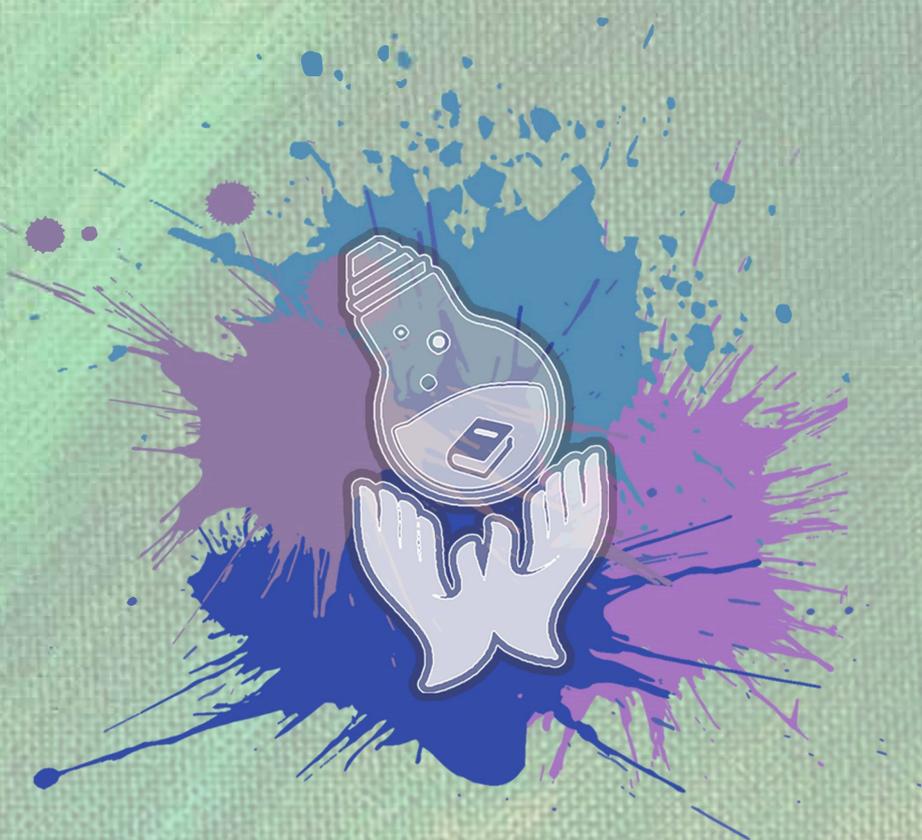




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UNIVERSITI TEKNOLOGI MARA PERAK BRANCH

SERI ISKANDAR CAMPUS

HIGHER EDUCATIONAL BUILDING DEFECTS IN PERAK

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Abstract:

Education buildings are prone to building defects and their care is very important to make sure the building is safe to use and maintained. Defects in educational buildings are hazardous to users especially students. For example, education building at Beaufort, Sabah which has defect in the wall structure causing the wall of the building to collapse. Furthermore, this study is about to improve the defect management of the higher educational building in Perak. The objectives of this study is to know the types of defects, the causes of the defects, and to investigate method to overcome the defect in higher educational building. This study uses observation and questionnaires to collect data from the respondents. For objective 1, the result from observation show the common defects found are cracks, dampness, flaking paintwork and plaster, fungus attacks are the most occurring type of defect in educational buildings in Perak. For objective 2 and objective 3, the questionnaires were distributed to 92 targeted respondents which are the maintenance team. In addition, the SPSS version 25 was utilized in analyzing the collected data. Amongst the main reasons that causes defects are age of the building itself. The famous method to overcome the defect is replacing and install new material to recover the defect.

Keywords:

Defect; Educational Building

1.0 INTRODUCTION

According to Jaydeep and Bhavin (n.d.), defects are generally defined as defects in the design, the workmanship, and in the materials or systems used on a project that results in a failure of a component part of a building or structure and causes damage to person or property, usually resulting in financial to the owner. Defects are viewed as deficiencies in the function, performance, and requirements of a building (Low and Darren, 2001). Defects in poorly maintained indoor environments have been linked to building related illnesses experienced by users. Defects reduce the efficiency and performance of indoor spaces in academic buildings. Although the main causes of defects in buildings are concerned with design detail, materials selection, workmanships, methods of construction, regulations and rules and standards, significant part of the defects are caused by maintenance management processes and procedures (Abdul Lateef, 2012). There are many issue that related with this research. According to Ali et al. (2013), says Maintenance issue often arises when the building performance is not meeting the standards and quality designed. The growing importance of maintenance sector, poor maintenance performance and the lack of research in that area. Thus, it would seem that, although human errors are the immediate cause of defects, the reasons are more likely to do with management, suggesting again that organisational routines and practices might need further investigation (Jingmond and Ågren, 2015). Many cases occur due to the issue, for instance The wall fell onto the student who were in the school area. The first case happened at Sabah in January 2016, involving concrete wall structures. The second case occurred February 2016 at a school in Jasin, Melaka, involving the board wall structure (Utusan, 2016).

2.0 LITERATURE REVIEW

The main literatures which are being discussed in this chapter are to define important terms in this topic, the types of defects happened in higher educational building, causes of defects, and the process to handle the defects.

2.1 Type of defect

According to studies conducted by Nadia and Md Azree (2013), there are many defects that normally occur such as cracks on wall, peeling paint, rising dampness, insect or termite attacks, fungus and small plant attack.

2.2 Cause of defect

Based on Building Research Establishment (1991), the sources of defect also come from the impact of the weather, environmental conditions, conditions of soil, poor design, chemical attacks, poor structural design, poor installation method, low quality of workmanship, maintenance factor and site working condition.

2.3 Method to overcome defect

According to Mei (2011) the defect can be identified by the dilapidation survey. Dilapidation survey can be defined by means of photographic and digital documentation as the systematic study of buildings. It aims to clarify possible causes of defects and also identifies appropriate methods and techniques for preservation.

3.0 METHODOLOGY

The method that have been used to collect all the data required for this research consist two methods which are through observation and questionnaire survey. For the observation, three higher educational buildings in Perak have been selected as case studies which are Universiti Teknologi Mara Seri Iskandar, Universiti Teknologi Petronas and Institut Kemahiran Belia Negara Seri Iskandar. The schedule of defect helps to accomplish the objective one (1) of this research which are to identify the types of defects. The element studies are external wall, internal wall, column, door, window, roof, ceiling, staircase, floor and other.

For the questionnaire, the simple random sampling technique was used to select the respondent. In order to achieve the objectives of research, a total of 92 sets of questionnaire were distributed to the respondent but only 38 (41%) of the respondent answer the questionnaire. The sample was picked randomly from the maintenance staff. According to Krejcie and Morgan on table for determining sample size from a given population, if the population at the particular event is 120 people the sample population should be 92 respondents and this research has achieved the sample size. The returned questionnaire was then analysed using SPSS version 25 software. All the data collected are analyzed, interpreted and transformed into table, pie chart or graphs depending on the question in the questionnaire. The last is make the conclusions and recommendations of the research based on the finding.

4.0 ANALYSIS AND FINDINGS

Table 1: Causes of the defects

No	Causes of defects	N	Mean	Ranking
1	Age of building will influence the defect	38	3.11	1
2	Low quality of material used	38	2.87	2
3	Change in weather at particular area (e.g. rain and sun)	38	2.84	3
4	Building functions of the buildings	38	2.79	4
5	Building defect caused by human error (e.g. vandalism)	38	2.79	5
6	Lack of maintenance by maintenance department	38	2.79	6

The table shows the highest score mean among all the causes in higher educational building is the age of the building itself with 3.11. This followed by low quality of material used with the score mean is 2.87. Next, the third ranking of the cause of defect at higher educational building were changes in weather at particular area with mean score, 2.84. Then it followed by building functions, building defect caused by human error and lack of maintenance by the maintenance department, they shared the same mean score which is 2.79. Based on the data collected, all the respondents of this research agreed that age of the buildings is the main source of the defect.

5.0 CONCLUSION

In conclusion, the majorities of the respondents are male with 63% and mostly aged between 35 to 44 years old. Besides, the period of time that respondent have working in those educational buildings is between 6 to 10 years only. Based on this research showed that the type of defects that usually occur at the higher educational building are quite same with other educational buildings in Malaysia. They have common the type of defect occurs at the building for the same elements such as external wall. The most common defects found are cracks, dampness, flaking paintwork and plaster, fungus attacks and others. Next, this research found that the main causes of defects occur at higher educational building is age of the building itself. Moreover, the best method to overcome the defect is replacing and install new material to recover the defect. Lastly, from this research, it may help the future researcher in his or her future studies.

REFERENCES

- Low, P. S. and Darren, W. (2001) Improving maintenance and reducing building defects through ISO 9000. *Journal of Quality in Maintenance Engineering*, 7(1), p.6-24.
- Olanrewaju, A. L. (2012) 'Quantitative analysis of defects in university buildings: user perspective', *Built Environment Project and Asset Management*, 2(2), pp. 167–181. doi: 10.108/20441241211280909.
- Agola, J. D., Kashiyan, B. K. (n.d.), *Conceptual Study on Construction Defects and Its Solution*, *International Journal of Advanced Research in Engineering, Science and Management*.
- Ali, A. S., Keong, K. C., N. Zakaria, U. Zolkafli and F. Akashah. (2013) 'The effect of design on maintenance for school buildings in Penang, Malaysia', *Structural Survey*, 31(3), pp. 1920-1930. doi: 10.1108/SS-10-2012-0030.
- Building Research Establishment (1991). *Housing defects reference manual*, Building Research Establishment Defect Action Sheets E&FN Spon, London.
- Jingmond, M. and Ågren, R. (2015) 'Unravelling causes of defects in construction', *Construction Innovation*, 15(2), pp. 198–218. doi: 10.1108/CI-04-2014-0025.
- Mardziah, K. and Md. Azree Othuman Mydin (2012). *Building Condition Assessment And Defect Analysis On Heritage Shophouse Inpeneng, Malaysia: Case Study*. *International journal of Engineering* Vol.2(3), page 77-80,2012
- Nadia, O. and Md Azree Othuman Mydin (2013). *General Building Defect: Causes, Symptoms and Remedial Work*. *European Journal of Technology and Design*, 2014, Vol.(3), No 1