table 1 revealed that none of the 108-sampled public primary schools in Edo State has adequate physical resources to cater for the pupils' enrolment and the needs of the schools. The data revealed that out of 1,518 classrooms required for 53,383 pupils in the schools, 1,200 were available. The benchmark for classrooms was 1:35 while the determined ratio was 1:45; this showed that classrooms were inadequate. The data also revealed that out of 23,772 desks required for 53,383 pupils, 10,272 were available, out of 20,519 chairs

required for 53,383 pupils, 10,269 were available. The benchmark for pupils' desks was 1:2 respectively while the determined ratio was 1:5 respectively; this also means that they were inadequate. On the other hand, out of 1,551 teachers' tables required for 1,551 teachers, 1,326 tables and 1,298 chairs were available, while the benchmark was 1:1 and the determined ratio was 1:2 respectively indicating inadequate. 1,518 chalkboards and toilets required for 53,383 pupils, 887 chalkboards and 539 toilets were available; the benchmark for chalkboards and toilets was 1:35 while the determined ratio was 1:60 for chalkboards and 1:99 for toilets indicating inadequate. It showed that the physical resources were inadequate in public primary schools in Edo State as at the time of this study.

Research Question 2: *What was the level of adequacy of the physical resources in Edo State public primary schools?*

To determine the level of adequacy of the physical resources in Edo State public primary schools, data collected were analyzed using percentages as shown in Table 2.

Table 2: Level of adequacy of the physical resources in Edo State public primary schools (2009/2010 to 2015/2016)

Physical Resources	Quantity Required	Quantity Available	% of Adequacy	Remark
Classrooms	1,158	1,200	79.1	High
Pupils' Desks	23,772	10,272	43.2	Low
Pupils' Chairs	20,519	10,269	50.0	Low
Teachers'	1,518	1,326	87.4	High
Tables	1,518	1,298	86.0	High
Teachers'	1,518	887	58.4	Moderate
Chairs	1,518	539	36.0	Low
Chalkboards				
Toilets				
Average			**62.9**	**Moderate**

Source: Fieldwork (2015/2016)

Key
0% - 50%, Low
51 - 69%, Moderate
70% - 100%, High

The analysis in Table 2 showed that out of 1,518 classrooms required in the schools, 1,200 were available, representing 79.1% (high). Also, out of 23,772 desks and 20,519 chairs required for the pupils in the schools, 10,272 desks and 10,269 chairs were available representing 43.2% and 50.0% (low) respectively. Teachers' tables and chairs showed that out of 1,518 tables and chairs required in the schools, 1,326

and 1,298 chairs were available representing 87.4% and 86% (high) respectively. Out of 1,518 chalkboards and toilets required in the schools, 887 chalkboards and 539 toilets were available representing 58.4% (moderate) and 36.0% (low) respectively. It was concluded that the level of adequacy of the physical resources in Edo State public primary schools was moderate with a mean percent of 62.9%.

Research Question 3: *What was the internal efficiency of Edo State public primary schools?*

To determine the internal efficiency of Edo State public primary schools from 2009/2010 to 2015/2016 school years, grade wise enrolment, progression rates percentage and standard progression method were applied. The findings of the computation are presented in Tables 3, 4 and 5.

Table 3: Grade-wise pupils' enrolment and progression for the schools

School Year	Pry 1	Pry 2	Pry 3	Pry 4	Pry 5	Pry 6	Output
2009/2010	8215	8110	7844	7955	7560	6985	6545
2010/2011	8101	7713	7669	7403	7514	7110	6661
2011/2012	8354	7661	7352	7234	7023	7163	6715
2012/2013	7991	7894	7261	7011	6873	6688	6398
2013/2014	8586	7551	7494	6906	6682	6613	6153
2014/2015	7511	8145	7156	7144	6556	6346	5940
2015/2016	7224	7345	7117	6522	6431	6012	5414

Source: Schools records

Table 4: Grade-wise Progression Rates

Between Grade	1-2	2-3	3-4	4-5	5-6	6-out
Percentage	95.10	93.73	94.51	94.11	94.58	93.42
Ratio	0.9510	0.9373	0.9451	0.9411	0.9458	0.9342

Yr 1 Base	Pupil in Pry 1		= 1000
	Pupil in Pry 2	1000 × 0.9510	= 951
	Pupil in Pry 3	951 × 0.9373	= 891
	Pupil in Pry 4	891 × 0.9451	= 842
	Pupil in Pry 5	842 × 0.9411	= 792
	Pupil in Pry 6	792 × 0.9458	= 749
Total Pupil Years			= 5225
Pupil Output in Year t + 5		749 × 0.9342	= 700

Input - Output Ratio = $\frac{Actual\ input}{Actual\ output} = \frac{5225}{700} = 7.46$

Ideal Input - Output Ratio = $\frac{6}{1}$ Wastage Ratio = $\frac{Actual\ Input\text{-}Output\ Ratio}{Ideal\ Input\text{-}Output\ Ratio}$

$= \frac{7.46}{6} = 1.2$

Coefficient of Efficiency = $\frac{1}{1.2} \times \frac{100}{1} = 83.3\%$

Table 5: Standard progression analysis of pupils' wastage rate in public primary schools in Edo State from 2009/2010 to 2015/2016 academic sessions.

Total Pupils' Years	Output	Input – Output Ratio	Ideal Wastage	Actual Wastage	Coefficient of Efficiency	Decision
5225	700	7.46	1.0	1.2	83.3%	high

The findings from the analysis showed that the total pupils' years was 5225, output was 700 while input – output ratio, ideal wastage, actual wastage and coefficient of efficiency stood at 7.46, 1.0, 1.2 and 83.3% respectively. The wastage ratio of 1.2 is an indication that the public primary schools in Edo State recorded low pupils' wastage rates between 2009/2010 and 2015/2016 school years while 83.3 percentage coefficient of efficiency showed that the schools had high rate of internal efficiency during the period.

Testing of Hypothesis

Research question four was turned to hypothesis as follows;

Hypothesis: *There is no significant relationship between physical resources adequacy and internal efficiency in Edo State public primary schools.*

The above hypothesis was tested using Pearson Product Moment Correlation statistics and the findings are presented in Table 6.

Table 6: Pearson *r* of relationship between physical resources adequacy and internal efficiency.

Variable	N	Pearson, *r*	Sig. (2 – tailed)	Decision
Adequacy of Physical Resources Internal Efficiency	108	-.091	.350	H_o accepted

α = 0.05 (2 tailed)

The data in Table 6 showed *r* value of -.091 and P value of .350. Testing at an alpha level of 0.05, the P value was greater than the alpha level, so the null hypothesis which stated that "There is no significant relationship between physical resources adequacy and internal efficiency in Edo State Public Primary schools" was retained. This implied that the internal efficiency in a school is not determined by the quantity and quality of physical resources available in the school and it is likely that what is lacking in one school is also lacking in another school.

Discussion of Findings

The result revealed that physical resources were not adequate in Edo State public primary schools. From the analysis, the benchmark of classrooms was 1,200(1:45), pupils' desks and chairs were 23,772(1:5) and 20,519(1:5), teachers' tables and chairs were 1,326(1:2) and 1,298(1:2), chalkboards were 887(1:60) and toilets 539(1:99) showing inadequacy. The result confirmed a general lack of physical resources which Adeyemi (1998) and Nwadiani (2003) described as "unconducive for teaching and learning" and that where they are available, they are not adequate. It was also revealed that the level of adequacy of the available physical resources were moderate with average percent of 62.7. Almeida (2012), stated that physical resources are what administrators, teachers and pupils harness, allocate and utilize for the smooth and efficient management of any educational institution.

The internal efficiency was high because the wastage value was 1.2 inspite of the inadequacy of physical resources that characterized the system. "Internal efficiency of an education system is concerned with the utilization of the available resources for improving the quality and quantity of education in best possible ways CPRA (2001)" as cited in NSCHE/GMSRC (2010). When a school is provided with adequate physical resources, it could never the less witness poor internal efficiency if other factors are not properly checked.

Conclusion

Based on the findings, it was concluded that physical resources like classrooms, teachers' tables and chairs, pupils' desks and chairs, teachers' tables and chairs, chalkboards and toilets were inadequate compared with the benchmark for schools. The internal efficiency of Edo State public primary schools was high because the wastage value was low.

Recommendations

It was recommended that Edo State government should ensure that the benchmark for school resource implementation is adhered to by making sure that adequate physical resources are provided for schools as well as match the number of pupils enrolled and their teachers. Also, the school management, teachers and pupils should put in more efforts to ensure that high internal efficiency is maintained by

shutting all the doors against pupils' wastage in the public primary schools. Other factors apart from physical resources that could promote high internal efficiency should be made available in public primary schools.

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