

School Plant Management and Students' Academic Performance in Public Senior Secondary Schools in North - Central, Nigeria

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Abstract: This study investigated school plant management and students' academic performance in public senior secondary schools in North Central, Nigeria. The study adopted the correlational survey and ex-post facto research designs. The population comprise teachers, principals from the 586 public senior secondary schools in North - Central, Nigeria. The sample size for the study consisted of 370 teachers and 226 principals drawn from the 226 public senior secondary schools in Nasarawa, Kwara and Kogi States. Krejcie and Morgan (1917) table was used to determine the sample from a finite population. The multistage sampling technique and simple random techniques were adopted for the study. Three sets of research instruments were structured for the study. These instruments were checklist, structured questionnaire and proforma. Instrument 1 consists of the checklist and questionnaire. The reliability of the research instrument was determined through a pilot test conducted using 24 teachers and 4 principals from 4 public senior secondary schools in FCT, Abuja. Split half method and Pearson product moment correlation (PPMC) were adopted to determine the reliability indexes of the research instruments which yieldedThus, the reliability indexes of 0.68 and 0.73. Descriptive and inferential statistical tools were adopted for data analysis using the Statistical Package for Social Sciences (SPSS Version 23). Percentage, mean scores and were used to answer the research questions while linear regression analysis was used to test the null hypothesis at 0.05 level of significant. The study revealed that school plant management supported effective students' academic performance. School plant management variables such as availability, utilization and maintenance showed positive relationship with students' academic performance in public senior secondary schools in North – Central, Nigeria. Based on the findings of the study , the following recommendations were made: school principals should collaborate with local communities, PTA, NGO, alumni, to solicit funds to purchase those school plant that were not available in order to improve teaching and learning in public senior secondary schools in North – Central, Nigeria. School principals should create a utilization long- term plan for school plant that sustains the high extent of school plant utilization in order to promote quality of teaching instruction.

Keywords: School Plant Management, Students' Academic Performance, Public Senior Secondary Schools.

Introduction

In Nigeria, secondary education has been identified as a critical aspect and component of the educational system. According to FRN (2013) in its National Policy on Education, the broad objectives of secondary education are to prepare students for higher education and useful living in Nigeria. The researcher therefore believed that in this era of technological revolution and contemporary changes in secondary education, actualizing the objectives of secondary education is dependent upon effective management of school plants. School plant refer to the school site, all the essential structures, permanent and semi-permanent such as machines and laboratory equipment and chalkboard needed for effective teaching and learning (Amanchukwu & Nwachukwu 2015). Alimi, Ehinola and Alabi (2012) defined school plant as the indispensable systems and structures required by any educational system to function effectively and achieve the objectives for which it was established.

The diverse roles of school plant in the establishment of effective and purposeful teaching and learning experiences towards actualizing secondary education objectives underscores the need for school plants to be effectively managed. In this study, of interest to the researcher are school plant management variables of availability, utilization and maintenance. School plant availability is the adequate provision of all school facilities that facilitate effective teaching and learning activities in the school system (Badamasi & Mohammed, 2019). School plant utilization refers to the ability of school heads to ensure that the school plants are ready for use as at when due and that they are correctly used for the purpose for which they are meant for (Badamasi & Mohammed, 2019). Maintenance of school plant is another critical aspect of school plant management for principals and educational personnel. School plant maintenance entails ensuring that facilities are kept near their original state as possible. This involves keeping the school sports and football field clean, periodic renovation of the buildings, servicing the school bus and generator sets, and repairs for the purpose of restoring the plants to optimum working condition (Jimoh, Akinlosotu & Ojo-Maliki, 2017).

School plant and facilities should not just be made available, but it should be ensured that they are adequately utilized and maintained. In the quest for effective lesson delivery and attainment of educational goals, school plant should be available and maintained, so that the teacher and learner could benefit from it. The school as a micro-system cannot operate without functioning school plant because they have a direct impact on students' academic performance. It is therefore pertinent to state here that functional school plants are necessary for the dynamic activities of teaching and learning to be handled effectively by the teacher. Used and maintained school facilities support academic performance of students in secondary schools. According to Olowo and Fashiku (2019), students' academic performance can be regarded as the result derived from assessment of test and promotion examinations done by students in the school system or external examinations such as the West African Senior School Certificate Examination (WASSCE) and Senior School Certificate Examination among others. Academic performance is also the degree of a students' accomplishment of his or her tasks or studies (Duruji, 2014).

The poor performance of secondary school students in public examinations especially the WASSCE has shown that the broad objectives of secondary education which include preparing individuals for higher education and useful living in the society seems to be far from being actualized. This is due to the fact that academic performance of students is a key indicator of the success or failure of secondary education in Nigeria. According to the chief

examiner's report, (2023), the researcher observed that there has been a consistent decline in academic performance of students generally in Nigeria and the North - Central is not an exception. The recurring decline in students' academic performance has elicited concern from educational stakeholders, educational institutions and examination bodies who seem to have the perception that the poor performance of students may not be unconnected with the way school plants are managed.

From the researcher's experience and observation as a teacher and the responses of some education stakeholders show that in most public senior secondary schools in North - Central states, school plants seem not be adequately provided. This is evident in the insufficient provision of modern facilities and equipment. For instance, classrooms are dilapidated, roofs are blown off, desks are shared among students in the classrooms, no school bus, no textbooks. Even those schools with these facilities seems not to be properly utilized by the students and maintained by school administrators. For instance, school buses are packed for one mechanical fault or the other, broken chairs and desks are piled up under the trees, playground and fields are bushy and have become a home for reptiles, laboratory equipment are obsolete and chemicals expired. Given the above issues therefore, the problem statement of this study is as follows: what is the relationship among school plant management and students' academic performance in public senior secondary schools in North - Central, Nigeria?

1.2 Purpose of Study

The main purpose of this study was to investigate School Plant Management and Students' Academic Performance in Public Senior Secondary Schools in North - Central, Nigeria. Specifically, the objectives are to:

- i. find out the types of available school plant in public senior secondary schools in North - Central, Nigeria.
- ii. find out the extent of utilization of school plant in public senior secondary schools in North - Central, Nigeria.
- iii. find out the extent of maintenance of school plant in public senior secondary schools in North - Central, Nigeria.
- vi. ascertain the trend in students' academic performance in public senior secondary schools in North – Central , Nigeria from 2014 to 2023.

1.3 Research Questions

The following research questions were answered in this study:

- 1) What are the types of available school plant in public senior secondary schools in North - Central, Nigeria?
- 2) What is the extent of utilization of school plant in public senior secondary schools in North - Central, Nigeria?
- 3) What is the extent of maintenance of school plant in public senior secondary schools in North - Central, Nigeria?
- 4) What is the trend of students' academic performance in public senior secondary schools in North - Central, Nigeria from 2014 to 2023?

1.4 Hypotheses

The following hypotheses were tested at 0.5 level of significance for this study.

H01: There is no significant relationship between school plant availability and students' academic performance in public senior secondary schools in North - Central, Nigeria.

H02: There is no significant relationship between school plant utilization and students' academic performance in public senior secondary schools in North - Central, Nigeria.

H03: There is no significant relationship between school plant maintenance and students' academic performance in public senior secondary schools in North - Central, Nigeria.

H04: There is no significant relationship among school plant management, teachers' professional standards and students' academic performance in public senior secondary schools in North - Central, Nigeria.

3.0 Method

This study adopted the correlational survey and ex-post facto research designs in view of the study variables. The target population of this study comprised 11,806 teachers, 586 principals from the 586 public senior secondary schools in North - Central, Nigeria. The sample size for the study consisted of 370 teachers and 226 principals drawn from the 226 public senior secondary schools in Nasarawa, Kwara and Kogi States. The sample size of the public secondary schools and the teachers was determined using the Krejcie and Morgan (1917) table for determining samples from a finite population. The multistage sampling technique and simple random techniques were adopted for the study. Three sets of research instruments were structured for the study. These instruments were checklist, structured questionnaire and proforma. Instrument 1 consists of the checklist and questionnaire. The validation of the research instruments was carried out by researcher through the input of the thesis supervisors and other experts in the Department of Educational Management. The reliability of the research instrument was determined through a pilot test conducted using 24 teachers and 4 principals from 4 public senior secondary schools in FCT, Abuja. The split half method and Pearson product moment correlation (PPMC) were adopted to determine the reliability indexes of the research instruments. Thus, the reliability indexes of 0.68 and 0.73 were obtained. For the SPAC and TPSQ therefore, Spearman Brown Prediction formula, which estimates the reliability of a test or measurement when lengthened or shortened was applied to determine the actual reliability estimate of the research instruments and this yielded reliability indices of 0.81 and 0.84 for the SPAC and TPSQ respectively. Descriptive and inferential statistical tools were adopted for data analysis using the Statistical Package for Social Sciences (SPSS Version 23). Percentage, mean scores and standard deviation were used to answer the research questions, while linear regression and multiple regression analysis were used to test the null hypotheses at 0.05 level of significance.

4.0 Data Analysis

Research Question One

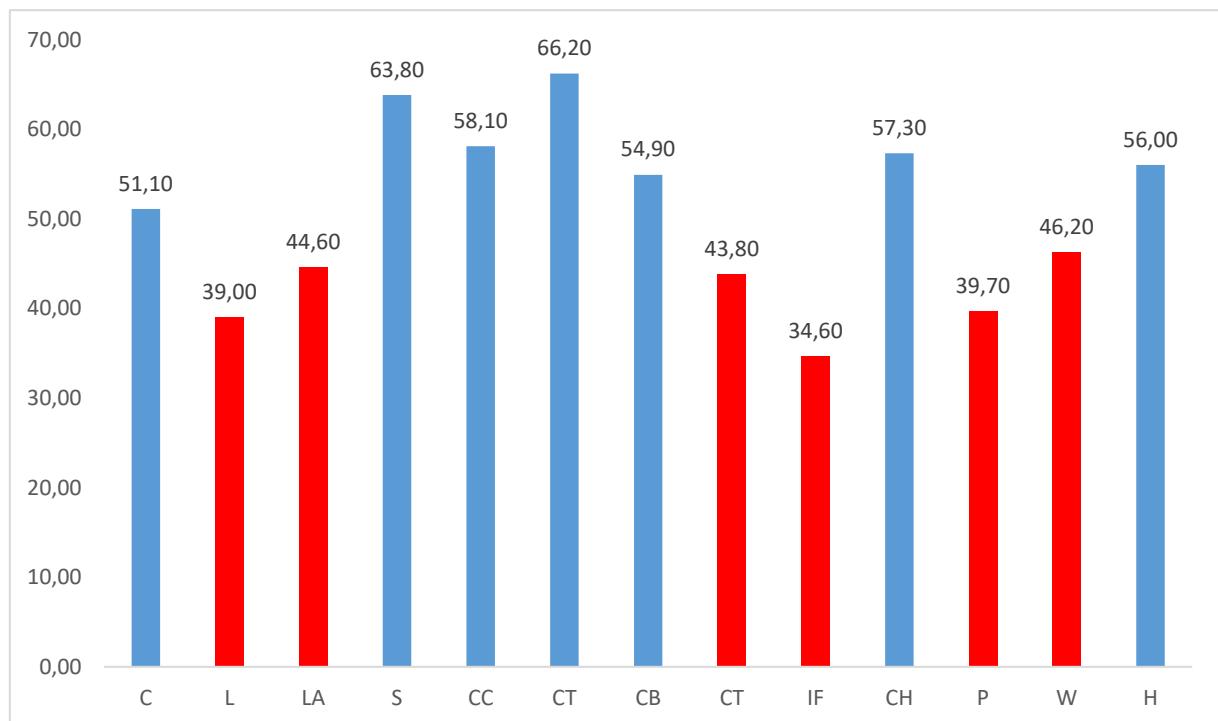
What are the types of available school plant in public senior secondary schools in North - Central, Nigeria?

Table 1
Analysis of School Plant Availability in Public Senior Secondary Schools in North - Central, Nigeria **n = 370**

S/N	Items	Available		Not Available		Decision
		N	%	N	%	
1	Classrooms	189	51.1	181	48.9	Available
2	Library	144	39.0	226	71.0	Not Available
3	Laboratory	165	44.6	205	55.4	Not Available
4	Sports field	236	63.8	134	36.2	Available
5	Classroom chairs	215	58.1	155	41.9	Available
6	Classroom tables	245	66.2	125	33.8	Available
7	Chalk board	203	54.9	167	45.1	Available

8	Computers	162	43.8	208	56.2	Not Available
9	Internet facilities	128	34.6	242	65.4	Not Available
10	Educational charts	212	57.3	158	42.7	Available
11	Photocopiers	147	39.7	223	60.3	Not Available
12	Workshops	171	46.2	199	53.8	Not Available
13	Hall	207	56.0	163	44.0	Available
Section Mean			50.4		49.6	Available

Table 1 presents the analysis of school plant availability in public senior secondary schools in North - Central, Nigeria. According to the results, classrooms (51.1%), library (39.0%), laboratory (44.6%) sport field (63.8%), classroom chairs (58.1%), classroom tables (66.2%), chalkboard (54.9%), computers (43.8%), internet facilities (34.6%), educational charts (57.3%), photocopiers (39.7%), workshops (46.2%) and hall (56.0%) were found to be the types of available school plant in public senior secondary schools in North Central Zone, Nigeria.



Key: █ High Extent (50% and Above)
█ Low Extent (Below 50%)

C	=	Classrooms	C	=	Computers
L	=	Library	IF	=	Internet facilities
LA	=	Laboratory	C	=	Charts
S	=	Sports field	P	=	Photocopiers
CC	=	Classroom chairs	W	=	Workshops
CT	=	Classroom tables	H	=	Hall
CB	=	Chalk board			

Figure 1: Percentage Mean Distribution of Available School Plant in Public Senior Secondary Schools in North - Central, Nigeria.

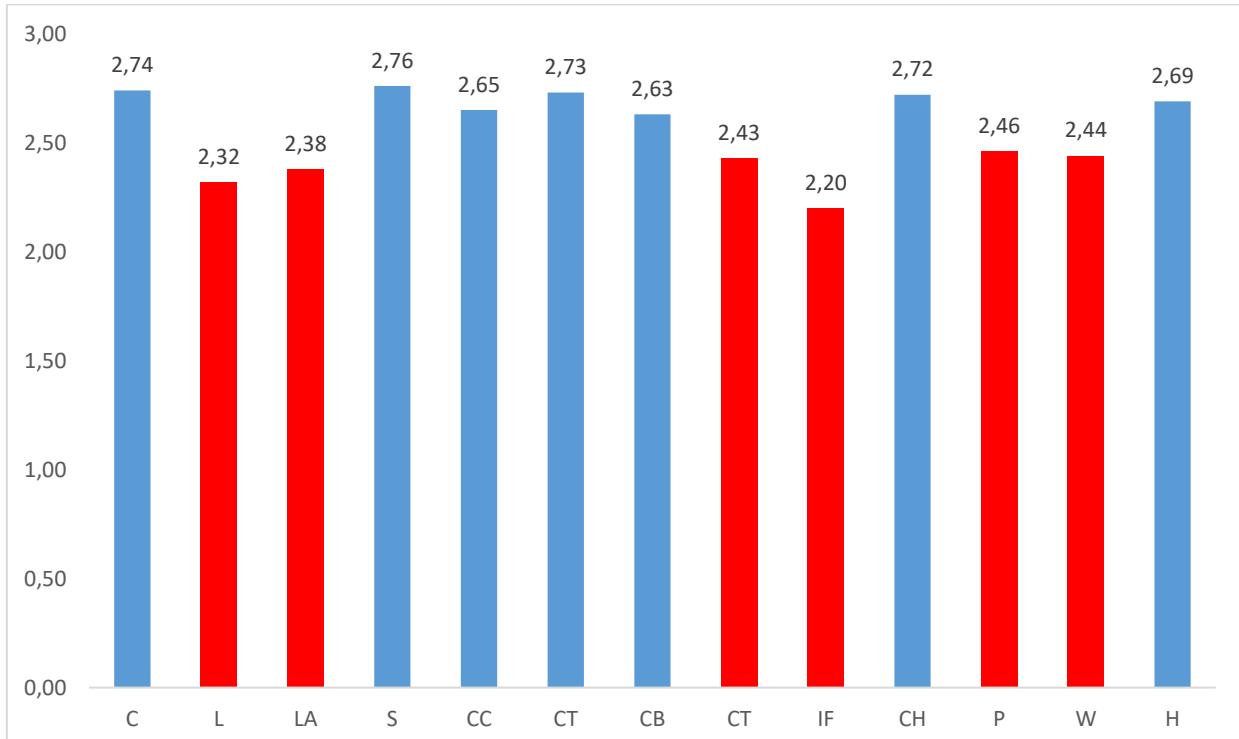
Research Question Two

What is the extent of utilization of school plant in public senior secondary schools in North - Central, Nigeria?

Table 2: Analysis of the extent of School Plant Utilization in Public Senior Secondary Schools in North - Central, Nigeria **n = 370**

S/N	Items	VHE	HE	LE	VLE	\bar{X}	S.D	Decision
14	Classrooms	125	88	93	64	2.74	.80	High Extent
15	Library	73	70	131	96	2.32	1.08	Low Extent
16	Laboratory	68	92	124	86	2.38	1.06	Low Extent
17	Sport field	132	93	70	75	2.76	.78	High Extent
18	Classroom chairs	120	90	69	92	2.65	.87	High Extent
19	Classroom tables	119	104	74	73	2.73	.82	High Extent
20	Chalk board	117	94	65	94	2.63	.89	High Extent
21	Computers	55	148	69	98	2.43	.98	Low Extent
22	Internet facilities	63	75	106	126	2.20	1.12	Low Extent
23	Charts	127	95	66	82	2.72	.82	High Extent
24	Photocopiers	63	133	85	89	2.46	.95	Low Extent
25	Workshops	74	122	68	106	2.44	.97	Low Extent
26	Hall	146	58	71	95	2.69	.85	High Extent
Section Mean						2.55	.92	High Extent

Table 2 presents the analysis of school plant utilization in public senior secondary schools in North - Central, Nigeria. According to the details of the results, the section mean of 2.55 is greater than the criterion mean of 2.50 and falls within the mean values range of 2.50 to 3.24. Thus, this implies that the extent of school plant utilization in public senior secondary schools in North - Central, Nigeria.



Key:	 High Extent
	 Low Extent
C =	Classrooms
L =	Library
LA =	Laboratory
SF =	Sports Field
CC =	Classroom Chairs
CT =	Classroom Tables
CB =	Chalk Board
CT =	Computers
IF =	Internet Facilities
CH =	Charts
P =	Photocopies
W =	Workshops
H =	Halls

Figure 2: Mean Score Distribution of Extent of School Plant Utilization in Public Senior Secondary Schools in North - Central, Nigeria.

Research Question Three

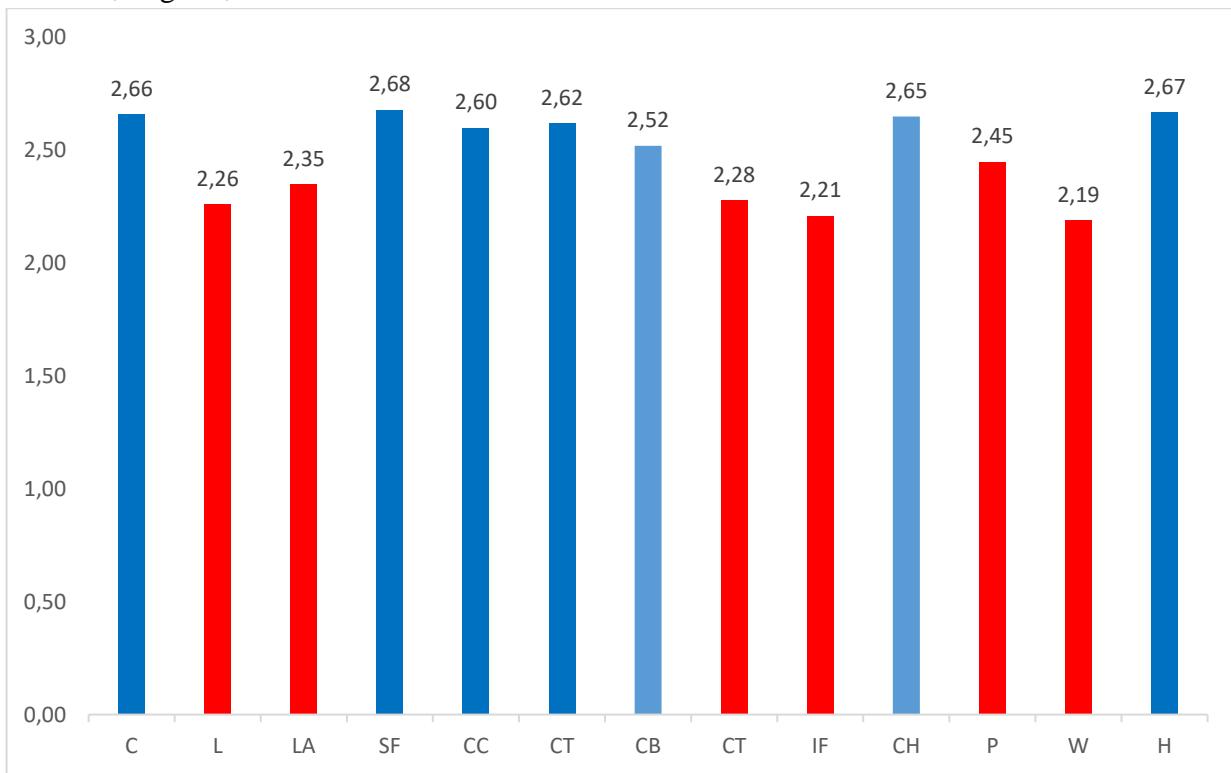
What is the extent of maintenance of school plant in public senior secondary schools in North - Central, Nigeria?

Table 3: Analysis of the extent of School Plant Maintenance in Public Senior Secondary Schools in North - Central, Nigeria n = 226

S/N	Items	VHE	HE	VLE	LE	\bar{X}	S.D	Decision
27	Ensures classroom tables are well arranged for effective teaching and learning.	73	53	52	48	2.66	85	High Extent
28	Ducts and tidy up library shelves.	43	41	74	68	2.26	1.09	Low Extent
29	Conducts a thorough laboratory inspection.	39	54	79	54	2.35	1.07	Low Extent
30	Mows and trims grasses on the sport field.	76	55	43	52	2.68	.84	High Extent
31	Cleans classroom furniture.	71	53	42	60	2.60	.89	High Extent
32	Repairs damaged classroom tables.	66	61	47	52	2.62	.87	High Extent
33	Re-darken the wear out chalk board.	64	56	40	66	2.52	.90	High Extent
34	Clean computers.	30	70	61	65	2.28	1.06	Low Extent
35	Ensure internet connectivity.	38	48	63	77	2.21	1.12	Low Extent
36	Ensures charts are properly secured to the wall.	73	56	41	56	2.65	.87	High Extent
37	Replaces photocopiers toner and cartridge.	40	79	50	57	2.45	.94	Low Extent
38	Maintain workshops electrical system.	32	61	51	82	2.19	1.15	Low Extent
39	Clean examination hall.	86	38	43	59	2.67	.85	High Extent
Section Mean						2.47	.96	Low Extent

Table 3 presents the analysis of school plant maintenance in public senior secondary schools in North - Central, Nigeria. According to the results, the section means of 2.47 is less than the criterion means of 2.50 and falls within the mean values range of 1.75 to 2.49. This

implies that the extent of school plant maintenance in public senior secondary schools in North - Central, Nigeria, is low.



Key: █ High Extent
█ Low Extent

C	=	Classrooms	CT	=	Computers
L	=	Library	IF	=	Internet Facilities
LA	=	Laboratory	CH	=	Charts
SF	=	Sports Field	P	=	Photocopies
CC	=	Classroom Chairs	W	=	Workshops
CT	=	Classroom Tables	H	=	Halls
CB	=	Chalk Board			

Figure 3: Mean Score Distribution of Extent of School Plant Maintenance in Public Senior Secondary Schools in North - Central, Nigeria.

Research Question four

What is the trend of students' academic performance in public senior secondary schools in North - Central, Nigeria from 2014 to 2023?

Table 4: Analysis of Trend of Students' academic performance in North - Central, Nigeria from 2014 to 2023

Year	No. of Candidates	4	3	2	1	\bar{X}	S.D	Decision
2014	45,774	7,938	6,956	16,986	13,894	2.20	1.14	Poor Performance
2015	48,876	9,235	9,389	13,673	16,579	2.23	1.08	Poor Performance
2016	47,273	11,135	7,689	12,765	15,684	2.30	1.05	Poor Performance

2017	49,352	13,887	6,452	19,775	9,238	2.51	.92	Good Performance
2018	50,987	14,972	19,866	6,341	9,808	2.78	.83	Good Performance
2019	49,429	15,389	18,973	7,025	8,042	2.84	.79	Good Performance
2020	52,837	17,967	16,428	8,139	10,303	2.80	.81	Good Performance
2021	51,724	17,565	19,862	6,362	7,935	2.91	.74	Good Performance
2022	54,651	18,772	20,783	7,409	7,687	2.92	.70	Good Performance
2023	57,839	19,886	25,694	3,221	9,038	2.98	.65	Good Performance
Total	508,742	146,74	152,09	101,696	108,208	2.65	.87	Good performance
		6	2					
		(100%)	(29%)	(30%)	(20%)	(21%)		

Highest mean score = 2.98

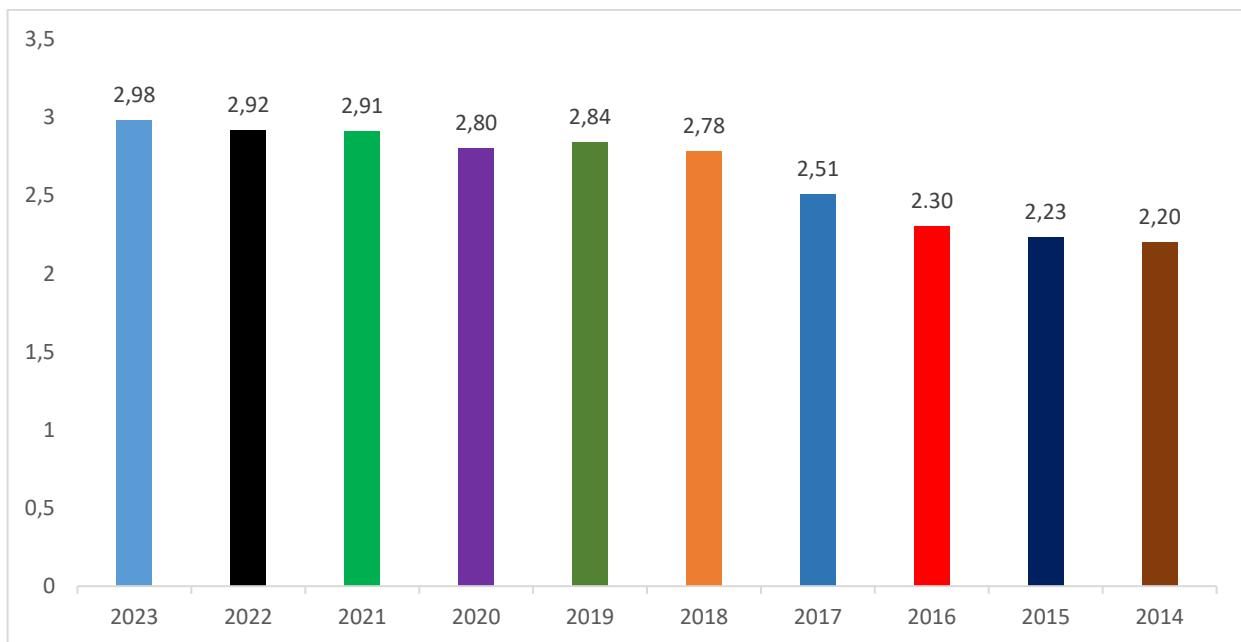
Average mean score = 2.65

Lowest mean = 2.20

Table 4 presents the analysis of the trend in students' academic performance in SSCE results in North - Central, Nigeria from 2014 to 2023. According to the results of the analysis, a total of 508, 742 students sat for the SSCE in the sampled public secondary schools from 2014 to 2023. Out of this number, 146,746 students (29%) had 5 credits and above including Mathematics and English Language; 152,092 students (30%) had 5 credits with either Mathematics or English Language; 101,696 students (20%) had 5 credits with neither Mathematics nor English Language; while 108,208 students (21%) had less than 5 credits or no credit.

As observed in the results, the highest mean academic performance of 2.98 was recorded in 2023; while the lowest mean academic performance of 2.20 was recorded in 2014. Cumulatively, from 2014 to 2023, the average mean academic performance for students was 2.65. This indicates that there was a good academic performance of students in the SSCE results in public senior secondary schools in North - Central, Nigeria from 2014 to 2023.

Fig. 4 shows the rank Order Distribution of Students' Mean Academic Performance Scores in SSCE Results in North - Central from 2014 to 2023



Key: 2023



2018





Figure 4: Rank Order Distribution of Students' Mean Academic Performance Scores in SSCE Results in North - Central from 2014 to 2023

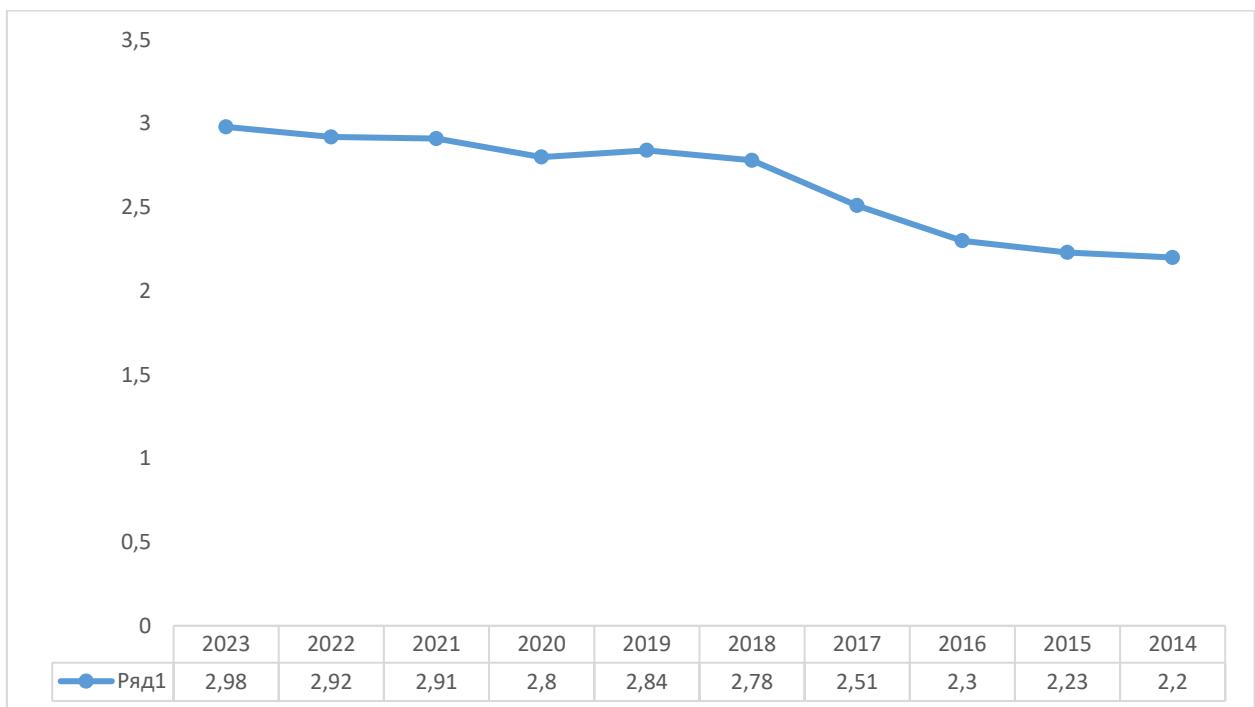


Figure 5: Graphical Representation of the Students' Mean Academic Performance Scores in SSCE Results in North - Central from 2014 to 2023

Test of Hypotheses

In this section, three null hypotheses were tested at 0.05 alpha level. The results of the test of hypotheses are presented in Tables (1 – 3).

H01: There is no significant relationship between school plant availability and students' academic performance in public senior secondary schools in North - Central, Nigeria.

Table 5: Linear Regression Analysis of Significant Relationship between School Plant Availability and Students' Academic Performance in Public Senior Secondary Schools in North - Central, Nigeria

R	R square	Adjusted R Square	Std. Error of Estimate	Extent of Prediction	Sig.	Decision
.467	.218	.215	.03761	21.80%	.027	Rejected

* $p < 0.05$ = Significant relationship

The computed correlation coefficient of .467 in Table 1 shows that there is a high positive relationship between the variables. With the probability value ($p = .027 < 0.05$) less than the alpha level of 0.05, the null hypothesis is rejected. This implies that there is significant relationship between school plant availability and students' academic performance in public senior secondary schools in North - Central, Nigeria. The R2 value of .218 shows that 21.80% of the variance in students' academic performance is predicted by school plant availability.

H02: There is no significant relationship between school plant utilization and students' academic performance in public senior secondary schools in North - Central, Nigeria.

Table 6: Linear Regression Analysis of Significant Relationship between School Plant Utilization and Students' Academic Performance in Public Senior Secondary Schools in North - Central, Nigeria

R	R square	Adjusted R Square	Std. Error of Estimate	Extent of Prediction	Sig.	Decision
.526	.276	.273	.001643	27.6%	.014	Rejected

* $p < 0.05$ = Significant relationship

The computed correlation coefficient of .526 in Table 2 shows that there is a high positive relationship between the variables. With the probability value ($p = .014 < 0.05$) less than the alpha level of 0.05, the null hypothesis is rejected. This implies that there is significant relationship between school plant utilization and students' academic performance in public senior secondary schools in North - Central,

Nigeria. The R2 value of .276 shows that 27.6% of the variance in students' academic performance is predicted by school plant utilization.

H03: There is no significant relationship between school plant maintenance and students' academic performance in public senior secondary schools in North - Central, Nigeria.

Table 7: Linear Regression Analysis of Significant Relationship between School Plant Maintenance and Students' Academic Performance in Public Senior Secondary Schools in North - Central, Nigeria

R	R square	Adjusted R Square	Std. Error of Estimate	Extent of Prediction	Sig.	Decision
.391	.153	.149	.002829	15.3%	.044	Rejected

* $p < 0.05$ = Significant relationship

The computed correlation coefficient of .391 in Table 3 shows that there is a low positive relationship between the variables. With the probability value ($p = .044 < 0.05$) less than the alpha level of 0.05, the null hypothesis is rejected. This implies that there is significant relationship between school plant maintenance and students' academic performance in public senior secondary schools in North - Central, Nigeria. The R2 value of .153 shows that 15.3% of the variance in students' academic performance is predicted by school plant maintenance.

4.2 Summary of Findings

1. Classrooms, Sports field, Classroom chairs, Classroom tables, Chalkboard, Educational charts, and Halls are the types of available school plant while Library, Laboratory, Computers, Internet facilities, Photocopiers and Workshops were not available in public senior secondary schools in North - Central, Nigeria.

2. There is a high extent of school plant utilization in public senior secondary schools in North - Central, Nigeria.

3. There is a low extent of school plant maintenance in public senior secondary schools in North - Central, Nigeria.

4. There is a good trend in students' academic performance in SSCE results in public senior secondary schools in North - Central, Nigeria.

4.3 Discussion of Findings

The study found that classrooms, sports field, classroom chairs, classroom tables, chalkboard, educational charts and halls are the type of available school plant in public senior secondary schools in North - Central, Nigeria. The findings of the study also revealed that library, laboratories, computers and internet facilities, photocopiers and workshops were not readily available in public senior secondary schools in North - Central, Nigeria. The study of Moyaka

(2019) found out that most facilities needed for teaching and learning are available in most public day secondary schools in Kiyii County, Kenya. The study of Ojeniyi and Adegbesan (2019) also established availability of school plant and facilities in secondary schools in Ogun State. In contrast, the studies of Olugbenga (2019), Awwal and Munir (2021), and Salami and Gbenu (2021) produced other results. Olugbenga (2019) found that most school plant and facilities were not available in public senior secondary schools in Kaduna State. Awwal and Munir (2021) observed that facilities such as laboratories, classrooms, sports equipment, and utilities were not adequately provided in public senior secondary schools in Niger State. The study of Salami and Gbenu (2021) found that school plant provision was poor in government technical colleges in South West, Nigeria.

The study established that there is a high extent of utilization of available school plant in public senior secondary schools in North - Central, Nigeria. This finding is similar to that of Avundaa et al (2023) who found that school plant are utilized to a high extent in public senior secondary schools in Rivers State. The finding however differs from those of Iheonunekwu and Anyatonwu (2014), and Awwal and Munir (2021). Iheonunekwu and Anyatonwu (2014) found that utilization of school plant was low in Ohafia Education Zone in Abia; Awwal and Munir (2021) observed that school plant were not adequately utilized in public senior secondary schools in Niger State.

The study found that there is a low extent of school plant maintenance in public senior secondary schools in North - Central, Nigeria. This finding is in line with the study of Eboatu and Agogbua (2018), Ebimuna (2021) and Mohammed (2020), but in contrast with the findings of Olugbenga (2019). Eboatu and Agogbua (2018) found that school plant are well maintained in secondary schools in Oyi Local Government Area of Anambra State. Ebimuna (2021) found that there is adequate maintenance of school plant in public senior secondary schools in Bayelsa State. Mohammed (2020) found that school plant maintenance was at a moderate extent in some public senior secondary schools in the North East. However, the study of Olugbenga (2019) revealed that maintenance culture of available school plant is a major problem in secondary schools in Kaduna State.

The study found that there was a good performance of students in the SSCE results from 2014 to 2023 in public senior secondary schools in North - Central, Nigeria. This finding is synonymous with the findings of Aniekop (2023) who found that there is a good performance of students in the SSCE results in public senior secondary schools in South-South, Nigeria. The study found that there is a significant relationship between school plant availability and students' academic performance in public senior secondary schools in North - Central, Nigeria. This finding is related to the study of Ojeniyi and Adegbesan (2019) which revealed that there is significant relationship between availability of school plant and students' academic performance in secondary schools in Ogun State, Nigeria.

The study found that there is significant relationship between school plant utilization and students' academic performance in public senior secondary schools in North - Central, Nigeria. In contrast, the study of Iheonunekwu and Anyatonwu (2014) found that there was no significant relationship between school plant utilization in secondary schools in Ohafia Education Zone in Abia State. On the other hand, the studies of Badamasi and Mohammed (2019) and Awwal and Munir (2021) found that utilization of school facilities had predictive ability on students' academic achievement in Adamawa State.

The study found that there is significant relationship between school plant maintenance and students' academic performance in public senior secondary schools in North - Central, Nigeria. The finding is supported by the findings of the studies of Ebimuna (2021), and Badamasi and Mohammed (2020). Ebimuna (2021) found that there is significant relationship between school plant maintenance and students' academic performance in public senior secondary schools in Bayelsa State. The study of Badamasi and Mohammed (2020) found that maintenance of school facilities had predictive ability on students' academic performance in public senior secondary schools in Adamawa State.

The findings of the study revealed that there is significant relationship between school plant management and students' academic performance in public senior secondary schools in North - Central, Nigeria. This finding is associated with the studies of Jimoh et al (2017), Briggs et al (2018), Ohia (2018), Atolagbe (2019), Azever et al (2019), Kakaba and Emechebe (2020), Nbina (2021), Aliyu et al (2022), Amadi and Amadi (2020), Abiodun et al (2020).

The study of Jimoh et al (2017) found that school plant had significant influence on secondary school students' academic performance in Economics in Ondo State. Briggs et al (2018) observed that there was a significant relationship between school plant and academic performance of secondary school students in Rivers State. The study of Ohia (2018) established a positive relationship between teachers' school plant management and students' academic performance in Chemistry in Orlu Education Zone, Imo State. The study of Atolagbe (2019) revealed that a significant relationship existed between school plant and students' academic performance in Osun State. The study of Azever et al (2019) found that recreational facilities have significant influence on students' academic performance in Makurdi Education Zone, of Benue State. Kakaba and Emechebe (2020) observed that the management of school physical facilities have significant impact on students' academic achievement. The study of Nbina (2012) revealed that there is significant relationship between teachers' competence and students' academic performance in senior secondary school Chemistry in Rivers State.

4.3 Conclusion and Recommendations

This study has investigated school plant management and students' academic performance in public senior secondary schools in North – Central, Nigeria. The study revealed that school plant management supported effective students' academic performance. Thus, school plant management variables of availability, utilization and maintenance showed positive relationship with students' academic performance in public senior secondary schools in North – Central, Nigeria.

This indicated a good trend in general performance of secondary school students in public senior secondary schools in North – Central, Nigeria, from 2014 to 2023 academic session.

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

1. School Principals should collaborate with local communities, PTA, NGO, alumni, to solicit funds to purchase those school plant that were not available in order to improve teaching and learning in public senior secondary schools in North – Central, Nigeria.
2. School principals should create a utilization long- term plan for school plant that sustains the high extent of school plant utilization in order to promote quality of teaching instruction.
3. School principal should collaborate with state secondary education board to ensure that school plants are regularly maintained by proposing a framework for sustainable maintenance practices that can be adopted by schools with limited budgets and resources in public senior secondary schools in North - Central, Nigeria.

4. School principals should ensure school plant management and adherence of teachers to TRCN regulations to sustain the good trend of students' academic performance in SSCE results in Public senior secondary schools in North – Central, Nigeria, from 2014 – 2023 academic sessions.

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