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Determination of Usage Frequency Index Level for Learning Space Towards Optimizing the Usage of Physical Resources in HEI's

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Abstract: Space management is considered important not only in terms of optimization of the usage but also related to the cost of maintenance operations. Space in space management is known as physical resources or asset. In 2009, the space management becomes the vital issues in Malaysia where the policy on asset management was launch under the Government Asset Management Policy (DPAK). Most of the Higher Education Institutions in Malaysia claims that their existing space was not enough and request for the new development. The research on space management in Higher Education Institutions was poorly conducted in Malaysia. Therefore, this research objective is to study focuses on frequency index as a method in space management for higher education institutions. This research will study on the frequency usage for the learning space in order to determine the frequency index and also discussing on the importance of the frequency index in space management.

Key words: Frequency index, learning space, space management, physical resources, Malaysia

INTRODUCTION

One of the important aspects to ensure the effectiveness of teaching and learning is supportive learning environment. It has been clear for some time that student learning depends on a complex of influences from the whole teaching-learning environment (Entwistle, 1987; Biggs, 1993). Supportive learning environment can be described as a learning space that systematically manage and equipped with good condition of facilities. According to the United States Department of Education (USDE, 1999), research studies had been consistent in describing poor conditions of public schools and raising concerns about the effects of school facilities on teaching, as well as learning. According to the Filardo (2008), the educational process was a very complex system. Environmental influences also a contributing factor to the failure or excellence of a student, furthermore will interfere with the students focus that ultimately affects the quality of their learning (Che-Ani *et al*., 2012).

Thus, space management is vital strategy to ensure that learning space can be provided and arranged consistent with the student time table and facilities. Therefore, this research objective is to study focuses on frequency index as a method in space management for higher education institutions and its importance.

Space management in higher education institutions: Space management is considered important not only in terms of optimization of the usage but also related to the cost of maintenance operations. Strategic Asset Management (SAM) is an approach adopted by the Facilities Management (FM) professional that elevates the role and relationship of facilities management to that of a strategic partner and enabler rather than simple service provider (Jensen, 2008).

Space in space management is known as physical resources or asset. In 2009, the space management becomes the vital issues in Malaysia where the policy on asset management was launch under the Government Asset Management Policy (DPAK). The issue rose for Higher Education Institutions in Malaysia about the teaching and learning space was lack of space. Most of the higher education institutions in Malaysia claims that their existing space was not enough and request for the new development. According to Warner and Leonard, the issue on lacks of space happened due the most of most institutions of higher education is not optimizing the use of physical resources at particular times, such as lower consumption during the learning session was not used in the evenings, nights, holidays and semester breaks. Learning space should be managed effectively and efficiently so as not to be burden and there are no wasted spaces in HEI (Che-Ani *et al*., 2012). It is known that there are now over 20 universities, polytechnics and colleges

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in the country, if the space management was not implemented effectively it will caused the ministry of higher education release the annual cost over billion ringgit.

MATERIALS AND METHODS

The research on space management in Higher Education Institutions was poorly conducted in Malaysia but some other countries have been done such as United State of America (USA), United Kingdom (UK) and Australia, they also produced the technical reports and internal or internal or national guidelines (Rahman *et al*., 2009) was used as guidance to this research. The approach of space management and space audit was the same concept however this research will study on the frequency usage for the learning space in order to determine the frequency index and also discussing on the importance of the frequency index in space management.

In order to determine the usage of learning space there are 3 stages include in the methods. The first stage of this study covers the preliminary research second stage was site work and last stage was calculation and report. To measure the frequency of usage of the learning space there are 2 method can be use first from the rooms timetables and second the audit space where the used of the room should be recorded during the lecture session or the use of the space.

Formulation of frequency index: The frequency usage was determine from the data collected via rooms timetables, learning space usage data through the timetables give an indication of the actual usage of the facility in an institution. Space frequency pertains to the space being physically in use, not the theoretical use as recorded as bookings on a room booking or scheduling system (TEFMA, 2009). According to the TEFMA (2009), room frequency is the number of hours the room is in use during the audit period, divided by the number of hours that the room is available for use during the audited period.

But unfortunately, this number of hours should be appropriate with the local culture and working environment, therefore this research was formulated the new frequency rate accordance to the nature of research. In general, typical learning time at most HEI in Malaysia is from 8 a.m., until 5 p.m., 5 days a week.

So, the total lecture time in a week is about 38 h, this does not include the 1 h time break and 3 h time break on Friday. But some of the cases, lecture also held after 5 p.m., until 10 p.m., this situation also counted as after 5 p.m., lecture session.

Frequency rate is determined by analyzing the learning space timetable data usage. The calculation of the frequency rate is divided into 3 steps namely:

- Typical daytime lecture session (8 a.m to 5 p.m.)
- After 5 p.m lecture session (5 p.m. to 10 p.m.)
- The overall time lecture session (8 a.m. to 10 p.m.)

The calculation of total audit hours for learning space: 8 hours (day time lecture session) × 4 day (Monday, Tuesday, Wednesday, Thursday) + 6 h (lecture session on Friday) × 1 day (Friday) = 38 h.

Frequency rate is the number of hours the learning space is in use, during the lecture session divided by the number of hours that the learning space is available for use, according to the recommended typical lectures time. A clear understanding can be gained by through the space frequency rate formula.

$$\text{Frequency of overall time}\,[\%] = F_N + F_S[\%]$$

$$\text{Lecture session, N} = F_N + F_S[\%],\ 38\ \text{h}$$

Where:

F_N = Frequency of typical daytime

F_S = Frequency of typical daytime

RESULTS AND DISCUSSION

Frequency index is an index to determine the frequency of use of learning spaces that are classified according to the levels of use which are minimal, optimal and maximal use of critical applications as shown in Table 1. Referring to TEFMA (2009), the use of optimal learning space is 75% usage frequency. Therefore, the classification of the learning space usage is classified by the percentage of learning space usage. Based on the interval percentage of learning space usage frequency will result in the frequency index of learning space utilization. The frequency index specified in term of value score and color key as shown in Table 2.

Score of index frequency shows the indicator of overall usage of learning space. Index frequency 2 shows optimal usage of the learning space this mean that the usage frequency at the best level. This indicator shows that if the index frequency in score 2 the usage of learning space in good practice, the implication there are no new building requirements. But, if the index frequency shows

Table 1: Table determinant Indexby intervals per usage

Indicator (usage)	Usage intervals (%)
Minimal	0-50
Optimal	51-75
Maximal	76-100
Critical	>101

Table 2: The determinants of learning space frequency index

Index	Range	Indicator (usage)	Usage intervals (%)	Description
1	0-1	Minimal	0-50	The usage frequency at the low level
2	1-2	Optimal	51-75	The usage frequency at the best level
3	2-3	Maximal	76-100	The usage frequency at the high level
4	3-4	Critical	>101	The usage frequency at the crucial stage because has exceeded the typical time

in score 4, this mean the usage frequency at the crucial stage and has exceeded the typical time. This shows the indicator to the admin for further action, this situation happened consequences of timetabling arrangements are not effective and accurate.

The quality of students educational achievement is highly dependent on teaching and learning in classroom. Empower students in learning science can be achieved through a conducive learning and effective. Hence, space is an important asset for achieving the goals of the desire by every university in Malaysia. The importance of frequency index for higher education institutions is as a parameter to indicate the usage of the learning space in university. The level of usage of the existing learning space such as classroom, tutorial room, laboratory, lecturer hall and others can be assess based on this frequency index. Usage pattern evaluation report audited campus space can be provided and the proposals current capacity for teaching and learning based on the indicators and indices of achievement and develop data collection mechanism for forming the proposed indicators and indices. Furthermore, assist physical development planning and enrollment of students and implemented more effective and practicable distribution of development expenditure on the actual needs and the use of space. Apart from that this research helps to university management using existing space more optimally in the implementation of KPIs that can be created for the purpose of monitoring to be one of the benchmark for the management of an institution.The data obtained can be used as the main reference in creating the learning space management policy in public and can be used in the last 5 years and more of the indirect ministry to monitor the Government's Asset Management Policy can be implemented.

CONCLUSION

The successful outcome of a space management program is enhanced if institutions embrace parameters in a policy document which can be custom designed from guidelines, such as these to meet individual strategic plans. This research highly recommended at an institutional level.

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