An Insight of Challenges in Implementing Green Campus: A Case Study of Universiti Malaysia Perlis

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Siti Nur Aishah Mohd Noor [1,*], Lim Kheng Loong [1], Nurul Akmam Naamandadin [1]

[1] Department of Civil Engineering Technology, Faculty of Engineering Technology, Universiti Malaysia Perlis, Padang Besar, Perlis

ARTICLE INFO	ABSTRACT
	Green campus is a community with the common goal of improving the effectiveness of energy usage, sustaining resources, thus increasing the quality of the environment. University Malaysia Perlis which is also known as UniMAP, one of the public universities that desire to turn its campus into a Green Campus. However, converting UniMAP into Green Campus is not an easy task because it will take more than green technology to accomplish it. Instead, sustainable development values in the university community and local community need to be sown as well. Hence, UniMAP makes a suitable subject for this research to identify challenges involved in implementing the Green Campus. Besides, the research objective is to identify the characteristics and features of Green Campus that UniMAP possessed. None the less, it also has an intention to recognize the various challenges involved in the establishment of Green Campus in UniMAP. Strategically, this research was conducted through a quantitative method of questionnaires survey. This research helps to determine various details about the Green Campus which can help in overcoming the obstacles in implementing green campus. Besides, this research also may provide an insight and significant information regarding Green Campus that is applicable for other green campus initiatives as well as any sustainable projects.

1. Introduction

Universiti Malaysia Perlis (UniMAP) is Malaysia's 17th public institution of higher learning. Originally known as Kolej Universiti Kejuruteraan Utara Malaysia (KUKUM), it was renamed as Universiti Malaysia Perlis (UniMAP) in February 2007. Currently, UniMAP has approximately 14,000 students and a workforce of more than 2,100 academic and non-academic staff members. This research is conducted using UniMAP as the case study.

Green Campus is a community with the common goal of improving the effectiveness of energy usage, sustaining resources and increasing the quality of the environment. This can be attained by sustainable development education and through implementing projects that contribute to a healthy and conducive lifestyle. Based on the management of UniMAP [12] UniMAP as an educational institution desires to turn its campus into a Green Campus.

Nonetheless, converting UniMAP into Green Campus is not an easy task because it will take more than green technology to accomplish it. Instead, sustainable development values in the university community and the local communities need to be sown as well. Hence, UniMAP makes a suitable subject for researching the characteristics and features of Green Campus that UniMAP possessed.

As stated by the Rwelamila and Purushottam [11], every good and worthy endeavor will run into obstacles in spite of its apparently good and worthy potential outcome. An understanding of the obstacles to attaining a sustainable campus is a critical to a successful planning and implementation process. Basically, there are barriers that may slow down or even completely prevent the successful implementation of Green Campus in educational institutions worldwide. Unless some action has been taken to overcome these hurdles, the concept of Green Campus will only be seen in a limited selection of universities. Hence, in order to assist in overcoming them, this research is conducted in order to determine the nature of the challenges in implementing Green Campus.

2. Methodology

In this study, quantitative method was used to achieve the objectives of the project. In the context of this project, questionnaires were distributed to a selected sample from the population of interest. The sample will be drawn without replacement from a population of 8382 students from Uniciti Alam, Pauh Putra and Wang Ulu. The questionnaires were distributed to approximately 430 students of UniMAP, as determined using the formula. The respondents were randomly chosen from three distinct locations in UniMAP which are Uniciti Alam Campus, Pauh Putra Campus and Wang Ulu Campus. The number of students from Uniciti Alam, Pauh Putra and Wang Ulu as obtained from the Registary Office are 4235, 1359 and 2788 respectively. The survey research was conducted by distributing a set of questionnaires which adopt the Likert scale and were collected by using the self-administration method. The data collected were then analysed by using the Statistical Package for the Social Sciences (SPSS).

3. Results

Out of the 430 questionnaires that were distributed to the students of UniMAP, 300 questionnaires were returned. This means that the response rate from the student population of UniMAP is approximately 70%. According to Fig. 1, it can be determined that out of the 300 respondents, 130 respondents are from Uniciti Alam (43.3%) while the number of respondents from Pauh Putra is 70 (23.3%). Meanwhile, from Wang Ulu, there are 100 respondents (33.3%). The results of the questionnaires were analyzed by the value of mean of each variable is determined. Typically, a higher value of mean indicates that a larger proportion of the student population agrees on the validity of the variable. Hence, by comparing the mean of each variable for each section, the variable that the largest proportion of student population agrees on can be determined.
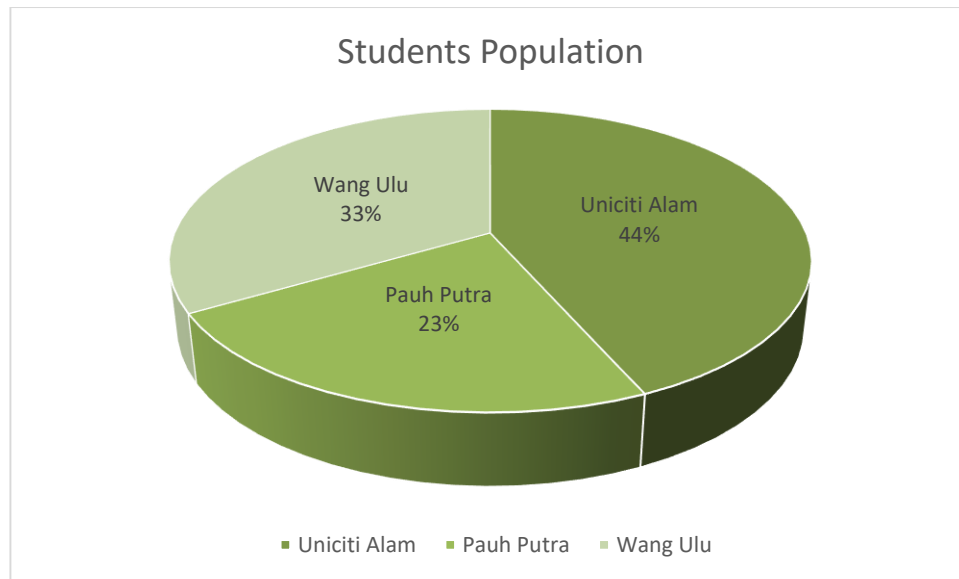
Fig. 1. Response rate from three different campus
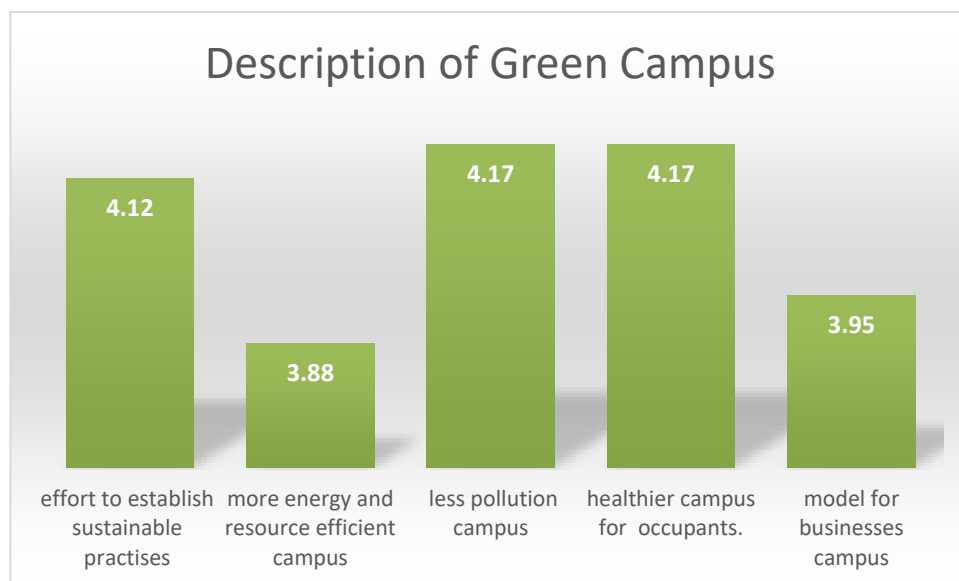
3.1 Characteristic of Green Campus

Fig. 2. Analysis of agreed description of green campus

Based on the mean of each variable for the description of Green Campus, the largest proportion of student population agrees that Green Campus is a campus that is healthier to its occupants which are student's community, staffs and also local community nearby the university. Besides, Green Campus also should be a campus that releases less pollution into the air. This characteristic also aligned by [3] statement to describe green building.

In addition to that, this shows that generally, the student population of UniMAP believes that Green Campus is a change initiative primarily intended to protect both the environment and the occupants. The environment is protected by reducing the amount of pollutants released

into the surrounding location which can degrade the environment while the occupants are protected through the reduction of the spread of illnesses which can degrade the fitness, wellbeing and comfort of the occupants.

An effort to establish sustainable practices also listed as a large proportion agreed by the students, there were a lot of sustainable initiatives try to be implemented at the early stage in each campus in order to be Green Campus. [1] did explained that sustainability programs and offices have become a standard fixture on many university and college campuses. Hence, the data obtained in this research is aligned with other establish green campus in the world.

Meanwhile, the smallest proportion of student population agrees that Green Campus is a campus that is energy and resources efficient. This small value of mean portrays that the student population of UniMAP less agreed that the primary purpose of Green Campus is to reduce the consumption of energy and resources while maintaining the same level of services. Although reducing the waste of energy and resources is a purpose to be a Green Campus, but student in UniMAPs agrees that is not the main purpose.

3.2 Concept of Sustainability

Table 1
Analysis of the description of the concept of sustainability

Description	Mean
The capacity to endure.	3.67
Meeting the needs of the present without compromising the ability of future generations to meet their own needs.	3.80
Providing for the best for people and the environment both now and in the indefinite future.	4.02
Something that is difficult to measure.	3.48
Something that is not attained overnight.	3.66
Something that allows campuses to improve operational efficiencies.	3.89
An imperative that allows reduced utility consumption and associated costs.	3.83

The concept of sustainability is so inextricably linked to the Green Campus that is practically impossible to explain Green Campus in detail without also explaining sustainability. Hence, this research also measured the understanding level of sustainability concept among students. Based on the data gathered, student population agrees that the concept of sustainability is about providing for the best for people and the environment both now and in the indefinite future.

This shows that generally, the student population of UniMAP agreed that the concept of sustainability is essentially about making it so that the people can continue to receive the desired necessities both in the present time and in the foreseeable future. This can be done through practices such as protecting the environment or following the environmental policy set by the governing body. Futhermore, it is also supported by Brundtland [3] where it defined sustainability as meeting the needs of the present without compromising the ability of future generations to meet their own needs

3.3 Challenges in Implementing Green Campus

The analysis show that most of student population agrees that the barriers to the implementation of Green Campus is hindered by the lack of environmental awareness which means that people failed to act sustainably. This shows that generally, the student population of UniMAP believed that a primary barrier to implementing Green Campus is the lack of conscious environmental education and awareness that has hampered the local sustainable initiatives. Lack of environmental awareness contributed to as the lack of caring about the problems in our environment such as loss of biodiversity, pollution, global warming and others. Dahle *et al.*, [8] supported that one of the categories classified as barrier is awareness where people simply do not know how to be sustainable in their actions.

Table 2
Analysis of the barriers to the implementation of Green Campus

Description	Mean
Slow, complicated and inefficient management.	3.48
Limited scope of management.	3.59
The great expenses connected with implementing energy saving and waste reducing measures.	3.72
The lack of space for the construction of new buildings.	3.34
The lack of space for the construction of more energy efficient buildings.	3.41
The restricted space available for waste disposal.	3.54
Lack of environmental awareness which means that people do not know how to act sustainable.	3.85
A general lack of interest towards environmental improvements.	3.81

Richardson *et al.*, [4], Clarke *et al.*, [2], Dahle *et al.*, [8] and United Nations Economic Commission for Europe (UNECE) [15] had determined that environmental as an obstacle which related to the implementation. Thus, this is aligned with the result obtained where the value of mean 3.81 indicate that lack of interest towards environmental improvements as one of the obstacles in UniMAP.

On the other hands, the lowest mean value of 3.41 shows that students agree the implementation is hindered by lack of space for construction of new buildings. This is clearly supporting that generally, the student population of UniMAP does not have firm conviction that a lack of space for new buildings is a good reason for the difficulty in implementing Green Campus. This belief of the student is due to influence by the fact that the location of UniMAP has plenty of empty space that can be utilized. Fig.3 illustrates the barriers in implementing Green Campus in details.
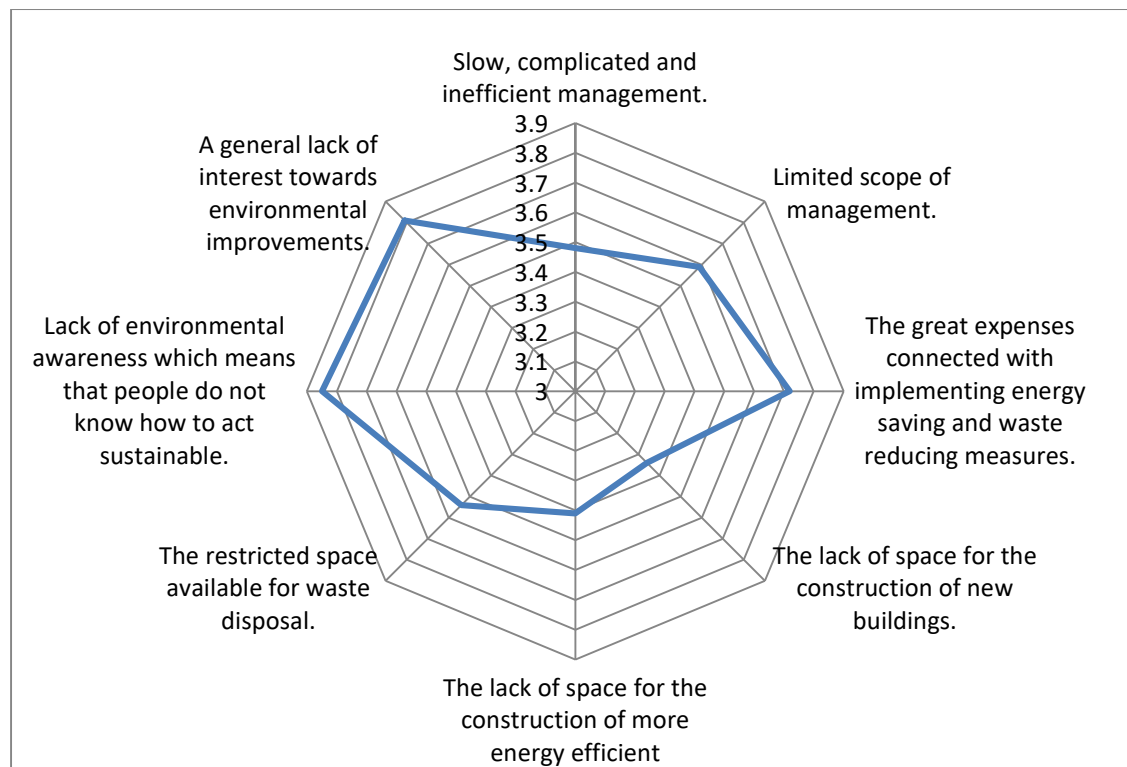
Fig. 3. Analysis of barriers to implement Green Campus

4. Conclusions

From all the analysis of data gathered, it is clear that the characteristic of green campus can be found in the case study of Universiti Malaysia Perlis. Hence, it can be said that Universiti Malaysia Perlis possessed at least a set of minimum characteristics and features of Green Campus. Each characteristic was successfully agreed throughout the survey gathered from the university students. Based on intensive literature study and data gathered, the challenges to establish of Green Campus in Universiti Malaysia Perlis also clearly being identified which eventually will help the university management to tackle the issues one by one.

This research also intended to increase awareness on the benefits of Green Campus towards university community. Through the questionnaire survey session, this research has gathered 300 respondents where the benefits of a greener campus having are disseminated through the questions which hopefully will raise an awareness among the community. On top of that, the research also provides an insight and significant information regarding Green Campus that is applicable for other green campus initiatives as well as any sustainable projects in future.

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