School Plant Planning: A Prerequisite for the Attainment of Educational Goals and Objectives

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Abstract
School plant planning is often considered an essential aspect of educational planning. The realization of educational goals and objectives is attainable through appropriate school plant planning. It therefore behooves that school plant is appropriately planned to facilitate the effectiveness of school system. This paper examines conceptual clarification of school plant planning, shows the need for school plant planning in an ideal school system, observes school plant planning process, considers challenges of school plant planning in Nigeria and concludes that the realisation of educational goals and objectives, no doubt, depends on the extent to which government and administrators of schools are able to give school plant planning adequate attention needed. It is recommended that considerable time be devoted in planning school plant for both intended and existing schools in order to achieve the educational goals and objectives.

Keywords: School plant planning, Educational goal, Educational objective and Facility

1. Introduction
Education, all over the world, is believed to be the most powerful instrument for national development. The increasing awareness of the prominent role of education in the human, economic, political and socio-cultural development of any nation has led many nations of the world to commit large amounts of money to the education of their citizens. This huge investment and expenses in education will only be justified if the goals and objectives of education are achieved in the long-run (Odunfowokan, 2011). The goals of Nigerian education as highlighted in National Policy on Education (2004) include: the inculcation of national consciousness and national unity; the inculcation of the type of values and attitudes for the survival of the individual and the Nigerian society; the training of the mind in the understanding of the world around; and the acquisition of appropriate skills and the development of mental, physical and social abilities and competencies as equipment for the individual to live in and contribute to the development of the society.

Other things being equal, the aforementioned goals of Nigerian education and that of schools in particular will not be achieved if there is faulty school plant in place (Odunfowokan, 2011). It can therefore be said that the realisation of educational goals is attainable through appropriate school plant planning. Corroborating this, Oyesola (2007) stated that the main objective of school plant planning is to satisfy educational goals which have been predetermined by educational planner. He explained that better planned school plants will enhance better school programmes and the community needs by providing a place for psychological and physical safety for students and teachers and enhancing the good, quality and quantity of instruction. As a result, school plant planning is often considered an essential aspect of educational planning (Oluchukwu, 2000). It therefore behooves that school plant is appropriately planned to facilitate the effectiveness of school system so as to bring about the achievement of educational goals.

However, in spite of the importance accorded school plant planning in realizing educational goals, it has not been given the adequate attention it deserves especially in developing countries like Nigeria. According to Amanchukwu and Ololube (2015), one of the strongest problems with the Nigerian educational system is the inappropriate school plant planning. It is worrisome that majority of the schools in our cities and towns are not properly planned in terms of school plants. For instance, students, especially in government-owned primary and secondary schools, sit on floors to receive instruction. They receive instruction in classrooms which are similar to death traps due to their poor construction. Most of these schools are ignorantly sited near market places, highways, rail line, industries, airports, very close to main roads etc. and these prevent students from paying rapt attention to what is being taught in class. Most private-owned schools are sited in either private homes or make shift buildings and do not have capacity for further expansion in the nearest future (Agi, 2013). This ugly situation poses a serious concern to as many that have stake in educational sector of the nation.

In view of this, this paper sets to examine school plant planning holistically. Specifically, the paper sets out to (i) examine conceptual clarification of school plant planning; (ii) show the need for school plant planning in an ideal school system; (iii) observe school plant planning process; (iv) consider challenges of school plant planning in Nigeria; (v) suggest ways for planning and overcoming challenges of school plant planning. Attempt will also be made to address the following questions:

- Does the development of educational programme to be run in a school determine the school site selection, the school plant design and the building construction in setting up a school?
- Are accessibility, geographical location, topography, soil condition, health safety, expansibility and...
security necessary conditions to be met in selection of school site?

• Do school plant planners need to provide architect with necessary information or briefings before designing a functional school plant that will suit the intended programme/curriculum and use?

2. Conceptual Clarification of School Plant Planning

School plant planning is an integral part of the over-all educational planning. As a concept, school plant planning has been subjected to several definitions by various scholars though they shared similar view. For example, according to Ajayi and Yusuf (2010), school plant planning is a process in which a suitable site is selected and instructional space, administrative space, circulation space, and spaces of convenience are designed to facilitate the teaching and learning process in the school system. In his own view, Oyesola (Undated) defined school plant planning as a process in which a congenial site is selected and appropriate structures (buildings) designed and constructed to satisfy the identified educational needs of the students. Similarly, according to Oyebanji (Undated), school plant planning means considering various ways to put up the structured features to suit the instructional and learning processes. A broader definition comes from Odunfowokan (2011) who said that school plant planning refers to the following:

(i) Instructional Spaces: These include classrooms, auditorium, gymnasium, library, workshops, laboratory, arts room, home economics rooms, multipurpose rooms/halls, music area and any other space where students receive instruction.

(ii) Administrative Spaces: These comprise principal’s office, clerk’s office, staff room, Guidance Counselors’ office and Health clinics.

(iii) Circulation Spaces: These include corridors, lobby, staircases and other spaces where students recreate.

(iv) Spaces for conveniences: These consist of toilets, cafeteria, kitchen dormitories custodian sheds and stores, and

(v) Accessories: These include parks, garden, fields, courts and lawns.

In the context of this paper, however, school plant planning is a process in which a functional educational programme is developed, suitable site is chosen, appropriate structures (buildings) are architecturally expressed and constructed with adequate resources provided for effective teaching and learning in order to ensure the attainment of educational goals and objectives. From the above definitions, the following can be deduced as features of school plant planning:

It is a detailed and systematic process: The task of planning school plant should not be hurriedly carried out but should be systematically approached because of the salient steps involved.

It is future oriented: It projects into the future course of actions to be carried out.

Identification of strategies, policies and procedures in plant planning is essential in order to chart the course of action that is needed.

Judicious use of resources: It ensures that the limited available resources at the disposal of planners (public or private) are judiciously utilized.

It is goal-oriented: The essence of school plant planning is to achieve a set of educational goals and objectives.

3. Rationale for School Plant Planning

In Nigeria, public school enrolment in all levels of education has continued to increase yearly without corresponding increase in school plants. Considering school plant planning as the most effective approach to the attainment of educational goals, a proper school plant planning is expected to be in place as population explosion in school enrolment evolves.

Education sector competes for budgetary allocation with other sectors of the economy. This is because the resources at government’s disposal are limited and cannot meet all the financial needs of all the sectors of the economy. Proper school plant is therefore necessary in order to judiciously utilize the limited available resources devoted to education.

For some years now, students’ poor academic performance particularly in WASSCE has been persistent. For instance, in the 2012 May/June WASSCE, 38.81 per cent of the total number of candidates that sat for the examination had a minimum of five credit passes including English and Mathematics. It got worse in 2013 as the performance dipped to 36.57 per cent. In 2014, it further deteriorated as only 529,425 candidates out of the total 1,705,976 that took the examination (representing 31.28 per cent) had five credits including English and Mathematics. However, it slightly improved in 2015 as only 616,370 candidates representing 38.68% out of 1,593,442 candidates who sat for the 2015 May/June WASSCE obtained credits in five subjects and above including Mathematics and English Language. This poor academic performance of the secondary school students in Nigeria may not be unconnected with seemingly poor school plant planning in the schools (Ajayi and Yusuf, 2009). On this basis, school plant planning is inevitable when a school system desires high level of academic performance from the students.
School plant planning helps to build good structure that enhances effective administrative functions. Durosaro (1998) stated that schools that plan their school plants are more administratively effective than the others and therefore required.

4. School Plant Planning Process
The Nigerian education consists of three levels – primary, secondary and tertiary education. Each of these levels of education has its distinct features which planners must take into consideration, otherwise the school plant planning will be considered a failure if it does not meet the requirements of the level of education being planned for. For example, the principles guiding school site selection, size of classroom, hall, laboratories, and libraries are different in proportion to the level of education. This therefore means that the level of education being planned for will determine the nature and types of the school plant to be provided (Asiabaka, 2008). However, this paper considers the holistic view of school plant planning process in the following:

Development of Educational Programme: To venture into school site selection, school plant design and construction without a prior dynamic, creative, relevant and functional educational programme already in place is to venture into futility. In essence, development of educational programmes is the kickoff of school plant planning process. According to Amanchukwu and Ololube (2015), the logical place to start school plant planning is the development of educational programme. In like manner, Asiabaka (2008) asserted that planning of school plant starts with the conceptualization of the educational programmes to be offered in the school. As enunciated by Knezevich (1953), school plants cannot be planned intelligently until educational programmes have been determined. It is therefore advised that adequate time should be devoted in developing a functional educational programme for the school before school site selection. In educational programme development, the following should be borne in mind and adequate attention is expected to be paid to it: The type of school proposed, the scope of the program, curriculum content, the required space a student needs to perform each type of the educational experiences, the building, furniture, equipment and instructional materials. When these are adequately considered in developing an educational programme, the educational system will be functional and its recipient will be self-reliant (Kotirde and Yunus, 2014).

Selection of School Site: Having developed a functional educational programme, the next stage of school plant planning process is to carefully select a suitable site for the construction of school buildings. In selecting the site for school, the following important criteria must be taken into consideration;

- Accessibility: The school should be sited where it is accessible for easy location.
- Geographical location: The school should not be sited near markets, highways, rail line, industries and airports to avoid external distraction or disturbance knowing fully well that effective teaching and learning require total focus as well as rapt attention of students.
- Topography: School should be sited on a plain ground, not rocky and hilly area in order to avoid students’ injury while playing.
- Health safety: The school should not be sited near industrial areas where carbon-monoxide is emitted from heavy duty machines. It should not also be sited near cigarette factories and abattoirs as offensive odours which emanate from such areas may hamper the health of students and staff.
- The soil condition: The planner may need to consult a soil geographer who will examine whether or not the soil condition of the selected site is prone to gully erosion or other environmental decadence so as to avoid collapse of building in the nearest future.
- Expansibility: The site should have adequate space that can accommodate future expansion.
- Security: The school should not be sited in an area where rape, cultism, stealing, drug abuse among others are daily occurrence. The life of teachers and students in such area will no doubt be threatened and thus affect teaching and learning.

Acquisition of Land: The educator, at this stage, acquires the land through purchase and ensures that the necessary legal documents such as land agreement, survey plan, certificate of occupancy etc. are obtained. This is necessary because land matters are very sensitive issues that require adequate documentation to forestall future challenges and trespassers on the land. Meanwhile, in a public situation, the master plan resides with the government who provides facilities like schools, security, hospital etc. for community development.

Designing School Plant: After acquisition of land comes the school plant design stage. At this stage, the planner consults an architect for proper architectural expression of the planned curriculum. The architects help to translate the building needs as conceived by the educator into practical terms through designs and specifications (Ugiomoh, Ememe and Obike, 2013). It is important to note that no architect, no matter how knowledgeable, skillful and talented he might be in school plant design, can design a functional school plant without proper guidance from the educators who will use it. Unfortunately, most private school owners often fail to employ the service of architects. This therefore results in the construction of school plants that are not attuned to the specific...
needs of students who would use them or the community in which the school is located which of course inhibits the progress and development of education in Nigeria (Amanchukwu and Ololube, 2015). Expectedly, the architect should not only know what subjects would be taught but should know the basic educational concepts and student experiences that underlie the design of the buildings. He should know what equipment is needed and how much space the teachers feel a student needs to perform each type of educational experience (Ogbodo, 1995) as this could assist him/her in designing a functional school plant that will suit the intended curriculum and use. 

**Approval of the Building Plan:** The Ministry of Education as appropriate authority through which school operation is approved, is at this stage fully involved to see to the approval of the building plan. Officers in the Land Matters Unit in the Planning, Research and Statistics of the Ministry of Education for Secondary education, SUBEB for Primary education and National University Commission (NUC) for Universities vet as well as correct errors where necessary in the building plan so as to meet the standard specification before approval.

**Construction of School Plants:** It is unwise to embark on the building construction without feasibility study on cost and estimate. It is expected therefore that planner/educator consults other experts to estimate the cost of the building so that he will know how much will be required at each stage of the work (Ololube, 2013). One must ensure that the huge investment in school plant is justified by providing its long term usefulness. Thus the following principles are suggested as guidelines:

- **Flexibility:** The school buildings should be constructed in such a way that it is adjustable to future modification both in the structure and school curriculum.
- **Durability:** The building should be constructed with materials that last for a very long time.
- **Maintainability:** The building should be constructed with materials that can easily be maintained with possible minimum cost.
- **Conformity:** The structures must conform to the standard specifications required by the government.

**Provision of Educational Resources:** Educational resources are perhaps the wheel on which educational system ride. These resources include human, material, financial and managerial. The availability and adequacy of resources are indeed very germane to the school success (Adu, Akinloye and Adu, 2015). It is important that adequate provision of resources be made according to standard specifications since the school curriculum cannot be implemented if the resources needed for teaching and learning are not available. When resources are provided according to standards, they provide facilitating and stimulating environment for effective teaching and learning in schools (Ugiomoh, Ememe and Obike, 2013). Unfortunately, African leaders earnestly desire good education programs for their people, but in many cases the resources are so meager that little progress can be made (Amanchukwu and Ololube, 2015).

**Implementation of School Curriculum:** School curriculum remains an ordinary document until it is fully and well implemented. According to Ali and Ajibola (2015), objectives of any level of education cannot be achieved if the planned programme for such level of education is not well implemented. Similarly, Onyeachu (2008) observed that no matter how well a curriculum of any subject is planned, designed and documented, implementation is important.

**Proper Utilization of Educational Resources:** National educational goals could be achieved and realized when human, material and financial resources within and outside the organization (such as school system) are well harnessed and judiciously used by the management (Heuneman, 1983). However, in Nigerian educational system, the available resources are often not properly utilized due to poor planning which ignores educational goals, types of schools and the number of classrooms required if the quality of education is to be maintained (Amanchukwu and Ololube, 2015).

**School Plant Maintenance:** All components of school plant need to be maintained regularly and made functional in order to ensure a long life span since they exist to facilitate effective teaching and learning. The school head must ensure that the equipment/facilities that have either been broken, worn out or stolen must be replaced and roofs that leak must be repaired without delay as prompt maintenance will no doubt continue to create an enabling environment conducive for effective teaching and learning. Ajayi (2007) identified five types of maintenance in the school system. These are:

- **Corrective maintenance:** This is concerned with repairing faults on time. Repairs of electrical faults in the school building and mechanical faults in generating sets and vehicles are examples of corrective maintenance.
- **Preventive and predictive maintenance:** This refers to maintenance carried out for the purpose of preventing break downs or situations which can put part of the plant out of use.
- **Shut down maintenance:** This involves the shutting down of a school plant or part of it in order to carryout maintenance work.
- **Running maintenance:** This is the maintenance carried on while the plant or a component of it is operating.
- **Break down maintenance:** This focuses on rectifying breakdowns in any component of the school plant.
Evaluation of School Programme: Whether the educational programme is fully and well implemented, it has to be evaluated. This help to know the extent to which the programme has been implemented. School programmes are evaluated for the purpose of efficiency, effectiveness and productivity. In the school system, the evaluation of programmes should be based on a thorough knowledge of their results or outcomes, roles and functions in consonance with stated goals and objectives of the school system. School programmes are evaluated through various ways. It could be by roles, results, functions and expectation or set standard. If a programme is evaluated according to role, the ability of a programme is assessed to know whether it delivers the deliverables or not. When a programme is evaluated according to results, programme performance is measured against pre-determined goals and objectives of the school. When a programme is evaluated according to function, the efficacy of such programme is tested to know if the outcome of the programme is able to function as determined goals and objectives of the school. When a programme is evaluated according to expectation or set standard, the outcome of such programme is compared at the end with the expectation set at the beginning.

5. Challenges of School Plant Planning in Nigeria
The following are the monumental challenges, among other challenges, confronting school plant planning in Nigeria.

Under-funding: The frivolous way and manner in which Nigerian government responds to financial needs of education as witnessed in today’s Nigeria, especially judging from the budgetary allocation to the sector, indicates, without doubt, that education is not given a top priority. For instance, in the 2016 budget, the education sector had a total allocation of N369billion, representing 6.06 percent of the total budget (6.08trillion). 92% of this amount was allotted to recurrent expenditure like salaries. It is from the balance of 8% that all the federal universities, polytechnics, colleges of education, secondary schools and primary schools were run. In this circumstance, it would be extremely difficult to procure all the required school plants for all the levels of education with this meager allocation. This challenge is not peculiar to public schools; private schools have their funding challenges as well. The high cost involved with procurement of school equipment has made school proprietors to settle for less quality ones. According to Amanchukwu and Oloibe (2015), this cost factor accounts for the unavailability of very essential school facilities in most private-owned primary and secondary schools in Nigeria.

Corruption: Most of the public office holders in Nigeria have come to power only for the ulterior motive they stand to gain and not to serve the interest of the masses. They unlawfully dip their hands in the coffers of government, withdraw public funds meant for provision of educational facilities/maintenance of existing ones and fraudulently divert it into personal accounts for their private use. Similarly, due to endemic nature of corruption that has found its way into virtually all sectors, it not surprising that some private-owned schools also suffer in the hand of unscrupulous staff that ‘cat away’ with school fund meant to be used for procurement of school plants. Also, commonly reported cases of corrupt officers from Ministry of Education who visit schools to ascertain level of compliance with required school plant in schools only go to schools to extort money and leave their statutory functions unattended to.

Cultural Problem: Nigeria is an amalgamation of over 300 ethnic groups and each of these ethnic groups has its own unique culture and worldview. The fact remains that these ethnic groups within our country are not only multitudinous but are also distinctly pronounced in culture. Therefore, the task of planning school plant that will meet the entire needs of students from different ethnic groups is a serious undertaking which requires the appointment of professionals who have adequate knowledge about what it requires to plan school plant.

Manpower Problem: Top government functionaries and political class in most cases exert their influence over whom to be appointed as school plant planners without considering and evaluating their suitability, capabilities and cognate experience for the job. Meanwhile, when unqualified educational planners are made to be in charge of planning school plant either at national or at state/grassroots level, there is certainty that the seed of ineffectiveness and inefficiency will germinate in the school system.

Political Problem: Another monumental challenge confronting school plant planning in Nigeria is the frequent change of government and this does not bode well for the smooth implementation of school plant planning. Since October 1960 when Nigeria gained independence, policy inconsistency by the government has been the major problem of the country. Successive administration in the country had had significant change in government policies to suit its administration. This poses a great concern to majority of private-owned schools in the country, because, school plants’ requirement and recommendations frequently change as new government comes into power.

Administrative Problem: Both technocrats and bureaucrats play a pre-eminent role at the implementation stage of educational planning through the control and operation of governmental administrative machinery. Unfortunately, most of the education plans have ended up failing because of the internal rivalry and clashes of interest that exist between technocrats and bureaucrats. For instance, technocrats do claim that they are vastly
superior to the bureaucrats while the bureaucrats do claim otherwise. Such internal rivalry arising from the plan environment usually leads to slowness of action in plan implementation. This also surface in private-owned schools where school owners who have little or no professional experience in right mix of school plant planning that could deliver the deliverables will be insisting that school facilities that appeal to his/her fancies should be secured irrespective of its relevance.

The Problem of Accessibility to Fund: Acquisition of proper and well-articulated school plants require huge funds. Most of the school proprietors/proprietresses are facing a lot in accessing fund from our financial institutions. Some of these challenges ranging from high interest rate, lack of collateral, lack of surety, etc hamper execution of proper school plant planning among private school owners.

Economic Recession: Due to economic recession that the nation and the world at large are witnessing, the prices of facilities have been skyrocketed in the recent times. This among others makes procurement of these facilities unaffordable by prospective school managers/administrators thereby making them resort to running the school with poor school plants/facilities.

Government Policies: Government policy becomes a threat when prospective school owners cannot afford what it takes to meet up with such policy. In a situation where government set a policy that is not realistic or too demanding for the establishment of school, proprietors/proprietresses disregard such policy and operate with what they can afford not minding whether or not it will enhance effective teaching and learning process and academic performance of the students.

6. Conclusion and Recommendations
As a way of concluding, all said and done, it can clearly be seen that the realization of educational goals and objectives, no doubt, depends on the extent to which government and administrators of schools are able to give school plant planning adequate attention needed. A properly planned school plant will no doubt bring about a conducive learning environment that is psychologically and physically safe for students and teachers as well as enhance quality of instruction which will in turn promote effective teaching and learning process. Consequent upon the foregoing, the following recommendations are hereby suggested:

✓ Considerable time should be devoted in planning school plant for both intended and existing schools.
✓ Adequate time should be devoted in developing the educational programme for the intended school before school site selection.
✓ In selecting the site for the school, the following important criteria must be taken into consideration; accessibility, geographical location, topography, soil condition, health safety, expansibility and security of lives and properties.
✓ School plant planner needs to provide architect with necessary information or briefings before designing a functional school plant that will suit the intended programme/curriculum and use
✓ The government in power should live up to UNESCO’s expectation regarding the 26% budgetary allocation to education for procurement of adequate school plants.
✓ Corruption is a monster that must be stamped out in our society with all sense of seriousness if goals and objectives of education would be achieved as planned.
✓ The service of professionals who have adequate knowledge must be sought for to plan school plants especially in an environment that has diverse ethnic groups.
✓ Qualified educational planners are to be in charge of planning school plant either at national or at state/grassroots levels; this certainly would make teaching and learning become effective and efficient in the schools.
✓ Technocrats, bureaucrats, school administrators and school owners should reach a compromise in planning and execution of school plants in a bid to achieving the preconceived objectives of education.
✓ Financial institutions should make loans accessible to school owners with considerable interest rates.
✓ Government should create enabling environment for prospective school owners to thrive by making policies that are realistic and achievable for a growing school.

References


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