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Designing a School Map for Expanding Public Primary Schools in Osun State, Nigeria (2018-2022)

Adelokun Adedapo Solomon, Adewole Israel Boluwatise
Obafemi Awolowo University, Ile-Ife, Nigeria

This study identified the location of existing public primary schools in Osun State, Nigeria, investigated the school age population of the study area, and projected the expected school age population between 2018 and 2022 by using the existing data. The study also estimated the number of classrooms that would be required and designed a school map between 2018 and 2022 for the study area. These were with a view to designing a school map for Osun State public primary schools by the year 2022. The study adopted descriptive survey design with a focus on a population of 1,205 public elementary schools, 1,205 head teachers across the three senatorial districts of Osun State, Nigeria, a sample of 30 public primary schools using simple random sampling technique, while 30 head teachers using total enumeration sampling technique. The results showed the location of the existing schools on the geographical maps of the local government areas (LGAs) for the study as supplied by National Population Commission (NPC) through Osun State Planning Commission Oshogbo. The projected school age populations in 2022 were 35,690, 32,530, 24,900, 23,710, 37,320, and 31,550 respectively for Ife Central, Ife North, Ede North, Ede South, Irepodun, and Orolu LGAs. Projected enrolments in 2022 will require 566, 495, 524, 525, 476, and 395 classrooms in these areas. Osun State would require 230, 276, 287, 337, 255, and 170 classrooms in these areas in 2022. The study recommended, among others, that Osun State government should be prepared to host quite a number of pupils in the educational enterprise by 2022, and ensure the supply of sufficient facilities to match the projected enrolments for 2022 to avoid deficiencies and wastage.

Keywords: school mapping, coordinates, school age population

Introduction

Education is a veritable tool which develops an individual and society functionally and economically. This can only be so, however, if it is properly planned and executed in order to avoid wastage of limited human and material resources. As a right of every child, achieving inclusive education requires deliberate efforts at planning and execution of such plans. The United Nations Educational Scientific and Cultural Organisation (UNESCO, 2007) had reiterated this position. This has caused most governments have abiding faith in the efficacy of education as an instrument for reconstruction and economic development (Niles & Harries-Bowlbey, 2003).

In a bid to provide education, governments are saddled with the responsibility of establishing educational institutions necessitating school buildings to accommodate and serve the demand for education per region in a

Adelokun Adedapo Solomon, Ph.D., Department of Educational Management, Obafemi Awolowo University.
Adewole Israel Boluwatise, M.Ed., Department of Educational Management, Obafemi Awolowo University.

given state or region. But the alarming situation at present is that several linear expansions in the educational enterprise have been made in some areas by the government of Osun State (one of the 36 states in Nigeria), without a proper consideration of those that would be served by the expansions. Viewing education from the democratic nature of the social demand approach used by the state, one might say that those expansions were for political success and not necessarily meeting educational needs of the citizenry. In fact, for the education sector of Osun State, Nigeria has attracted a lot of attention in form of criticisms and controversies because of various innovations introduced in recent years since 2011. Such innovations which are in the areas of sitting of schools, structural designs of schools, and erection of school buildings (blocks of classrooms) appears to have been introduced without a conscious effort to effectively plan using appropriate data.

Literature Review

The *National Policy on Education (NPE)* (Federal Republic of Nigeria [FRN], 2013) stated that primary education refers to education given to children aged 6-11^{+} in primary schools. It also stipulated that the primary level is the key to the success or failure of the whole system since the rest of the education system is built upon it. Education at this level strengthens the learner's feet to climb the educational ladder to the zenith of academic attainment if a good foundation is laid. This statement confirms the fact that the primary level of education is most crucial to the success of other levels, hence, the need for the stakeholders to do everything possible to lay a solid foundation for its sustainability.

Primary education, as defined in the *NPE* (FRN, 2013), had the following objectives which cannot be achieved except it is planned and mapped. They are to:

1. Inculcate permanent literacy and numeracy, and ability to communicate effectively;
2. Lay a sound basis for scientific and reflective thinking;
3. Give citizenship education as a basis for effective participation in and contribution to life of the society;
4. Mould the character and develop sound attitude and morals in the child;
5. Develop in the child the ability to adapt to the child's changing environment;
6. Giving the child the opportunities for developing manipulative skills that will enable a child function effectively in the society within the limits of the child's capacity;
7. Provide the child with basic tools for further educational advancement, including preparation for trades and the craft of the locality. However, this makes the issue of effective schools to be of concern to the government, teachers, parents, and even the pupils themselves.

There is no doubt that the achievement of the aforementioned objectives hinges majorly on the availability of adequate resources which must not only be available, but also be usable and free of wastage or encumbrances if the other sectors of education are not to be starved of adequate funding.

In order to avoid the wastage which could be in form of over-invoicing on materials, incidence of idle facilities, and early depreciation of facilities (caused by use of substandard materials in the building process), proper planning, through an articulate understanding of the variables associated with planning of physical facilities in the school system. One of these is school-mapping.

Map could mean a design, an outline, or a sketch of a phenomenon, while mapping is the process of designing, sketching, or strategising. School-mapping has been misunderstood by many educationists and statisticians. The misconception made them to see school-mapping as a matter of taking a conventional landscape map alone and to locate different educational institutions in their different regions or locale. On the

contrary, the concept is beyond the meaning or interpretation given to it.

It is a process that involves obtaining, analysing data, and using the data to make projections of future expansions defined school-mapping as the dynamic process of diagnosing and estimating school requirements and identifying the communities and sites where new schools are to be located and where additional facilities are required. It is also seen as designing, outlining, and fashioning out all that will aid formal education. It can therefore be concluded that school-mapping is the locational planning of educational institutions, the allocation as well as the optimal utilisation of the required resources in the institutions.

According to available accounts, school-mapping originated in France in 1963 (Caillods, 1983; Da Graca, 1998). It is a well-accepted and long-standing approach to the planning of school locations which is also used to investigate and ensure the efficient and equitable distribution of resources within and between school systems when large-scale reform or significant expansion of an education system takes place. It is also seen as a dynamic process of identifying the site where educational facilities are to be located. It involves more than the preparation of scale maps with conventional sign showing the location of educational institutions. School-mapping involves the application of thought processes and critical analysis of techniques to foresee what educational institutions are likely to be and what type of educational future a society or community may have by the end of a planning period. Location of schools is function of school-mapping.

Therefore, school-mapping is the process of estimating and diagnosing school requirements and identifying the ideal communities and sites where new schools are to be located and where additional educational resources are to be provided. Chesswas (1969) viewed school-mapping as school location planning which is a technique for evaluation of use-efficiency, re-organization, and re-distribution of resources (physical and human) that are required for meeting the current and future needs of education in the society. Location-planning is a term often applied to the set administrative policies and procedure that are used in planning, distribution, size, and spacing of schools. This involves efficient planning of the site and school resources to ensure greater access and efficient use of the school by the community it served. School-mapping is an essential planning tool to overcome possibilities of regional inequities arising from the investment policies of the public authorities. Caillods (1983) and Varghese et al. (1997) advanced some uses of school-mapping. These are to:

1. Create the necessary conditions for achieving universal primary education (UPE) and universal secondary education (USE);

2. Increase access for females and members of other traditionally under-represented socioeconomic groups;

3. Promote the equitable distribution of educational benefits within and between different regions and populations;

4. Improve the quality of educational efforts;

5. Optimise the efficient use of existing capital, human, and financial resources;

6. Organise, coordinate, and rationalise efforts at technical, vocational, and post-secondary education (Caillods, 1983; Varghese, 1997).

School-mapping incorporates spatial and demographic dimensions into the educational planning process (Hite, 2006; 2008).

It is necessary to map schools but it is sufficient to plan the school-mapping process and this planning is not done without figures or data. Planning a school map (if it must be holistic) may involve determination of school sites, school architectural design, policy considerations for school establishment, demographic variables considerations in school-mapping, agents of school-mapping, political factors in school-mapping, and

school-mapping finance, administration, maintenance utilisation, and constraints. They will serve as a yardstick for effective school map planning. The methodology of planning a school map envisages specification of norms, diagnosis of the existing educational facilities, projection of future population, deciding the location of schools, estimates of facilities required in all the (existing and new) educational institutions, and estimation of financial resources required. School-mapping can now be planned with thought processes and analytical techniques, and forecast on what educational institutions have to be and a dynamic process of identifying logically and systematically the community, where educational facilities are to be located.

In mapping schools in Osun State, Nigeria, there is a need to know the status of each of the following parameters in the state: promotion/survival rate, repeater rate, dropout rate, birth rate, and death rate.

The Statement of the Problem

Many efforts have been made globally to address inequities (inaccessibility and learning outcomes) in education particularly since the *Sustainable Development Goal Four (SDG IV)* was formulated in 2015. Beyond diagnosis of this defect, the Osun State government has erected new blocks of classrooms in different locations in the three senatorial districts of the state. Such structures are found in all the 30 local government areas (LGAs) in the state. The schools are sited in various locations particularly in the urban centres of the state. However, it is observed that the existing schools before the establishment of the new ones are still in existence creating a gamut of idle classrooms in the new structures. One might suggest that the existing school structures should be abandoned (though this would result in a waste) while the new structures are put to use. The distance from home (which the United Nations International Children's Emergency Fund [UNICEF] puts at two kilometers) of those new structures constitutes a breach as most of the new structures are not within the range particularly in the highly urban centres. Not only is that, the new structures mostly structures along the highways, creating the feeling of unsafe environment in parents and guardians.

An easy explanation of this situation is to have greater access to primary education, facilitating the achievement of *SDG IV* which is to encourage inclusive and equitable quality education and promote learning opportunities for all. This cannot be achieved in an atmosphere of waste typified in the existence of idle classrooms and the probable deterioration as a consequence of disuse. In order to avert this wastage therefore in the future (2022), there would be a need to design a school map within the period (2018-2022) under reference.

The Objectives of the Study

The study aimed at designing a school map for optimum utilisation in the educational system of Osun State, Nigeria. The specific objectives were to:

1. Identify the locations of the existing schools in Osun State, Nigeria;
2. Examine the school age populations in the study area;
3. Project the expected school age population between 2018 and 2022 by using the existing data;
4. Estimate the number of classrooms required for the study area between 2018 and 2022;
5. Design a school map for the study area between 2018 and 2022.

Research Questions

The following questions were raised to guide the study:

1. Where are the existing schools located in the Osun State, Nigeria?

2. What are the school age populations of the study area?
3. What are the expected school age populations between 2018 and 2022?
4. What number of classrooms will be required between 2018 and 2022?
5. What is the expected design of school map for Osun State, Nigeria in 2022?

The Significance of the Study

It is expected that exposures on planning school-mapping will facilitate people's understanding of the basic needs of every community realising the fact that what community "A" needs is different from what community "B" requires. Specifically, the study would be useful for decision making on provision of facilities and infrastructure reveal the extent of over-utilization and under-utilisation of existing instructional facilities, provide guidelines for the reorganisation of such instructional facilities as well as serve as a blueprint for medium planning of physical plant in primary schools.

Theoretical Framework

The study is based on Hull's Need Reduction Theory (NRT) which recognises that there are societal primary and secondary needs in Osun State, Nigeria. These needs lead to felt needs which might be primary and/or secondary. The need to achieve 100% attendance in primary schools agrees with the *SDG IV* which stresses inclusive education. The construction new buildings to expand the enrolment can only meet the secondary needs of the children if they can attend with minimal discomfort. This is captured in Figure 1:

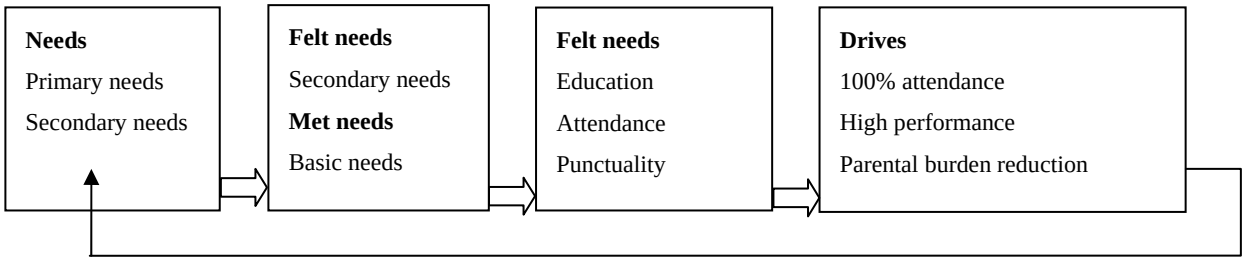

Figure 1. Need Reduction Theory (NRT) (Source: Clark Hull, 1933).

Thus, school-mapping is an exercise useful to rationally allocate educational facilities of any type related to any level of education. According to existing literature, school-mapping originated in France in 1963 (Caillods, 1983; Da Graça, 1998; Galabawa, Agu, & Miyazawa, 2002; Govinda, 1999). School-mapping is a normative approach to the micro planning of school locations.

In developing countries, school-mapping has been used at various times to attain or consolidate universal primary education as in Morocco, Burundi, and the Sudan.

Determinants of School-Mapping

In determining the school map, consideration is given to some factors. These are demographic, educational, geographical, political, economic, manpower, and economic activity factors (Hite, 2011). Policy considerations also form a core issue in the process of school establishment. These considerations are land acquisition policy, structure of the building, size (land and classroom), enrolment school infrastructure, and the national policy on education (in this case, primary education). The education planner has a duty to have a detailed knowledge of these in carrying out a school-mapping exercise for a state.

Empirical Review

Several works have been done on school-mapping in different countries at different times especially at times when countries were recovering from the World War II. The educational systems of those countries experienced a great turn around, because planners engaged in post war child-centred education. School-based planning is then seen as the most important means through which this is done.

A case study, found in the study of Galabawa, Agu, and Miyazawa (2002) discussed the impact of school-mapping in Tanzania and studied its after effects on education. Another work on school-mapping was carried out in Indian context that helped the decision maker in identifying the new school locations (Govinda, 1999). In this connection, the school map could be the means for carrying out administrative reforms at the local level aiming at a re-grouping of institutions in clusters, such as the “nuclei” in Latin America or the “clusters” in Thailand and Sri Lanka.

Appraisal of Literature

One of the greatest challenges for educational planners and administrators has been to equalize educational opportunities for all and provide easy access to educational facilities to all children. If all habitations/villages are to be provided with schools. Then, the question of equality does not arise. But in real life situations, we locate schools in such villages, so that other habitations and villages also benefit. How do we decide on the village/habitations where schools are to be opened so as to ensure equality of educational opportunities?

Most of the literatures do not focus on providing data on projected enrolments and facilities. This was the aim of this study: designing a school map for Osun State, Nigeria with a view of ensuring efficiency in the execution of building projects across the state.

Enrolment projections are important to decide on the opening of new schools, up-grading of existing schools and to estimate the number of teachers required. The techniques of enrolment projections can broadly be classified into two-mathematical and analytical methods. Mathematical methods require aggregate enrolment data at least for five to 10 years, and only total enrolment can be projected. What is more, analytical methods require promotion, dropout, repetition, and apparent entry rates. The two methods in this study were used to design a school map for the state.

Methodology

The study adopted the descriptive survey research design. A sample representative of a large population to generalize and plan for the state was selected. Osun State is one of the 36 states in Nigeria with three senatorial districts (Osun East, Osun West, and Osun Central) and 30 local governments. The population of the study involved 1,205 public elementary schools in Osun State with 1,205 head teachers across the three senatorial districts in the state (Template for elementary schools in 2014/2015). The sample comprised six LGAs (using cluster sampling technique), 30 public primary schools (using simple random sampling technique), and 30 head teachers (using total enumeration sampling technique). Students’ flow which is a key area of intra educational diagnosis in school-mapping was used. A map of Osun State, Nigeria was acquired from the Ministry of Lands, Survey Department, Oshogbo Osun State, and local governments’ maps were drawn by using the geospatial information system (GIS) for explicit information about the locations of the existing schools. Secondary data on students flow (enrolments, promotion rate, repeater rate, and dropout rate of pupils) was collected from the Ministry of Education Oshogbo to corroborate the information that was supplied from the selected schools,

while mortality rate, population growth rate, and school-age population in the study area were collected from the National Population Commission (NPC) and Osun State Planning Commision. Data were analysed for projection purpose by using the projection formula as provided in the International Institute of Educational Planning Publications.

$$P_{N\ t+1}^{k+1} = S_{t+1}^{k-1} + R_{t+1}^{k-1} - D_{t+1}^{k+1} + U \quad (1)$$

Where $P_{N\ t+1}^{k+1}$ is the projected enrolments to the succeeding class in the succeeding year. S_{t+1}^{k-1} is the survivors from the preceding class in the year. R_{t+1}^{k-1} is the repeaters in the succeeding year. D_{t+1}^{k+1} is the dropout from the succeeding class in the succeeding year. U is the error term.

A self-designed questionnaire titled “Questionnaire on Pupils’ Flow in Osun State Schools (QPFOSS)” was also administered on the head teachers of selected schools to get information on the current enrolment figures and the number of classrooms available for pupils in each selected school. The QPFOSS was validated with the assistance of some experts in demography. Its reliability coefficient of 0.68 was also ascertained by using re-test approach.

Data Analysis

The researchers used geographic information analysis to interpret the coordinates of the latitudinal and longitudinal directions of the schools and made necessary projections (based on the existing data) by using a projection formula as provided in the International Institute of Educational Planning Publications.

Results

Research Question 1: Where are the Existing Schools Located in?

Table 1 is the global position system (GPS) coordinates of the new elementary and neighbouring sampled public primary schools.

Table 1

Locations of Existing and Newly Built Schools in Osun State (Study Area)

S/N	Senatorial districts	LGA	New elementary school buildings	Neighbouring schools	Longitude	Latitude
1	Osun East	Ife Central	Baptist Central Elementary School, Ilare Ile Ife Longitude: 4.528306 Latitude: 7.518694	Christ Apostolic Church (CAC) Elementary Primary School, Ojoyi, Ife	4.549923	7.482614
				Los Angeles (L.A.) Primary School, Eleyele, Ife	4.54571	7.490542
				Igboya Community Primary School, Igboya, Ife	4.558748	7.517421
				Community Primary School, Oluorogbo, Ife	4.548212	7.514722
				Community P/S Olonade, Ife	4.547596	7.506297
		Ife North	St. Augustine Elementary School, Ipetumodu Longitude: 4.472345 Latitude: 7.524266	L.A. School, Ipetumodu	4.493866	7.343221
				St. Micheal’s School, Ebuabon	4.529601	7.395253
				St. Thomas School, Edunabon	4.5091123	7.358743
				CAC Government Elementary School	4.481048	7.401342
				St. Jude School, Ipetumodu	4.451309	7.305879

(Table 1 to be continued)

2	Osun West	Ede North	L.A. Elementary School, Agbongbe, Ede Longitude: 4.525363 Latitude: 7.754352	Baptist Practising School A., Talafia, Ede	4.437352	7.743734
				L.A. Primary School A., Alusekere, Ede	4.456123	7.726263
				L.A. Primary School B., Alusekere, Ede	4.415634	7.709223
				Community Primary School, Oke-Gada, Ede	4.535253	7.732166
				Seventh Day Adventist Government Elementary School, Ede	4.414122	7.736311
				L.A. Primary School, Alajue, Ede	4.396356	7.671321
				L.A. Primary School, Oloki, Ede	4.442173	7.636933
				L.A. Primary School, Ponpola, Ede	4.471255	7.6822153
		Ede South	L.A. Elementary School, Obada, Ede Longitude: 4.402733 Latitude: 7.647534	Baptist Day School, Obada, Ede	4.548277	7.673832
				Community Primary School, Ogobi	4.514196	7.646326
3	Osun Central	Irepodun	A.U.D Elementary School, Laaro, Ilobu Longitude: 4.492243 Latitude: 7.852342	St. Micheal Anglican Primary School, Ilobu	4.485365	7.841163
				L.A. Primary School A., Gbobamu, Ilobu	4.513275	7.861624
				Isale Imole Community. Primary School, Ilobu	4.534217	7.903263
				Methodist Primary School B., Ilobu	4.523053	7.877177
				Aromiwe Comm Primary School, Ilobu	4.507268	7.858362
				St. John's Anglican Primary School, Ifon-Osun	4.483534	7.896311
				A.U.D. Primary School A., Ifon-Osun	4.464742	7.872844
				Molufon Community Primary School, Ifon-Osun	4.499423	7.909312
		Orolu	St. John'S Rcm Elementary School, Ifon-Osun Longitude: 4.438325 Latitude: 7.891180	Baptist Primary School, Ifon-Osun	4.505076	7.926003
				CAC Government Elementary School, Ifon-Osun	4.466316	7.848627

Note. GPS coordinates template for the study area.

The maps interpreting the coordinates are presented in Maps 1-6 in the Appendix.

Ife Central LGA is a LGA in Osun State which has 111 km^2 (43 sq mi) with coordinates 7°33' N, 4°32' E and a population of 167,254 at the 2006 census. The schools sampled are closely located as shown in the map which translates to a not very far walking distance from home to school. From Map 1, it is observed that the neighbouring schools are very close to the new elementary school building. Based on the field report, few classrooms were empty in each school visited sending a signal that there was no need for a new school building when the existing ones have not been fully utilised.

Map 2 shows Ife North LGA and its primary schools. Ife North is a LGA in Osun State having Ipetumodu as its headquarters which has 899 km^2 (343 sq mi) with coordinates 7°22' N, 4°30' E and a population of 153,694 at the 2006 census. The schools sampled are closely located as shown in the map which translates to a not very far

walk-able distance from home to school. It also shows that the neighbouring schools are very close to the new elementary school building. Field report also shows that few classrooms were empty in each school visited justifying that no need for a new school building when the existing ones have not been fully utilised. This is captured in Map 2 in the Appendix.

Map 3 shows Ede North LGA and its primary schools. Ede North is a LGA in Osun State having Oja Timi as its headquarters which has 899 km^2 (343 sq mi) with coordinates 7°44' N, 4°29' E and a population of 83,831 at the 2006 census. The postal code area is 232. The schools sampled have a scattered distribution. From Map 3, one can see that the neighbouring schools are not very close to the new elementary school building and based on the field report, quite a number of classrooms were locked up in each school visited thereby posing a question on how the need for a new school building arose in the first place when the existing ones were not optimally utilised. This is captured in Map 3 in the Appendix.

Ede South LGA and its primary schools are presented in Map 4. Ede South is a LGA in Osun State having Ede Town as its headquarters which has 219 km^2 (85 sq mi) with coordinates 7°42' N, 4°27' E and a population of 103,494 at the 2006 census. The postal code area is 232. In Map 4, one can see that the existing schools are not that close to the new elementary school building compared. Based on the field report, some classrooms were empty of pupils in each school visited which invariably means there was no need for new schools to be established.

Irepodun is a LGA in Osun State having Ilobu as its headquarters which has 64 km^2 (25 sq mi) with coordinates 7°50' N, 4°29' E and a population of 119,497 at the 2006 census. The postal code area is 230. The schools sampled are serially sited as shown in the map above which translates to a not very far walk-able distance from home to school for residents on the extremes. In Map 5, it is shown that the neighbouring schools are very close to the new elementary school building and based on the field report, few classrooms were not utilised.

Orolu is a LGA in Osun State having Ifon Osun as its headquarters which has 80 km^2 (30 sq mi) with coordinates 7°52' N, 4°29' E and a population of 103,077 at the 2006 census. The postal code area is 230. The schools sampled have a scattered distribution as shown in the Map 6. One can see that the existing schools are far from the new elementary school building and based on the field report, quite a number of classrooms were locked up in each school visited.

Research Question 2: What are the School Age Population Figures of the Study Area?

Table 2 is the secondary data on school age population per local government received from the NPC through Osun State Planning Commission as at 2006 when the census was held in the country.

Table 2

School Age Populations in the Study Area

Senatorial districts	LGA	2006 school age population (6-11^+ years old)
Osun East	Ife Central	21,624
	Ife North	19,710
Osun West	Ede North	15,093
	Ede South	14,366
Osun Central	Irepodun	22,614
	Orolu	19,160

Note. National Population Commission (NPC, 2006).

From Table 2, the school age population figures are displayed, showing the number of children (both males and females) between 6 and 11^{+} years old. The figures are the combination of children in school and those that were out of school age population.

Research Question 3: What are the Expected School Age Populations Between 2018 and 2022?

Using the existing data as given in the Research Question 2, 2006 will be the base year for projection purpose. And as provided by the Nigerian Bureau of Statistics, Osun State average annual population growth rate is 3.18%. These projected school age populations are presented in Table 3.

Table 3

Calculated/Projected School Age Population

LGA	Calculations	Expected school age population in 2022 ($6\text{-}11^{+}$ years old)
Ife Central	Antilog (Log^{P0}) + n (Log^{1+r}) Antilog ($Log^{21,624}$) +16 (Log^{1} + 0.0318) Antilog (4.3349) + 16 ($Log^{1.0318}$) Antilog 4.3349 + 16 (0.0136) Antilog 4.3349 + 0.2176 Antilog 4.5525	35,690
Ife North	***	32,530
Ede North	***	24,900
Ede South	***	23,710
Irepodun	***	37,320
Orolu	***	31,550

Note. *** Computed using same process as done for Ife Central LGA.

The summary of expected school age population come in 2022 compared with 2006 is presented in Table 4.

Table 4

Summary of Expected School Age Population Come 2022 Compared With 2006

Senatorial districts	LGAs	2006 school age population ($6\text{-}11^{+}$ years old)	2022 expected school age population ($6\text{-}11^{+}$ years old)
Osun East	Ife Central	21,624	35,690
	Ife North	19,710	32,530
Osun West	Ede North	15,093	24,900
	Ede South	14,366	23,710
Osun Central	Irepodun	22,614	37,320
	Orolu	19,160	31,550

Research Question 4: What Number of Classrooms in the Study Area Will be Required Between 2018 and 2022?

To answer this question, pupils' flow chart as provided by the State Universal Basic Education Board (SUBEB) from 2012-2015 was used to project enrolments which was later used for estimating the number of classrooms that would be needed in 2022. Taking the promotion rate as 100%, and the enrolments in previous years, Table 5 presents the flow chart for the study area.

Table 5 was then used to project the school age populations for 2018-2022 as presented in Table 6. From Table 6, 2022/2023 academic session, about 19,819 pupils will enroll into any of the basic classes in Ife Central LGA with the expectation of nine dropouts while about 17,378 pupils will enroll into any of the basic classes in Ife North with 42 expected dropouts come 2022.

Table 5

Flow Chart of Students in the Study Area

LGA	Pupil' flow	2011/2012	2012/2013	2013/2014	2014/2015
Ife Central	Enrolment	16,377	16,676	17,002	17,316
	Promotion (%)	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil
	Dropouts	175	153	144	130
Ife North	Enrolment	10,493	10,871	11,363	12,498
	Promotion (%)	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil
	Dropouts	114	109	102	94
Ede North	Enrolment	9,971	10,709	11,313	12,339
	Promotion (%)	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil
	Dropouts	108	98	90	106
Ede South	Enrolment	10,009	11,363	12,004	12,389
	Promotion (%)	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil
	Dropouts	111	120	108	90
Irepodun	Enrolment	10,600	11,824	12,222	12,099
	Promotion (%)	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil
	Dropouts	117	121	99	106
Orolu	Enrolment	11,604	11,933	12,042	12,206
	Promotion (%)	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil
	Dropouts	107	94	90	87

Note. Extracted from the grand sheet of pupils' flow SUBEB Osun State in 2016.

Table 6

Projected School Age Populations (2018-2022)

LGA	Pupil' flow	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023
Ife Central	Enrolment	17,615	17,941	18,255	18,554	18,880	19,194	19,493	19,819
	Promotion (%)	100	100	100	100	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Dropouts	108	99	85	63	54	40	18	9
Ife North	Enrolment	12,876	13,368	14,503	14,881	15,373	16,508	16,886	17,378
	Promotion (%)	100	100	100	100	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Dropouts	89	82	74	69	62	54	49	42
Ede North	Enrolment	13,077	13,681	14,707	15,445	16,049	17,075	17,813	18,417
	Promotion (%)	100	100	100	100	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Dropouts	96	88	104	94	86	102	92	84
Ede South	Enrolment	13,734	14,375	14,670	16,114	16,755	17,140	18,494	19,135
	Promotion (%)	100	100	100	100	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Dropouts	99	87	69	78	66	48	57	45
Irepodun	Enrolment	13,323	13,721	13,598	14,822	15,220	15,097	16,321	16,719
	Promotion (%)	100	100	100	100	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Dropouts	110	88	95	99	77	84	88	66
Orolu	Enrolment	12,535	12,644	12,808	13,137	13,246	13,410	13,739	13,848
	Promotion (%)	100	100	100	100	100	100	100	100
	Repeaters	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Dropouts	74	70	67	54	50	47	34	30

Furthermore, it is essential to note that in Ede North LGA, the government should be preparing for 18,417 pupils' enrolment with 84 projected dropouts while about 19,135 pupils are likely to enroll with 45 dropouts for the session in Ede South LGA come 2022. Lastly, Irepodun LGA will have to accommodate pupils of about 16,719 in 2022/2023 academic session with 66 expected dropouts while Orolu LGA will be accommodating 13,848 pupils and should expect 30 dropouts. Moreover, the projected enrolment figure for each local government come 2022 as shown in the last column of the Table 6 was then used to calculate by using the projection formula earlier discussed.

It is noted that the promotion/survival rate for each local government will be the enrolment figure since promotion is 100% and the estimates of classrooms that will be required in the year 2022 can now be derived by dividing each projected enrolment figure by 35 (UNESCO standard for pupils-teacher ratio = 35:1). This led to the calculation as presented in Table 7.

Table 7

Classroom Estimate

LGA	Projections	Results	Classrooms estimate calculations	2022 classroom estimates
Ife Central	19,819 + 0 – 9 + 0	19,810	19,810 ÷ 35	566
Ife North	17,378 + 0 – 42 + 0	17,336	17,336 ÷ 35	495
Ede North	18,417 + 0 – 84 + 0	18,333	18,333 ÷ 35	524
Ede South	19,135 + 0 – 45 + 0	19,090	19,090 ÷ 35	545
Irepodun	16,719 + 0 – 66 + 0	16,653	16,653 ÷ 35	476
Orolu	13,848 + 0 – 30 + 0	13,818	13,818 ÷ 35	395

From Table 7, Ife Central LGA would require 566 classrooms in 2022. To meet the expected demand for education while Ife North LGA will need 495 classrooms to meet the educational required needs of the pupils that will enroll by 2022. Furthermore, it is essential to note that 524 classrooms will have to be built in Ede North LGA to avoid gap in the demand for and the supply of education in that area while 545 classrooms will be needed in Ede South LGA come 2022. Lastly, Irepodun LGA will need 476 classrooms to match her projected enrolment while Orolu LGA will need 395 classrooms to avoid congestion or overcrowding of pupils by 2022.

Research Question 5: What is the Expected Design of School Map for the Study Area in 2022?

From the foregoing analysis and computations, Table 8 presents the data for the school map in 2022.

Table 8

School Map Design

Senatorial districts	LGA	Available classrooms (2014 survey)			2022 estimated classrooms	Extra classrooms to be built
		Good	Bad	Total		
Osun East	Ife Central	156	180	336	566	230
	Ife North	123	96	219	495	276
Osun West	Ede North	110	127	237	524	287
	Ede South	139	69	208	545	337
Osun Central	Irepodun	152	69	221	476	255
	Orolu	134	91	225	395	170

For the year 2022, Ife Central LGA will need 230 more classrooms to meet the expected demand for education while Ife North LGA will need 276 more classrooms to meet the educational required needs of the pupils that will enroll com 2022. Furthermore, it is essential to note that 287 more classrooms will have to be built

in Ede North LGA to avoid gap in the demand for and the supply of education in that area while 337 more classrooms will be needed in Ede South LGA come 2022. Lastly, Irepodun LGA will need 255 extra classrooms to match her projected enrolment while Orolu LGA will need 170 more classrooms to avoid congestion or overcrowding of pupils come 2022.

Summary, Conclusion, and Recommendations

Summary

The projected number of classrooms required by Osun State government in Nigeria by 2022 would go along way to prevent wastage. Furthermore, from the projected number of students who would enroll in the year 2022, the number of classrooms was estimated and showed that 566, 495, 524, 525, 476, and 395 classrooms will be required to meet the projected enrolments of Ife Central, Ife North, Ede North, Ede South, Irepodun, and Orolu LGAs, respectively. Lastly, the design of school map was done through the representation of GPS coordinates on GIS and the comparison of the existing classrooms with the projected required classrooms to know what more classrooms would be needed by 2022.

Conclusion

Based on the findings from the field experience, it is indisputable that linear expansions in the educational enterprise have been made by the government of Osun State. It is therefore necessary to ensure that adequate school-mapping should be done on existing schools before new schools are established to be able to ascertain the likely enrolments by knowing the school age population and the gap between the school age population and enrolments in schools to avoid wastage of resources and facilities that we have presently in the state. Unlike other findings that show inadequacy on the part of the government, this study showed excessive provision of facilities for low enrolments. In fact, existing schools are better renovated with few classrooms added to the structures on the available land space than building new ones.

Recommendations

This study has shown that Osun State government has excessively provided facilities in a way that classrooms are more than enrolled pupils would need. Therefore, in a bid to plan for the state, the following recommendations are made to the government of Osun State:

1. With the projection made on the school age population compared to the existing one, Osun State government should be prepared to host quite a number of pupils in the educational enterprise by 2022.

2. With the estimated number of classrooms that will be required by 2022 in the study area, Osun State government must ensure sufficient facilities to match the projected enrolments for 2022 to avoid deficiencies and wastage.

3. With the design of school map for the study area, Osun State Government with the help of educational planners should add to the available facilities to match the expected number of enrolment by 2022.

Preparation against 2022 should start now to avoid hasty project execution which cannot be devoid of errors.

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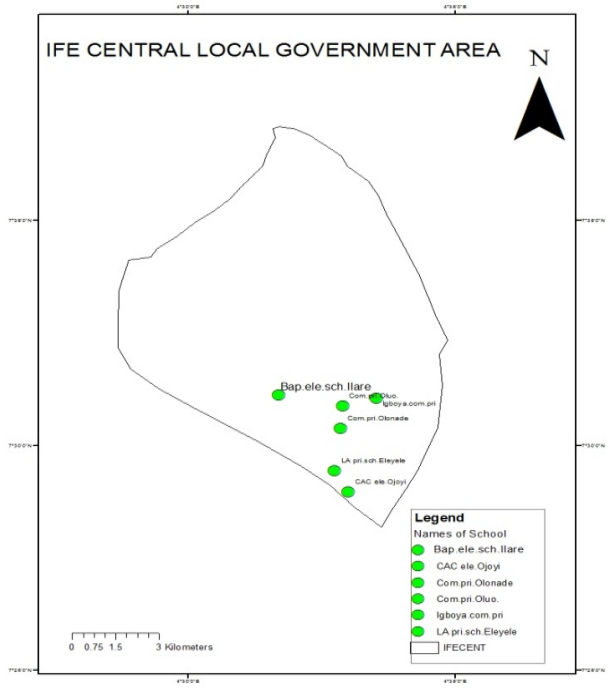
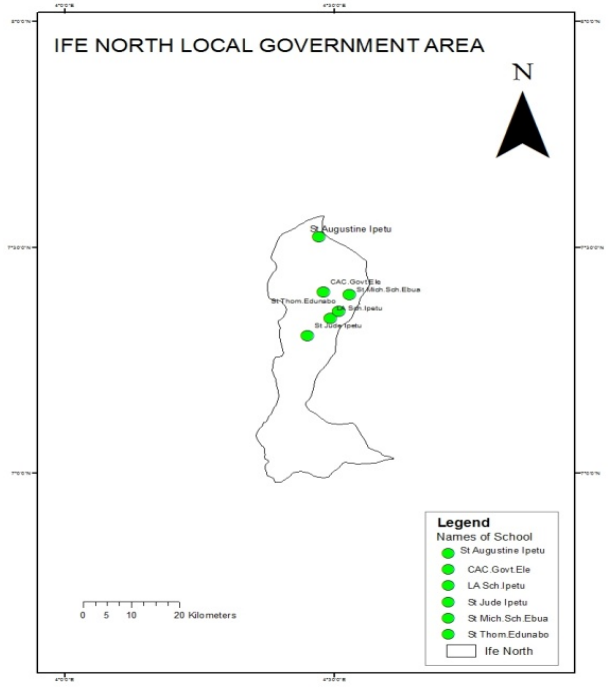
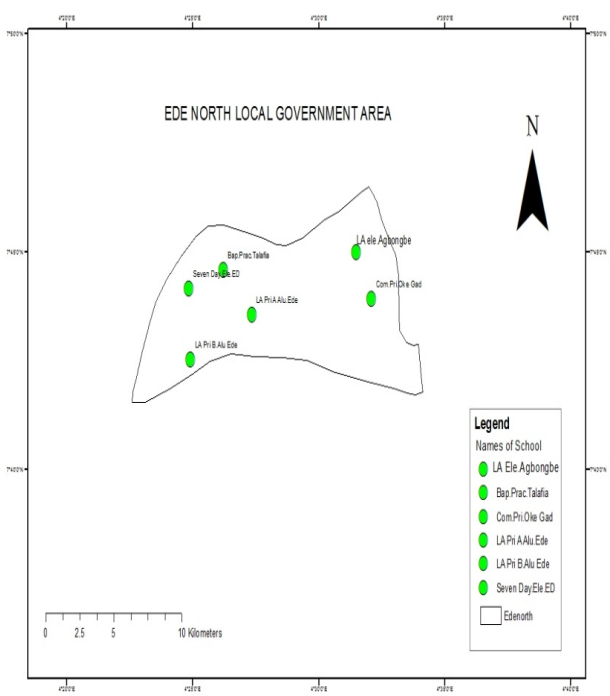
Appendix: GPS Coordinates of Primary Schools on Maps in the Study Area



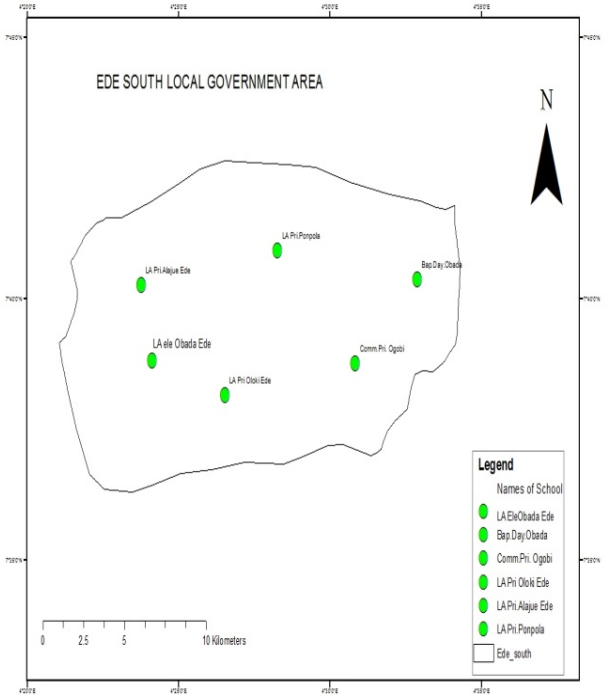
Map 1. Ife Central LGA primary schools.



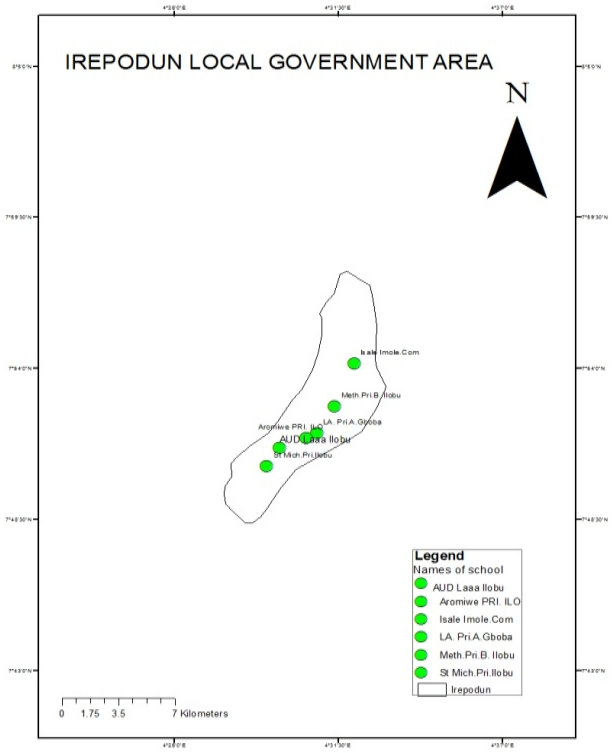
Map 2. Ife North LGA primary schools.



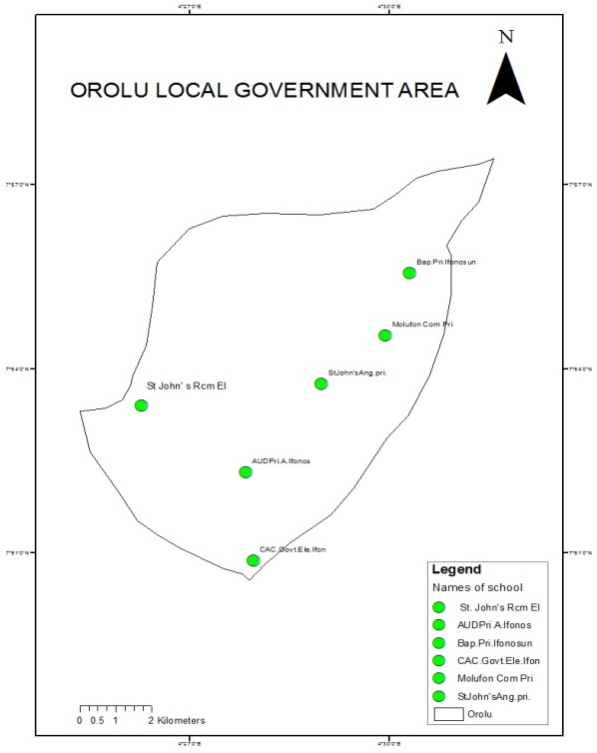
Map 3. Ede North LGA primary schools.



Map 4. Ede South LGA primary schools.



Map 5. Irepodun LGA primary schools.



Map 6. Orolu LGA primary schools.