

The Need for Effective Facility Management in Schools in Nigeria

Dr. (Mrs.) Ihuoma P. Asiabaka

Department of Education Foundations and Administration, Faculty of Education, Imo State University, Owerri, Nigeria,
Email: ipasiabaka@yahoo.com

ABSTRACT

Facilities management is an integral part of the overall management of the school. The actualization of the goals and objectives of education require the provision, maximum utilization and appropriate management of the facilities. Furthermore, advances in science and technology, necessitate that the school manager should adopt modern methods of facilities management. This will improve the quality of teaching and learning. A direct relationship exists between the quality of school facilities provided and the quality of the products of the school. The physical environment of a school is a major determining factor in the attainment of its objectives. This paper describes the concept, nature, types of school facilities, need for facilities in schools and facility management problems. It also suggested methodologies for facilities management and concluded that school facilities give meaning to the teaching and learning process. It recommended that school managers should carry out comprehensive assessment of the facilities to determine areas of need. This type of assessment will assist in policy formulation as it relates to facility management in schools. [New York Science Journal. 2008;1(2):10-21]. (ISSN: 1554-0200).

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Introduction

The primary purpose of the teaching and learning process is to bring about in the learner desirable change in behaviour through critical thinking. This process does not take place in a vacuum but rather in an environment structured to facilitate learning. Stoner, Freeman and Gilbert (1996) described the environment of an organization as all elements relevant to its operation and they include direct and indirect action elements. School facilities, constitute the major components of both direct and indirect action elements in the environment of learning. Several studies have shown that a close relationship exists between the physical environment and the academic performance of students. Nwagwu (1978) and Ogunsaju (1980) maintained that the quality of education that children receive bears direct relevance to the availability or lack thereof of physical facilities and overall atmosphere in which learning takes place. The school facilities consist of all types of buildings for academic and non-academic activities, equipment for academic and non-academic activities, areas for sports and games, landscape, farms and gardens including trees, roads and paths. Others include furniture and toilet facilities, lighting, acoustics, storage facilities and packing lot, security, transportation, ICT, cleaning materials, food services, and special facilities for the physically challenged persons.

These facilities play pivotal role in the actualization of the educational goals and objectives by satisfying the physical and emotional needs of the staff and students of the

school. Knezevich (1975, p.563) emphasized that the physical needs are met through provision of safe structure, adequate sanitary facilities, a balanced visual environment, appropriate thermal environment, and sufficient shelter space for his work and play. His emotional needs are met by creating pleasant surrounding, a friendly atmosphere, and an inspiring environment. The educational system has undergone tremendous changes in the form of its philosophy, broadened goals and objectives, new approaches to service delivery and architectural design, quantum leap in school enrolment, multiplicity of curricula programmes and extra-curricula activities, introduction of Information and Communication Technology (ICT) and expanded academic support services such as guidance services to students, teachers and the community, integration of the school and community. The resultant effect of all these changes is the need for creative and innovative steps in the management of school facilities. For example, research findings have shown that students learn better when a combination of methods and materials are employed during teaching. Furthermore, emphasis has shifted towards giving individual attention to students as against teaching large classes which presupposes that all students in a class have the ability to learn at the same pace. The implication of the foregoing is that in designing school plant, provision should be made for individual and small group interaction and for large groups for academic and social activities.

Fenker (2004) stated that facilities management is a process that ensures that buildings and other technical systems support the operations of an organization. The International Facilities Management Association (2002) described facilities management as the practice of co-ordination of the physical workplace with the people and the work of the organization; it integrates the principles of business administration, architecture and the behavioural and engineering sciences. School facilities management is the application of scientific methods in the planning, organizing, decision-making, co-ordination and controlling of the physical environment of learning for the actualization of the educational goals and objectives. This involves among other things, collective decision making in relation to selection of site for establishment of new schools, design and construction of new school plants including grounds, renovation and modernization of old plants, provision of equipment for academic and non-academic activities, maintenance of all facilities and review of management practices and processes.

Concept, Nature and Types of School Facilities

Schools exist for the purpose of teaching and learning. Human and material resources are deployed for this purpose. School facilities are the material resources provided for staff and students to optimize their productivity in the teaching and learning process. The realization that the transfer of knowledge does not only take place in the four walls of the classroom from the teacher to the students but rather that learning takes place through discovery, exploration, interaction with the internal and external environment has necessitated the creative and innovative development of teaching and learning facilities that reflect these changes. Schools exist to serve socio-economic and political needs of the ever-changing society, consequently, they are in constant interaction with their external environment. They receive inputs from the external environment in the form of human and material resources, processes them and empty same into the society as

finished products and services. The quality of the products bears a direct relationship with the quality of the facilities deployed in the process of the production. This demands that state of the art facilities are provided in schools to prepare school leavers for life in the global village. According to Propst (1972, p.107) useful types of resources to be contacted by the planners and the management team are acoustical design engineering, audiovisual design engineering, behavioural sciences, building systems design, community and press relations, ecological studies, electronic data processing of hardware specifications, electronic data processing for programme development, use of facilities training and financial planning. Others include food service planning, graphic design, health care planning, information management, installation supervision, interior design, laboratory planning and engineering, lighting design, management consulting, project planning, safety engineering, site planning, technical equipment specialization, and urban planning.

This implies that facilities management is a collective responsibility of the federal, state, local government authorities, staff and students of the individual schools and the community where the school is located. The Federal Government through the Federal Ministry of Education provides the policies that guide the educational system and also oversees the implementation of these policies at the State level. On the other hand the State Government ensures the actual implementation of the National Policy on Education by providing the enabling environment for effective teaching and learning.

The school plant is a major component of the school facility. Knezevich (1975, p.562) described it as “the space interpretation of the school curriculum”. He emphasized that the curriculum finds its physical expression in construction and arrangement of the school plant, which is a controlled environment that facilitates the teaching and learning process and also protects the physical well being of the occupants. He further stated that since teaching and learning does not take place in a vacuum, school facilities give meaning to the planned curricula and extra-curricula activities. A discussion of the school plant starts with the conceptualization of the educational programmes to be offered in the school. The nature and types of the educational programme will determine the nature and types of the school plant to be provided. Unruh (1974) emphasized that both teachers and students need places to search, read, write, confer, interact, view, listen, think, experiment, and record. Students need places to transact student affairs or to gather for social purposes. Teachers need office space, conference rooms for team planning, facilities for diagnosis of pupil’s needs, and facilities for preparing instructional presentation. New views of the teaching-learning process that move beyond memorizing of knowledge toward involvement of students in applying, analyzing, synthesizing, and evaluating knowledge stress the need for flexibility of space in the schools. The complexity of the learning environment requires flexibility in the design of the school plant. Modern facilities are designed for diverse academic and social activities.

Multipurpose facilities used for academic activities during school hours, may be available for community use during or after school hours. Such facilities may be used for continuing education programmes, social activities and recreation. Through appropriate scheduling multipurpose facilities may be accessible to the community during school

hours. This will eliminate the burden of duplication of such facilities as conference halls, gymnasium, library, theatre and sporting facilities. Such integrated effort is cost effective and brings the community closer to the school. Some buildings are over fifty years and therefore require modern facilities for teaching and learning. Renovation and modernization of old and dilapidated buildings should be carried out to ensure that facilities for team planning areas, office space, clerical space, workrooms, professional development libraries, faculty dining area, storage space, students conference areas, guidance services area for large group instruction, spaces for instructional media, library resource centers, science facilities, arts and music studios, individual study area and physical education facilities. Equipment and supplies are essential for the attainment of educational goals and objectives. Simpson and Anderson (1981, p.139) defined equipment as “items that last a minimum number of years or cost more than a certain amount” and supplies as items such as microscope slides, glass tubing, and cotton swabs, that are quickly consumed and that are usually less expensive than equipment items”. Some equipment perform specific functions while others such as computers perform multiplicity of functions.

School equipments are available in various forms. The equipment may be fixed or movable and they serve various purposes in the educational system. They are used in the classrooms, laboratories, offices, workshops, cafeteria, toilets, laundry, library and for sports etc. The supplies are the accessories for operation of various equipment. Furniture are also available in the classrooms, offices, cafeteria, laboratories and workshops, outdoor, residential halls, common rooms, and those designed for the physically challenged. Information and Communication Technology (ICT) facilities also include among others soft wares on classroom management, facility management, inventory control, maintenance management, online procurement, food services and general management. The application of the software requires that the school managers should be exposed to necessary in-service training to enable them make maximum use of the soft wares.

Need for Facilities in Schools.

Facilities are materials designed to serve specific purposes. In the school system, there are multiplicity of facilities, which facilitate teaching and learning. They are used;

- (1) To illustrate concepts
- (2) Provide opportunity for firsthand experience
- (3) For experimentation and demonstration
- (4) For scientific investigation and discovery
- (5) To provide diversity of thoughts
- (6) For observation and inquiry
- (7) For development of scientific attitudes and skills
- (8) To protect the individual and also provide comfort

The indirect or teaching support facilities such as offices, cafeteria, acoustics, toilets, laundry, mowers, residential halls, common rooms, cleaning materials ground and similar items satisfy the individual’s physical and emotional needs. They are used to:

- (1) Increase instructional effectiveness

- (2) Improve the cleanness, orderliness and safety of facilities
- (3) Reduce the operational cost and life cycle cost of a building
- (4) Extend the useful life of a building
- (5) Increase efficiency and effectiveness of the staff and students
- (6) Improve building appearance
- (7) Use data collection and analyses for decision making

Facilities Management Relations

The responsibility of management of facilities requires collective efforts. Management processes, which involve planning, organizing, decision making, leading, coordinating and controlling are applied in facilities management. Broadened educational goals and objectives as a result of changes in socio-economic development have necessitated the involvement of several minds in the facilities management process. It requires expert input from a wide range of stakeholders. Collaborative efforts bring into facilities management new ideas and perspectives. Over the years, school managers have emphasized that physical facilities available for academic and non-academic activities are grossly inadequate. This issue is very sensitive and demanding because it bears direct relevance to the funding of education and most importantly to the quality of outputs of the educational system. Available facilities in most schools may well be regarded as obsolete in terms of quality and quantity. These facilities were provided when the student population in the school was reasonably low when compared to the population of the same school presently using the same facilities. According to the report of the educational facilities laboratories (1968, p.27) adjectives used to qualify such facilities are rigidity, inaccessible, sterility, formality, isolation, starkness, immobility and permanence. These facilities no longer satisfy present day needs.

With quantum leap in school enrolment, increasing number of academic programmes and limited resources, flexibility must be an integral part of the planning process. Facilities should be established such that they will serve new functions in future. In facilities planning, Caudill, (1954, p.18), emphasized that, “more specific terms like expansible space that can allow for ordered growth, convertible space that can be economically adopted to programme changes, versatile that serves many functional and malleable space that can be changed at once and at will should be used”. For these to be achieved Regnier (1980, p.102), “advocates team efforts of facilities planners and capital budget analysts, administrators, academic staff, fiscal and institutional research personnel”. According to the Planning Guide for Maintaining School Facilities effective school facility maintenance plan can:

- Contribute to an organization’s instructional effectiveness and financial well-being
- Improve the cleanliness, orderliness, and safety of an educational organization’s facilities.
- Reduce the operational costs and life cycle cost of a building
- Help staff deal with limited resources by identifying facilities priorities proactively rather than reactively
- Extend the useful life of buildings

- Increase energy efficiency and help the environment.

Methodologies for Facilities Management

Planning, as in all management processes is the first logical step in facilities management. According to Dror (1967, p.99) planning is the “process of preparing a set of decisions for action in the future directed at achieving goals by optimal means”. A plan for facilities management must be an integral part of the overall Federal, State and Local Government educational master plan. It is a well articulated conceptualization of the educational philosophy, goals, objectives and specification for short and long term objectives including implementation of the planned curricula and extra-curricula activities. It also includes budget priorities for facilities management. A facilities management plan starts with the educational philosophy that serves the needs of the individual in a dynamic and knowledge based economy. The educational system should prepare individuals for life in a constantly changing world. Facility management plan should therefore give meaning to the educational philosophy.

A second step is the development of broad educational goals and specific objectives. These goals and objectives should be comprehensive enough to cover all aspects of the educational programme and also make adequate room for flexibility to allow for specific individual and group needs. Planning cannot meaningfully be carried out without accurate information, which should be collected through facility audit. According to the Planning Guide for Maintaining School Facilities (2003) facility audit is a comprehensive inventory of a school’s facilities that provides a standard method for establishing baseline information about the components, policies and procedures of a new or existing facility. It provides information on the status of school facilities. It is carried out by assessing buildings, grounds and equipment, documenting the findings and recommending service options to increase efficiency, reduce waste and save money. According to the guide, facility audits are important because they:

- help planners, managers, and staff know what is available, its condition, service history, maintenance needs and location
- provide facts not guess work, to inform plans for maintaining and improving school facilities
- establish a baseline for measuring facilities maintenance progress
- allow in dept analysis of product life cycles to occur on a routine basis (i.e. measuring actual life versus expected life)

The following information should be collected when a facility audit is being carried out:

- (1) Brand name, model number, serial number
- (2) Quality and product size
- (3) Location
- (4) Age
- (5) Condition
- (6) Working as purchased/designed
- (7) Working as it should

- (8) Working as it needs to be to meet the needs of the users
- (9) Repair history
- (10) Specialized upkeep equipment (e.g. oil and filter types)
- (11) Evidence of future needs
- (12) Recommended services
- (13) Estimated remaining useful life

Brooks and Atkin (2003, p.13) outlined the stages in facilities management as follows:

Analysis stage- assembles all relevant facts about the organizations objectives, needs, and policies, a review of resources processes, systems and the physical assets themselves, together with their attributes in terms of space, functions and utilization

Solution stage- assembles criteria for judging options, evaluating these against the objectives of the organization and develops the facility management strategy

Implementation stage- completes the strategy development process through the establishment of an implementable plan that incorporates the key elements of procurement, training and importantly communication.

Information and Communication Technology

The school heads and the teachers are constantly involved in decision making, planning, organizing, communicating, influencing, coordinating, and evaluating. These managerial processes are carried out in the areas of academic programmes and activities, construction and maintenance of physical facilities, staff and student personnel services, special services, and public relations. In carrying out these duties they work in collaboration with the ministry of education, school board, parents and guardians, and in fact all other stakeholders in the internal and external environment.

Since the school is a formal organization, there is need for accurate, timely, sufficient and relevant information, which are kept in the form of records and they provide information on the past, present, and anticipated future activities of the school. The traditional method of gathering, processing, preservation and presentation/dissemination of large volume of information in print media has failed to facilitate work in the school system because of its attendant problems ranging from limited capacity to total loss of important information. Consequently, Information and Communication Technology (ICT) became indispensable in the administration of schools. The ICT is technology- based and knowledge-driven and its application in all spheres of human activities has changed the face of the earth. It is used in health delivery, engineering, industry, business, agriculture, military, education, all aspects of arts and science, maintenance of law and order among others. The school is an open system that is in constant interaction with the external environment. The world is undergoing tremendous changes as a result of advances in science and technology; consequently, the school exists in a technological environment. According to Ogburn (1979) technology is application of scientific discovery and the material products to technology. He further stated that technological environment consists of such fabricated objects as buildings, vehicles, processed foods, clothing, machines, ships, and

laboratories. The technological environment has direct impact on the management of the schools.

The Commonwealth Secretariat (1991) stipulates that the phrase Information Technology is used to encompass a range of new technologies and their application, including all aspects of the use of computers, microelectronic devices, satellite, and communication technology. Vernon (2001) stated that Information and Communication Technology (ICT) is a collective term covering all those technologies, both hardware and software, dedicated to the capture, storage, processing, transmission, and presentation of information. According to Hawkrige, Jaworski and McMahon (1990) computers are at the heart of the ICT revolution because they are fast information processing machines, configured to receive input in the form of information, systematically process the input and provide organized information that serves the needs of the user. It has the advantage of improving administrative efficiency and overall quality of the teaching and learning process. Babu, Singh and Sachdeva (1997) defined information as data that have been put into a meaningful and useful context and communicated to recipient who uses it to make decisions. According to them, information involves the communication and reception of intelligence or knowledge. It appraises and notifies, surprises and stimulates, reduces uncertainty, reveals additional alternatives or helps eliminate irrelevant or poor ones, and influences individuals and stimulates them to action. They listed relevance, timeliness, accuracy, cost effectiveness, reliability, usability, exhaustiveness and level of aggregation as characteristics of good information.

Facilities Maintenance.

An aspect of school management that is generally overlooked is facilities maintenance. When new buildings are constructed and taken over by the appropriate authorities, practically no attention is paid to the maintenance of such buildings. Several school buildings that are over fifty years old have never undergo renovation or any form of modernization in spite of the changes in the educational system. Facility maintenance is an issue that concerns all levels of the educational system ranging from the pre-kindergarten to the tertiary levels. Some of these facilities are architecturally obsolete and therefore cannot contribute to functional education. Maintaining the new buildings, renovating and modernizing the old ones require considerable expertise and commitment of human and material resources. Changes in weather conditions and lack of maintenance culture are responsible for the aging and deterioration of school buildings, grounds and equipment. School managers and teachers who constantly use school facilities lack knowledge of facilities maintenance planning. Consequently, they fail to integrate facility maintenance into the management of the school. The issue of facility maintenance is haphazardly addressed at all levels of the educational system. Repairs take place only when problems arise due to break down of the existing facility. Facility maintenance entails providing clean and safe environment for teaching and learning. It also involves provision of adequate facilities for teaching and learning. This type of maintenance should be adopted in the facility maintenance plan. These are preventive, routine, emergency repairs, and predictive maintenance.

Preventive maintenance - This is a type of maintenance carried out on school facilities to avoid breakdown and ensure optimal performance of the facility. Up to date

information about the facility is required to serve as a guide for the maintenance team. Preventive maintenance saves cost and time. It is usually an integral part of the management practice in societies where maintenance culture is well established. Decisions on preventive maintenance are collectively made and implemented.

Routine maintenance- This is carried out periodically as scheduled by the school managers. Facilities may be serviced monthly, quarterly or even annually depending on the agreed schedule. Manufacturers guide provide information on the nature and maintenance intervals. School managers comply with these guides to avoid breakdown of the equipment.

Emergency Repairs- This is very common in the management of school facilities in societies where maintenance culture is not well established. It takes place when a facility breaks down and urgent measures or steps had to be taken to remedy the situation. In this regard, collective decision-making may not be possible because there may be limited time to bring together all the necessary individuals to make decisions. It is also expensive because due to lack of maintenance, the extent of damage may demand total replacement of the facility or high cost of repair. In some cases, the breakdown may cause injury or even death to staff and or students of the school. The resultant effect may be high insurance premium or prevent the use of the facility for teaching and learning until repair had been effected. School managers should proactively develop and implement facilities management plan for addressing facility needs.

Predictive Maintenance-This involves the use of computer softwares to predict equipment failure based on age, user demand and performance measures.

Problems and Issues in Facilities Management

The most fundamental problem in facilities management is lack of policy guidelines for infrastructural development in schools. In some schools, there are inadequate classrooms, staff offices, laboratories and workshops, libraries, study areas while in some, these facilities are adequately provided. This situation arises because the Federal, State and Local Governments have failed to establish policy directives on minimum standards in relation to school facilities. While some classes hold under trees and students are exposed to harsh weather conditions, others hold in air conditioned classrooms. While some others have well equipped laboratories, workshops, libraries and other facilities for effective teaching and learning, others have none, and where they exist, such facilities are poorly equipped. It therefore becomes imperative that the different levels of government should address the issue of development and implementation of minimum standards for facilities development and management.

Sergiovanni, Burlingame, Coombs and Thurston (1980, p.106) defined policy as “authoritative communication of expected behaviour for individuals in certain positions under specific conditions”. According to the 21st Century School Fund (2005) policy agenda should entail increase in public participation in facilities planning, create and support schools as centers of community that offer school-based support to children to

eliminate barrier to success and serve the broader community, improve facilities management including maintenance and improvement programme and secure adequate and equitable facilities funding. Policies should direct the actions of the school managers. In the absence of policy, facility management is left to the whims and caprices of the managers. Schools are formal organizations, and all activities including facilities management should be in line with laid down rules and regulations derived from overall policy guidelines.

Management Practices

Several individuals occupying managerial positions in schools lack knowledge of management processes, and some who possess the knowledge fail to put them into practical use in the management of the schools.

Schools facilities management requires intermixture of experts in different areas as stated earlier. This demands that the school manager should possess the necessary human relations skills to assemble and utilize the relevant individuals within and outside the school for efficient facilities management.

Finance

Adequate fund is always a problem for managers in all organizations. The school manager therefore is not left out in this problem. However, it is necessary for the manager to look for alternative means of sourcing for funds within and outside the community. Government subvention and funds from all forms of fees and levies are usually inadequate. According to the Educational Facilities Laboratories (1955, p.112) the following principles if applied would reduce cost of facilities management.

- Selecting the best architect and professional advice before buying a site.
- Eliminating waste space, especially in corridors, boiler rooms, and other non-instructional areas
- Using out-of-doors areas where possible
- Using a short, simple perimeter to reduce expense on exterior walls.
- Simplifying detail and using repetitive modular building elements where possible.
- Carefully selecting building materials.
- Using movable partitions to reduce future remodeling costs when alterations are needed to keep the building from becoming obsolete.
- Using space flexibility.
- Including foundations designed for imposed loads.
- Using walls that can be moved to subdivide space.
- Considering acoustical problems.
- Considering quality and quantity of light.
- Avoiding over design (more capacity than needed) in the heating system.
- Consulting with an insurance agent during design.
- Using building alternates with moderation.
- Avoiding confusion of cheapness with economy.
- Keeping in mind the purpose of everything that goes into the schoolhouse.

Information

School managers lack qualitative and quantitative information on facilities. Quantitative data involves nature and condition of existing facilities, nature of present use and possible future use. Qualitative data involves room configuration, ventilation systems, windows, lighting, access to support facilities, condition of furniture, space for equipment including specific discipline related requirements. Data collected and analyzed should form the bases for facilities management decision making.

CONCLUSION

School facilities give meaning to the teaching and learning process. Facilities management is therefore an integral part of the overall management of the school. School managers should carry out comprehensive assessment of the facilities to determine areas of need. This requires an integrated effort of all stakeholders who possess the expertise needed for accurate and up-to-date assessment of all aspects of school facilities. The actualization of the goals and objectives of education require the provision, maximum utilization and appropriate management of the facilities. Furthermore, advances in science and technology, necessitate that the school manager should adopt modern methods of facilities management. This will improve the quality of teaching and learning.

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