

Using Educational Facility Quality Indicators (EFQI) In Evaluating Quality of Educational Facilities in Public Primary and Secondary Schools in Kaduna State, Nigeria

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Abstract

This paper is aimed at examining the quality of education in public primary and secondary schools in Kaduna State using Educational Facility Quality Indicators and provide up to date information on public schools and its facilities. The study used field survey to collect information on public schools by oral interview was administered to the teachers and students. It also used Educational Facility Assessment Form for assessment of facilities through field observation. Multistage sampling method was adopted to select nine LGAs within the three senatorial zones of the state. Descriptive statistics was used for data analysis using Statistical Package for the Social Sciences (v25). Pearson Correlation employed to determine the existence of relationship between the physical conditions of educational facilities in public schools. The finding of the study revealed that Lere Local Government Area (LGA) have the highest number of classrooms (1549) while Kajuru LGA have the lowest (947). Also Kaduna South LGA have the highest ratio of classroom per school (19:1) while Chikun LGA lowest (4:1). The study revealed that Lere and Chikun LGAs have the highest number of teaching staff while Kaduna South LGA have the lowest number of teaching staff. The study further revealed that Zaria LGA have the highest ratio of student to teacher 80:1; Birni Gwari LGA (71:1); Chikun LGA (65:1) while Kajuru LGA have the lowest (46:1). Chikun LGA has the highest ratio of students per classroom (104:1) while Kaduna South LGA have the lowest (28:1). It found that the existing facilities has not been properly maintained and in many case poor funding is a major factor. The study therefore, recommends the implication of the UNESCO's benchmark of demands 26% annual budget and 6% of the gross domestic product be invested in public schools and educational facilities in the state.

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I. Introduction

Quality of education as a set of elements containing input, process and outcome of educational system Cheng and Cheung (1997). According to Santos (2007) in a transitional school quality model is characterized by test scores and various input which includes student/pupil background and enrollment, school characteristics, teacher characteristics and student innate ability. The indicators of education quality identified by Thaug (2008), Figueroa, Lim and Lee (2016) and Abraha (2019) includes learner (student/pupils), teachers, content, teaching-learning process, learning environment and outcomes.

UBE (2006), FRN (2016) and FRN (2017) had observed some of the quality issues affecting education in Nigeria. These included: inadequate budgetary provision; low presence of inspectors/supervisors; late release of fund; inadequate reporting system; non-prescription of sanctions for non-compliance to guidelines; low achievement and others. Added to these are the concomitant issues of dearth of quality infrastructure, including furniture, equipment and facilities; and the fact that some of the existing ones fall below the expected minimum standard specifications in terms of quality and quantity that will make the desired impact in efficient educational service delivery. According to Figueroa *et al.* (2016) and Abraha (2019) the quality of education in a school influences the quality of learning environment.

Indicators of quality in the educational context include quality teachers and learners, quality content of curriculum, quality instruction, child friendly learning environment (physical and aesthetical) and quality outcomes, which includes academic achievement (UBE, 2004, FRN, 2016). Quality of education is an important issue for attaining the goals of education for all (EFA) and Sustainable Development Goals (SDGs) number 4. The EFA Goal 6 targets improving all aspects of the quality of education and to ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all especially illiteracy, number and essential life skills. Thus, the quality dimension has become imperative in the provision of education. While the SDG 4 emphasises on provision of equitable and inclusive quality education and life-long learning opportunities for all

(UNESCO, 2017). Nigeria domesticated the SDG 4; to ensure that all girls and boys complete free, equitable and quality primary and secondary education (Shittu, 2015).

Abraha (2019) used education quality indicators such as pupil-teacher ratio, class-student ratio served population, availability of school infrastructures (toilet, bath, water supply, electricity and library). The study found that pupil-teacher ratio (PTR) in Gambela city ranges from 50:1 to 60:1 while emerging regions like Ethio-Somali has the highest STR at 63 students for every teacher and the pupil-class room ratio in Gambela ranges from 1: 50 to 1:153. It also found that low teachers' qualification, low teachers' motivation, limited teachers' building capacity, ineffective school leadership, low participation of parents, lack of adequate school facilities, overcrowded classes, low quality of classrooms which were seemingly deteriorating, high pupil teacher ratio, lack of instructional materials, shortage of textbooks and uneven school distributions were the underlying causes for the low education quality.

Fabunmi and Okore (2000) pointed out the significance of teacher-pupil ratio to cognitive learning in the school. Uwheraka (2005) revealed that facilities were below approved standard could also lead to reduction in quality of teaching and learning in school resulting to poor student academic performance. In the same vein, Olutola (2000) emphasized that those facilities such as desks, seat, chalkboard, teaching aids are ingredient for effective learning. Mohammed (2009) revealed shortage of classroom has made parents to withdraw their kids from school. Odeh, Oguche, and Ivagher (2015) assessed influence of school environment on academic achievement of students in secondary schools in Zone A Senatorial District of Benue State. The study revealed that school climate, discipline and physical facilities have significant influence on academic achievement of secondary school students in Benue State. Tsavga (2011) did a similar work in Tarkaa Local Government Area of Benue State and had same outcome. Likewise, Bulti, Bedada and Diriba (2019) also had same outcome in Bishoftu Town, Ethiopia.

The investigation into the quality of education has been existing around the globe and in Nigeria. This is not only important in the understanding of the nature of development of a nation but also assist in knowing where interest and investment should be channelled. This paper proposed that one reason why the standards of quality of education have fallen in the state is due to inadequate basic facilities in schools. The effect of the physical facilities on educational outcomes and its impact on the quality of schools is due of inadequacy of knowledge about these relationships. This paper therefore is aimed at evaluating the quality of education in public primary and secondary schools in Kaduna State using the Educational Facility Quality indicators.

II. Methods and Material

A multistage sampling technique was used to obtain a representative sample of public schools in the selected LGAs across the state. The first stage involved the stratification of the state by senatorial zones. The second stage was the purposive selection of the three urban LGAs from each of the three senatorial zones. The third stage was the randomly selection 2 LGAs from each three senatorial zones considered semi-urban and rural areas. The study covered only public primary and secondary schools within Kaduna State, which involved the identification and location of all public primary and secondary schools. It covers nine (9) LGAs in Kaduna State that is three (3) LGAs from each of the three senatorial districts. Kaduna Central Senatorial Zone (Kaduna South, Chikun, Birnin Gwari LGAs) Kaduna North Senatorial Zone (KNSZ) (Zaria, Lere and Soba LGAs) and Kaduna South Senatorial Zone (KSSZ) (Jemaa, Kagarko and Kajuru LGAs). The choice of nine LGAs out of the 23 LGAs in the State was enable the study to assess of each school and covering 40% of the LGAs. The inventory of the existing public schools was obtained from Kaduna State Ministry of Education, Science and Technology (MOES&T) and administrative map from Kaduna Sate Geographic Information Services (KADGIS). The study used field survey to collect information on public schools by oral interview was administered to the teachers and students. It also used Educational Facility Assessment Form (EFAF) for assessment of facilities through field observation. Multistage sampling method was adopted to select nine LGAs within the three senatorial zones of the state. Descriptive statistics was used for data analysis using Statistical Package for the Social Sciences (v25). Pearson Correlation employed to determine the existence of relationship between the physical conditions of educational facilities in public schools. Educational quality indicator (EQI) was used to measure the variables such as Student-Teacher Ratio (STR), demonstrating the ratio of the number of students to number of teachers. Student-Classroom Ratio (SCR) expressing the rate of students per classroom in each pubic school in each LGA. Average Number of Classroom (ANC), that is the total number of classrooms per school. Average Number of Staff (ANS) representing the number of staff in each public school and average for each LGA was taken. Physical Conditions of Facilities (PCF) signifying the average condition of educational facilities at public school in each LGA.

Study Area

Kaduna State is located at mid-central portion of the Northern parts of Nigeria and serves as a major gate way to important traditional, political and commercial states of Kano, Katsina, and Sokoto (Hena, 2014;

Bako, Maiwada, Abubakar and Akwo, 2016). The Kaduna State is located between Latitudes $9^{\circ} 03'$ and $11^{\circ} 32'$ North of the Equator and Longitudes $6^{\circ} 05'$ and $8^{\circ} 38'$ East of the Greenwich Meridian (Figure 1). Kaduna State has 23 LGAs and Kaduna is the capital (Figure 2). Kaduna State experiences a tropical continental climate with two distinct seasonal climates, dry and rainy seasons (Hena, 2014). The annual average rainfall in the state is about 1323mm. The average daily minimum and maximum temperatures are 15.1° and 35.18° degrees Celsius (Nwude, 2006; Akpu, 2012; Hena, 2014; Bako *et al.*, 2016). Kaduna State extends from the tropical grassland known as the Guinea Savannah to Sudan Savannah (Nwude, 2006). Kaduna State is third most densely populated states in Nigeria. The population of the state according to 2006 National Census stands at 6,113,503 and has 3.18% growth rate (National Population Commission, 2009) and 2017 projected population stands at 8,147,161 (KDSG, 2017a; NBS, 2017). The state's population structure shows that majority of the citizenry lives in urban and semi urban towns like Kaduna, Zaria, Kafanchan, Kagoro, Zonkwa, Birnin Gwari, Makarfi and Zangon Kataf. Twenty-two percent (22%) of the population are infants, aged between 0-5 years while 18% are children aged 6-11 years (KDSG, 2017b).

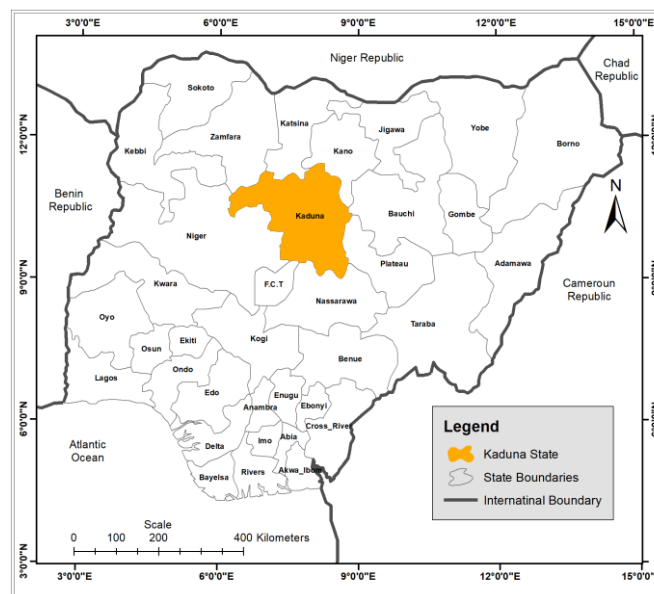


Figure 1: Kaduna State in Nigeria
Source: KADGIS (2017)

III. Results

The study examined the effects of average number of classroom and staff per school, the ratios of student-teacher and student-classroom and the physical conditions of facilities as indicators of the quality of education offered by the schools.

Analysis of Average Number of Classroom (ANC): The result reveals Lere LGA have the highest number of classrooms (1549) while Kajuru LGA have the lowest (947). However, the analysis shows that Kaduna South LGA have the highest ratio of classroom per school (19:1) and Zaria LGA with 10:1 while Birnin Gwari and Kajuru LGAs have 6:1. The outcome of analysis reveals that Chikun LGA have the lowest (4:1) while the rest LGA have 5:1 (Lere, Soba, Kagarko and Jema'a LGAs) (Figure 2).

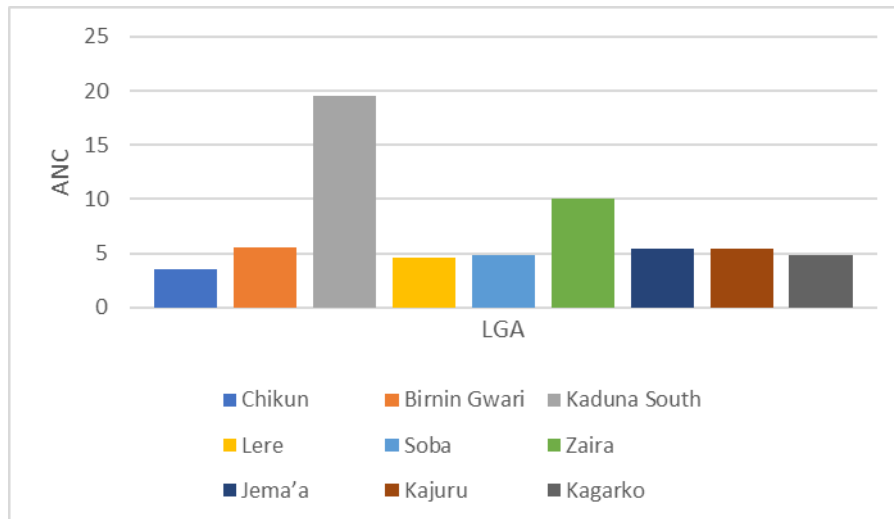


Figure 2: Average Classroom per School across Selected LGAs
Source: Fieldwork (2018)

The minimum number of classrooms as set out by the Federal Ministry of Education (FMOE) is six (6) classrooms per school which implies one classroom per class grade (FRN, 2017). Thus, Lere, Soba, Kagarko and Jema'a LGAs do not meet this standard. The implications of public schools where there are shortage of classrooms includes students studying in open space and on the floor (Plates 1a and 1b).



Plate 1a: LGEA Primary School, Ungwan Tudu, Soba LGA



Plate 1b: LGEA Ungwan Sarki, Soba LGA

Analysis of Average Number of Staff (ANS): The result reveals that Lere and Chikun LGAs have the highest average number of teaching staff with 86% and closely followed by Jema'a and Kajuru KGAs while Kaduna South LGA have the lowest average number of teaching staff (59%) (Figure 3).

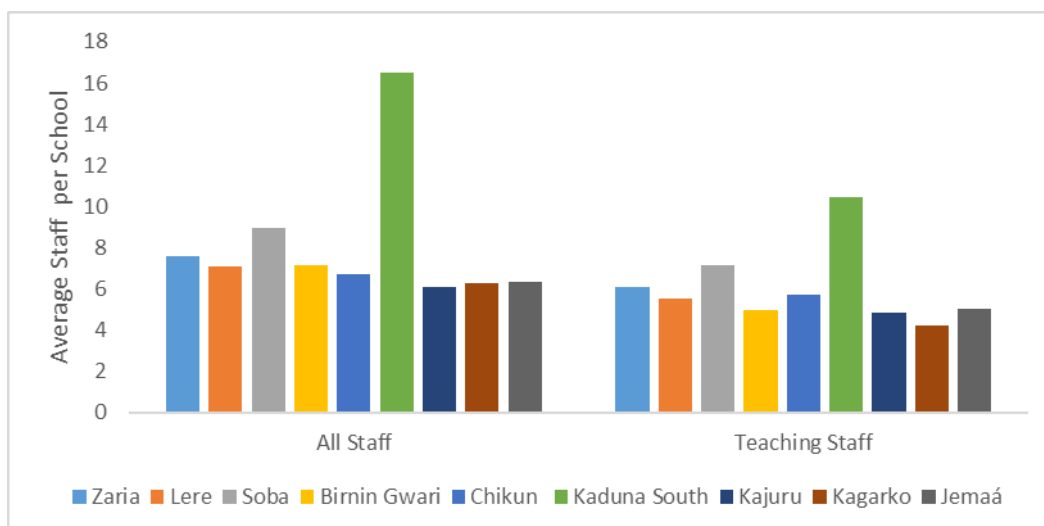


Figure 3: Average Number of All Staff and Teaching Staff at LGA Level
Source: Fieldwork (2018)

However, Kaduna South LGA have the highest number of both teaching and non-teaching staff (all staff) with the average of 17 staff per school while Soba LGA and Zaria LGA have nine and eight staff per school. Lere, Chikun and Birnin Gwari LGAs have the least of seven staff per school. The high number of both teaching and non-teaching staff (all staff) in Kaduna South LGA may be due to the fact that it's part of the state capital and many senior civil servants ensure that their wives are in urban LGAs. This implies that the rural LGAs are not well served with teaching and non-teaching staff. A further probe finds that many teachers prefers to work in urban areas where there are basic social infrastructures such as water, road, hospital, housing and security. One of the teachers who was teaching in School, Birnin Gwari LGA but got transferred to Kaduna South LGA had this to say;

"I was robbed three times on my way to school and on one occasion we went to market in Kaduna to shop for my family and the road was blocked for two hours. I lost all the materials and items I bought and even one of the young ladies was raped...." (Mrs. Deborah Balat, UBE, Fadan Kagoma, Jema'a LGA)

The result further shows that Kaduna North and Kaduna Central Senatorial Zones (KNSZ & KCSZ) have the highest average number of both teaching and non-teaching staff (all staff) and teaching staff. The result also reveals that three out of every staff in KNSZ and KCSZ are teaching staff while one fourth are non-teaching staff. However, in KSSZ, 17 out of every 20 staff are teachers while the rest are mostly security men and cleaners (Figure 4).

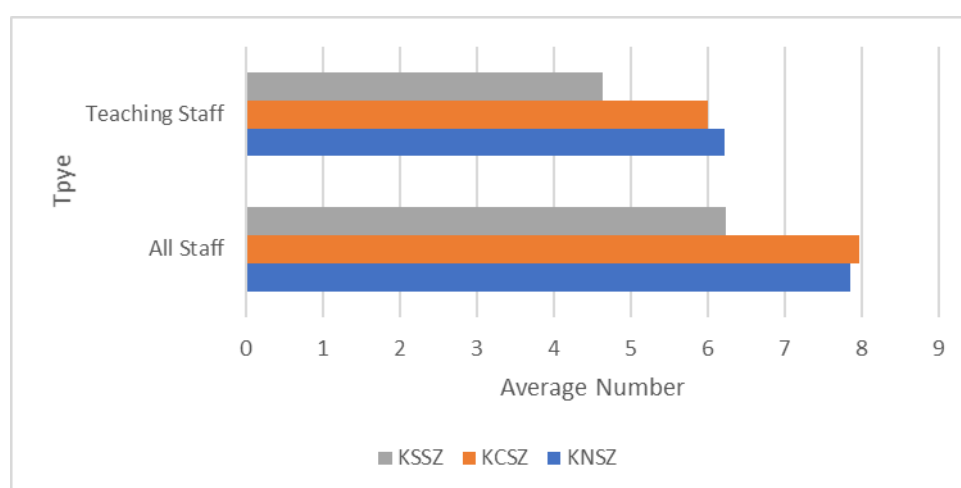


Figure 4: Average Number of Staff and Teaching Staff at Senatorial Level
Source: Fieldwork (2018)

The implications are that many educational facilities in KSSZ do not have non-teaching staff. These staff provide supportive services in the schools such as cleaning, game masters, health officers and security which add value to the educational quality. This is evident in the conditions of educational facilities in LGEA Primary School Babu Ciki in Kagarko LGA, which is in KSSZ (Plate 2).



Plate 2: LGEA Primary School, Babu Ciki, Kagarko LGA
Source: Fieldwork (2018)

- i. **Analysis of Student-Teacher Ratio (STR):** The result shows that Zaria LGA have the highest ratio of student to teacher 80:1 and Birni Gwari LGA have 71:1 while Chikun LGA have 65:1. The analysis also reveals that Kajuru LGA have the lowest ratio of 46:1 while Kagarko LGA have 48:1 and Soba LGA have 49:1 (Figure 5).

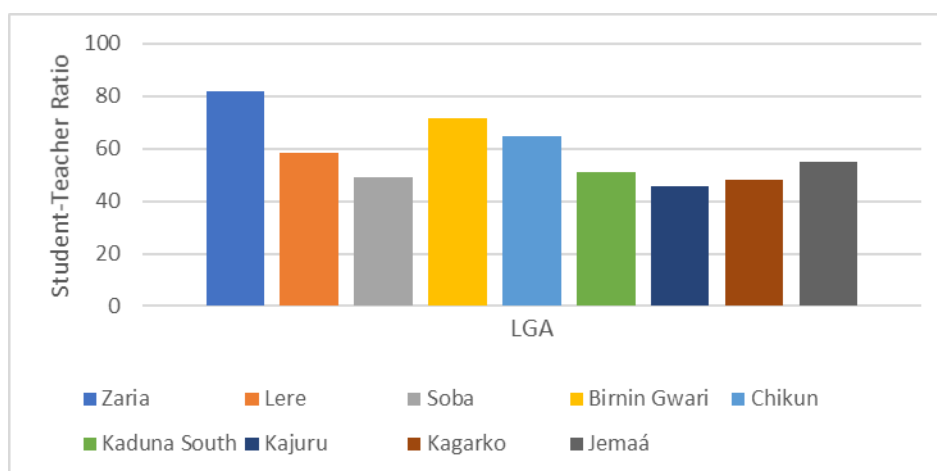


Figure 5: Student-Teacher Ratio in Selected LGAs
Source: Fieldwork (2018)

It is equivalent to the number of students in relation to the total amount of teachers according to education level, administrative dependency, region and geographic area. The result shows that all the selected LGAs have ratios higher than the standard set by Federal Ministry of Education of 40:1 for primary and 35:1 for secondary schools. This is in agreement with UNESCO (2009), Mulei, Waita, Mueni, Mutune and Kalai (2016), Abraha (2019) that the ratio of student-teacher in most developing nation are over 40 students per teacher. This may be because of the state government enough to increase the student's enrolment have work. This is agreement with KSBS (2018) which stated that students enrolment increased by 5.4% in 2016/2017 and 10.1% in 2017/2018. However, this increase is without equal increase in teachers. Accordingly, this high ratio of STR is one of the major factors that affects educational facilities in the state. The implications are that the quality of education in these school does not meet the minimum standards as expected by the FMoE. Gokce, Kayia, Aktas and Kantar (2016) and Abraha (2019) determined that higher student teacher ratio (STR) affects the student's self-confidence, cooperation, sense of belonging and behavioral changes while low STR promotes participation and confidence of the students.

Analysis of Student-Classroom Ratio (SCR): The analysis of the student-classroom ratio reveals that Chikun LGA has the highest ratio of students per classroom of 104:1 while Kaduna South LGA have the lowest of 28:1 (Figure 6). In Nigeria, the standard set for student-classroom ratio (SCR) is 40 at primary and 35 at secondary level (FRN, 2017) while the optimal ratio set at 35 which was supposed to have been in place by 2016 (UBE, 2006). This National standards of ratio of students to classroom of 35:1 is only achieved in Kaduna South LGA. However, the study also shows that Kagarko LGA (42:1) and Kajuru LGA (41:1) are very close while Zaria LGA (50:1) and Jema'a LGA (51:1) are following. Lere LGA (70), Soba (74) and Birnin Gwari LGA (64) are ranging higher.

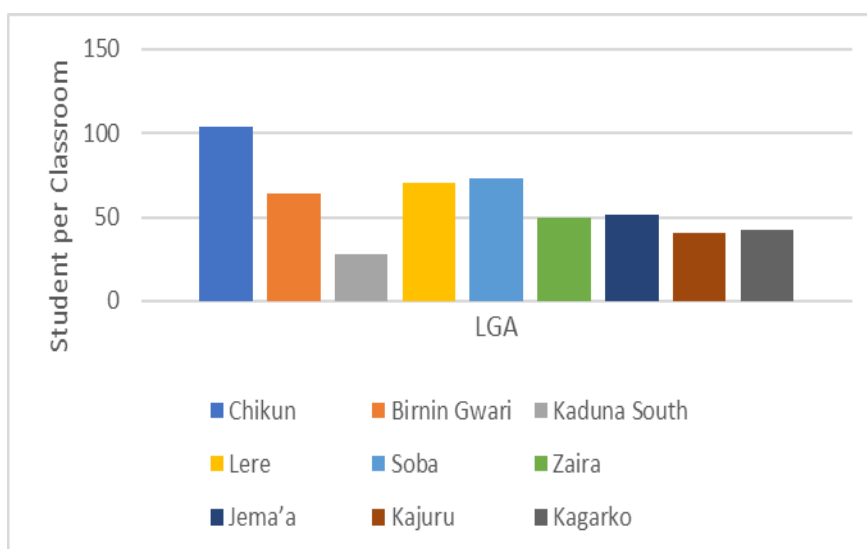


Figure 6: Student-Classroom Ratio in Selected LGAs
Source: Fieldwork (2018)

The implications are that the students will not have the quality education with classrooms over populated. This will result in overstressing of the classroom furniture's and learning materials. This implies that there were limited number of classrooms in each school. In actual sense, during the field visit, it was noticed that classrooms were overcrowded and there was competition for the resources (book, chair and facilities). Blatchford, Bassett and Brown (2011) and Abraha (2019) clarified that smaller classes led to pupils to get attention, support and can create active interaction among pupils and teachers. In the contrary, higher number of students in class cannot participate in the class and interact with their teachers. The poor conditions of classrooms can lead to lower performance of the students and hence education quality. Figueroa *et al.* (2016) and Blatchford *et al.* (2011) argued that the number of students in a class is a primary factor affecting the quality of education.

Analysis of Physical Conditions of Facilities (PCF): The analysis reveals that the highest score for any of the facilities is 3 points (in a scale of 5) which indicates fairly good, for classroom conditions in Chikun, Kaduna South, Jema'a and Kagarko LGAs (Table 1). The result also shows that Birnin Gwari have the lowest in the physical conditions of all assessed facilities. The findings of this study are that the school environment was not attractive as the environment in and outside the educational facilities are not kept clean. The basic minimum facilities required in a school are classrooms, administrative office, store, toilet, bath, library, playground, water and fence around the facilities are not provided as required by FRN (2017).

Table 1: Physical Conditions of Educational Facilities in Selected LGAs

LGA	Classroom	Office	Student Toilet	Staff Toilet	Water Supply	Library	Workshop	Sport	First aid box	Fence
Chikun	3	2.100	1.915	1.465	1.475	1.495	1.510	1.445	1.455	1.450
Birnin Gwari	1	1.294	0.818	0.726	0.815	0.637	0.617	0.842	0.686	0.607
Kaduna South	3	2.172	2.438	1.484	1.250	1.406	1.109	0.969	1.828	1.313
Lere	2	2.000	1.289	1.190	1.324	1.054	1.033	1.289	1.027	1.110
Soba	2	2.081	1.297	1.176	1.396	1.029	1.004	1.304	0.993	1.110
Zaria	2	2.173	1.327	1.167	1.507	1.040	1.000	1.453	0.980	1.193
Jema'a	3	2.172	2.438	1.484	1.250	1.406	1.109	0.969	1.828	1.313

Kagarko	3	2.650	2.438	1.654	1.450	1.486	1.877	1.980	1.828	1.363
Kajuru	2	1.653	1.912	1.676	2.047	2.047	2.047	2.047	1.835	2.035

Source: Fieldwork (2018)

The result shows the poor condition of classroom due to lack of store room which resulted in using part of the classroom for storing reading materials at UBE Primary School, Dafako (Plates 3) and LGEA Primary School, Danhonu, Chikun LGA (Plate 5). While Plate 4 shows the very poor condition of educational facility at LGEA Primary School, Zankoro Chikun LGA. However, this finding is in agreement with Abraha (2019) that lack of adequate school facilities and overcrowded classes were major causes of low education quality.



Plate 3: UBE Primary School, Dafako, Chikun LGA Plate 4: LGEA Primary School, Zankoro, Chikun LGA
Source: Fieldwork (2018)



Plate 5: Classroom used as Store at LGEA Primary School, Danhonu, Chikun LGA
Source: Fieldwork (2018)

This is in agreement with the findings of Abraha (2019) that schools in Gambela city, were not attractive and not equipped with necessary facilities like toilet, bath, library, recreational space and office facilities This implies that lack of those facilities has great impact on the education quality. Physical condition of classrooms and their internal facilities have direct and indirect impact on teaching and learning process (King'oina, Kadenyi and Mobegi, 2017). However, schools in developing countries are suffering from lack of school facilities and substandard class rooms (Ngigi, Musirega and Mulefu, 2012). When schools are not equipped with facilities like play fields, recreational areas and other outdoor services social bonds among students' decline (Nepal and Maharjan, 2015). According to Button, Trites and Janssen, (2013) this situation will harm students' effort to share knowledge and to work in team spirit in the teaching and learning process. This finding is also in agreement with the findings of Alsuiadi (2015), which discovered that parents choose

schools based on the quality of the educational facilities available, classroom, library, toilet and good environment were the leading reason for sending their wards to a school in at Riyadh City Saudi Arabia.

Pearson Correlation employed to determine the existence of relationship between the physical conditions of educational facilities in public schools. The result reveals that there is a significance relationship between classroom and staffroom as well as first aid box and classroom (0.798 at $p < 0.01$), first aid box and toilet (0.960 at $p < 0.01$) first aid box and library (0.798 at $p < 0.01$), first aid box and workshop (0.798 at $p < 0.01$) (Table 2). The result further shows that 94.9% fenced school to have a workshop while there is 56.7% chances of a fenced school to have good sport facilities. The result reveals a significant relationship between sport facilities and library (0.667 at $p < 0.05$), also separate toilet and water supply (0.711 at $p < 0.05$). The result also reveals that there is positive correlation in the other relationships but are not significant at $p < 0.01$ and $p < 0.05$.

Table 2: Pearson Correlation Coefficient of Physical Conditions of Facilities

Variables	Classroom	Staffroom	Separate Toilet for student/staff	Separate Male /Female Toilet	Water supply	Library	Workshop	Spot Facilities	First Aid Box	Fence Wall
Classroom	1									
Staffroom/office	0.798**	1								
Separate Toilet for student/staff	0.910**	0.65	1							
Separate Male /Female Toilet	0.795*	0.596	0.876**	1						
Water supply	0.241	0.204	0.309	0.711*	1					
Library	0.567	0.266	0.714*	0.927**	0.824**	1				
Workshop	0.467	0.352	0.588	0.865**	0.815**	0.901**	1			
Spot Facilities	0.175	0.322	0.249	0.629	0.836**	0.667*	0.890**	1		
First Aid Box	0.798**	0.487	0.960**	0.932**	0.484	0.862**	0.726*	0.388	1	
Fence Wall	0.471	0.236	0.59	0.877**	0.924**	0.974**	0.877**	0.720*	0.753*	1

** . Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

Source: Fieldwork (2018)

IV. Conclusion

This study has looked closely at the distribution of public primary and secondary educational facilities in the selected LGAs in Kaduna State. It has conclusively shown that there is lop-sidedness in the distribution of these educational facilities in all the nine Local Government Areas; most of the educational facilities are concentrated in the urban areas at the expense of the rural suburbs. The observed pattern of distribution of educational facilities and personnel in the region appeared to be significantly better in Kaduna South Senatorial Zone than in the other two senatorial zone of Kaduna Central and Kaduna North. Spatial imbalance in the distribution of the educational facilities are still observed that need to be adequately addressed in the LGAs to enable her achieve the Sustainable Development Goals on education by the year 2030. There is imbalance in distribution in both public primary and secondary schools especially at the rural areas; high dropout rate in rural LGAs, and student teacher ratio of 58:1 are generally high as compared to UNESCO (international standards) and the NPE standard in Nigeria. Finally, there are lop-sidedness in the number of schools per rural LGAs compared to Zaria and Jema'a LGAs.

The study revealed 58.4% of the head teachers agree that the existing facilities has not been properly maintained and in many case money (funding) have always been a major factor. This is in agreement with the findings of Izobo-Martins *et al.* (2014) the respondents agreed that educational facilities were not properly maintained in secondary schools in Zaria area of Kaduna State. The study also showed that population of the general residents is not the best justification for siting of educational facility in a

location. Rather, the population of the school age children and how accessible the facilities are to the children matter so much. The finding of this study shows that Kaduna State is far from meeting target SDG 4, which aim is that by 2030, ensuring that all children complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. This study has revealed that most of the remote areas are not serviced with public primary and secondary schools due to poor road, insecurity, and poor social facilities. The study concluded that the conditions of public primary and secondary schools are in disarray and requires action form KDSG and other stakeholders in the educational sector. It therefore, recommends the implication of the UNESCO's benchmark of demands 26% annual budget and 6% of the gross domestic product be invested in education and develop a database of public schools and educational facilities in the state.

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