



MAINTENANCE OF EDUCATIONAL BUILDINGS: EVALUATION OF USER PRACTICES IN RIVERS STATE UNIVERSITY, PORT ARCOURT.

Tambari B. Joshua; Dr. Ferdinand Daminabo
Department Of Architecture, Rivers State University Port Harcourt Rivers State
Email: tambarijosh@gmail.com

Abstract.

Effective maintenance strategies are imperative to provide proper maintenance and management of buildings. Educational buildings are one of the key facilities for rudimentary knowledge in daily life. Accordingly, the maintenance of these institutional buildings, which serve staff and students, needs considerable attention as effective maintenance protects capital investment, ensures the health and safety of the students, and supports educational performance. Based on a combination of literature survey and physical appraisal, this study examines the maintenance practices in selected hostels and faculties in Rivers State University. Generally, this study also showed that most of the school buildings do not possess their own maintenance manuals in their management practices. Additionally, there is no preventive or planned maintenance as it was not observed, only emergency and unexpected maintenance practices were applied when the need arises as a result of damages. The study recommends the implementation of planned maintenance process, which will be more effective than unplanned maintenance mostly because of the reduction in repair costs.

Keywords: Maintenance, Educational buildings, User Practices

Introduction

Maintenance is work undertaken in order to keep or restore all facilities, for example, every part of a site, building and contents, to an acceptable standard (A.Z.A Akasah and B.M Alias) (2009). The concept of building maintenance is divided into two parts, namely building maintenance management and building maintenance technology. Building maintenance management describes how a system of maintenance work could be organized to deal with the issue of building maintenance. It recognizes that aside from locating and rectifying defects, there need be an effective program to not only curb maintenance costs but also to maximize the benefits of the investment. This means that financial considerations and techniques play a vital role L. (Pintellon and S.K. Pinjala) (2006). Building maintenance technology essentially deals with the study of building defects, such as deterioration of buildings (N.M. Noor, M.Y Hamid, 2011).

The decision to carry out maintenance is influenced by the maintenance needs. The principal aim of maintenance is to preserve a building in its initial stage, and some of the main reasons for maintaining a building are to retain the value of the investment, to maintain the building in a condition where it continues to fulfil its function, and to present a good appearance (O.A. Latef, M. F. Khamidi and A. Idrus, 2010). Besides, effective maintenance management embraces many skills, including identifying maintenance needs and specifying the right remedies. Generally, there are four types of maintenance, namely, corrective or breakdown maintenance, scheduled maintenance, preventive maintenance and predictive maintenance (R.M.W. Horner, M.A.El-haram, A.k. Munnsi)(1997)

However, this paper focuses more on two (2) types of maintenance, namely: preventive maintenance and emergency maintenance (S.J. Odediran, O. A. Opatunji F. O. Eghenure) (2012). Since a comparison of each maintenance strategy depends strongly on the performance-degradation, minimum level of quality, service life and frequency of maintenance operations, these have shaped the parameters for evaluating the maintenance practices in this on-going research (I.F. Colen, J.D Brito) (2010). Even though constructing a new building helps to upgrade educational facilities and to provide a better quality of education, it is also necessary to maintain the existing building at an acceptable standard of performance so that it is capable of facilitating the transfer of knowledge and other academic activities.

Methodology

Primarily, the necessary procedures were observed. The researcher revealed the difficulties related to maintenance practices for educational buildings by searching for some related journal papers for the literature review. Secondly, the researcher came out with the objectives to be used as a guide for the research.

The case studies were selected based on the school buildings and the age of the buildings. The majority of the selected school buildings were almost 5 – 20 years old or more. Five (5) case studies were selected to gather the required data for the research analysis. The buildings that were investigated within the Rivers State University campus were the Faculty of Environmental Science, Faculty of Engineering, faculty of Agriculture, Hostel E, Hostel H

The study employed two methods to collect the required primary data for analysis, i.e. by using unstructured interview survey and visual inspection. This was mostly because the study needed to know the maintenance practices that were adopted in the institution. Other than that, the visual inspections of the buildings assisted in conducting a better analysis and provided some evidence to support the results of the study.

The visual inspections were carried out without any specific instrument and there were certain limitations as there were some places that were out of bounds to the researcher. After collecting all the data, an analysis was performed using Microsoft Excel.

Observations, Results and Discussion

These observations were made based on the overall condition of the buildings and not that of any one school in particular.

A. Toilets

The toilets in these schools were in a very bad condition. According to the interviews, most of the respondents were dissatisfied with the condition of the school toilets. The toilets had many defects and this will have an impact on the school building if nothing is done to rectify the problem. Besides that, it may also affect the students and teachers at the schools. The defects that were identified Figure 1 included toilets with mould growth, dampness, broken concrete, water leakage, and some sulphate acid.



The Figure 1: shows mould and fungus growing on the wall of a toilet.

The defects in the toilets were very bad because the schools did not have any information on the types of defect. In addition, there was no one who was experienced in this field to do a survey for them and to make a report to the ministry. The defects will only be reported in the event that there is any damage that would endanger the students and teachers because they are still not very well-versed on the types of defects that can cause damage to the school building. The Figure 2 shows the concrete spalling that occurred at the column area.

Defects cannot only occur in the toilet, but can also occur outside the toilet. Most of the toilets at the schools had defects because they were located close to a water source. Water was the main factor behind this defect.



Figure 2: Concrete spalling at column area

B. Ceiling

Giving to the visual inspections, most of the ceilings were in good condition because some problems only appeared on certain parts of the ceiling, and not on the whole ceiling. If on the whole the ceiling is riddled with problems, then it may collapse and will pose a danger to the students. Most of the ceilings had defects because of dampness. Their condition was not very dangerous. Some ceiling defects were located in the classrooms, and hostel and had occurred on the asbestos. As shown in figure 4; Some of the asbestos were broken and this could be seen on the inside of the ceiling. Figure 3 shows the growth of mould on the ceiling



Figure 3: Areas of dampness in the ceiling

The defects only occurred on some of the asbestos sheets. To ensure it does not happen again, the asbestos sheets need to be replaced. Before that, the source of the dampness needs to be located and it needs to be solved first before the new asbestos sheets are put in place.



Figure 4: Some of the asbestos were broken

C. Doors

The condition of most of the doors were in deplorable state however some were spared on the average. Some of the problems with the doors included broken doors and termite-infested doors. The doors were broken because of student vandalism. The doors had been kicked in by naughty students until they broke.



Figure 4: Some of the asbestos were broken



Figure 5: Broken doors and termite-infested doors.

D. Structure

Most of the respondents answered that their buildings were in an average condition,

Although the buildings are aged 5-20 years or above, they are still in good condition. However, some of the buildings are at a hazardous stage because they are having problems of a structural nature, where the buildings are experiencing some settlement in the soil and that this might affect the multi-floor buildings if precautions are not taken.



Figure 6: Broken doors and termite-infested doors

E. Maintenance Planning

Most of the faculties do not have their own maintenance manuals or strategy for present or future maintenance but depend more on emergency planning. They do not think that planned maintenance is important to them. The facilities that were surveyed do not have preventive maintenance plan or strategy.

The University management also does not have sufficient budget for maintenance. They can only wait till ugly Emergences occur that require funds to allocate a budget to solve that problem. There is a department in charge of the maintenance and if a problem is encountered, it will be reported to the Estate and works, who will then approve and instruct that maintenance be carried out, then artisans or field workers are sent accordingly. They do not have any planned maintenance because they are not aware of the benefits of having such a plan and that it will save the building and make it last even longer. Besides, if a staff or student were to complain of any problems concerning the school building, the management of the University has made the organogram very rigorous before it could be resolved. The university also do not hire any professionals for maintenance as the management does not see the necessity for it because for them these are only minor problems.

However, they do not understand that even small problems may affect the whole building if nothing is done to stop them from happening.

General Appraisal

Facilities and faculties in Rivers State University are having some unadorned building defects but these are not being disclosed by anyone because the buildings do not have any professional person who is in charge of maintenance. Management and even if there is, it is only represented on organogram and not on the field to actually carry out or supervise this maintenance process. The Table below show the comparison of each element at different building in the institution. Maintenance needs to be carried out on each school building in order to prolong the life of the building.

Facilities Element	Hostel E,	Hostel H	Faculty of Environmental Science,	Faculty of Engineering,	Faculty of Agriculture,
Type Of Maintenance	Unplanned maintenance	Unplanned maintenance	Unplanned maintenance	Unplanned maintenance	Unplanned maintenance
Structure	Good condition	Good condition	Not Good condition	Good condition	Good condition
Toilet	Not Good condition	Not Good condition	Not Good condition	Not Good condition	Not Good condition
Wall	Not Good condition	Not Good condition	Good condition	Good condition	Not Good condition
Floor	Good condition	Good condition	Good condition	Good condition	Good condition

Table 1: Comparison of each element at different building in the institution.

Conclusions

Sequel to a personal inspection of each facility, it can be established that most of the facilities are having various problems because of the maintenance plan that has been implemented in each facility. Most of the problems in performing maintenance works in the university are because they do not have a budget allocation that is sufficient for maintenance. Implementation should be carried out periodically, because some problems may occur continuously and are unpredictable. Most faculties and hostels inspected also have problems in their management system. Maintenance has not been done in a long time because of the lack of efficient management and no immediate action is taken on any report of complaints or damage, this can be attributed to the long organogram of communication. The parties who are assigned to this section (workers) do not have sufficient knowledge of maintenance. The Estate Department is also somewhat slow in acting on complaints of damage which does not affect the structure of the building, such as broken windows, damaged doors, etc., and to ensure the comfort of students and lecturers. School buildings which are more than 5 years old need to be examined. School buildings that are having multiple problems in certain parts need to be attended to quickly to avoid obsolescence and dilapidation setting in. Every faculty and facility on the campus should have a person in charge with knowledge on how to manage the problems faced by the occupants of that building. Each school should also allocate sufficient budget to carry out planned maintenance work not just in an emergency, a suitable maintenance management for facilities is a proper projection for maintenance. The university do not practice regular maintenance, but carry out emergency maintenance when needed. In conclusion, each facility or building on the Rivers State University campus needs to have their own maintenance department to cover the problems that they will face either today or in the future.

References

1. A.Z.A Akasah and B.M Alias, Analysis and development of the generic maintenance management process modeling for the preservation of heritage school buildings, *International Journal of Integrated Engineering*, 1 (2) (2009) 43-52.
2. L. Pintellon and S.K. Pinjala, Evaluating the effectiveness of maintenance strategies, *Journal of Quality in Maintenance Engineering*, 12 (1) (2006) 7-20.
3. N.M. Noor, M.Y Hamid, 2011, Building maintenance budget determination: an exploration study in the Malaysia government practices. *Procedia Engineering*, 20 (2011) 435–444.
4. O.A. Latef, M. F. Khamidi and A. Idrus, 2010, Building Maintenance management in a Malaysia university campuses: A case study, *Australasian Journal of Construction Economics and Building*, 10 (1/2) (2010) 101-114
5. R.M.W. Horner, M.A.El-haram, A.k. Munnsi, Building maintenance strategy: a new management approach, *Journal of quality in maintenance engineering*, 3 (4) (1997) 273-280
6. S.J. Odediran, O. A. Opatunji F. O. Eghenure, Maintenance of residential buildings: user's practices in Nigeria, *Journal of Emerging Trends in Economics and Management Sciences*, 3 (3) (2012) 261- 265
7. I.F. Colen, J.D Brito, A systematic approach for maintenance budgeting of buildings facades based on predictive and preventive strategies, *Construction and Building Materials*, 24 (9) (2010) 1718- 1729.