

The Identification of Green Spaces in UTHM Parit Raja Campus

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Abstract : Most of the higher education campuses have green space, which is beneficial to campus life. Even though various evaluations have examined the relationship between nature and student's health, there is still a need for studying correlation between student's perception towards green space. Since currently there is no research related to the green space in UTHM Parit Raja, this study aims to identify the green space location in UTHM Parit Raja campus and to measure student perception of green space on UTHM Parit Raja campus. An orthophoto map of UTHM Parit Raja was analyzed by Global Mapper software which was used to identify location and measure the green space. Other than that, a survey of student perception of green space in UTHM Parit Raja campus is conducted. The survey is to measure the appreciation of green space on accessibility, cleanliness, facilities, and attraction. The respondents are those who are currently pursuing students at the UTHM Parit Raja Campus. Mean score of every section in survey was used for data analysis with the collection, organisation, and systematic examination of data. The significance of this study is to make room for improvement regarding how to make use of green space to the max potential in the future as well to ensure the green space area percentage is in accordance with the existing standards. To summarize the findings, the total area of green space in UTHM Parit Raja campus required by the institutional setting is successfully achieved with a percentage of 63.74% land covered in green space. Furthermore, the feedback from the survey of student's perception is evaluated as the green space reflects the students' perception. Therefore, this study is successful since it able to prove the relation between both of the objectives.

Keywords: Green Space, Campus, Perception, Student, Survey

1. Introduction

Most of the higher education campuses have green space, which is beneficial to campus life. Green spaces not only provide habitat for wildlife, but they also serve as places of relaxation for students. [1] As we all know, many university students are stressed out these days. Green spaces in a student learning

environment improve health, wellness, and academic performance. Green spaces can improve students', faculty's, and staff's health by improving air quality and potentially reducing sick days. So, how do green spaces contribute to better air quality? Plants absorb gaseous pollutants in the air that contribute to air pollution. After absorbing harmful gases, plants can release oxygen into the atmosphere. The production of oxygen helps to mitigate the negative effects of air pollution. Plants and greenery help to clean the air by creating green spaces in cities. In addition to the advantages of keeping students and lecturers on campus, air quality directly affects student achievement. Students' use and awareness of university green space is still debatable.

The Green Space Index, produced by Fields in Trust, is an annual barometer of publicly accessible local parks and green space provision. It is critical to assess greenness because it can help identify critical areas that can then be used to identify action areas for improving green quality. As a result, the university should follow the institutional setting requirement by using a green space index so that it will not be a problem if the university wants to develop more buildings on campus in the future as the student population grows. In this case, the institutional setting requirement using the green space index is required, or the green space on campus will suffer.

The loss of green space may have far-reaching repercussions for individuals [2,3]. The link between green space and happiness has received a lot of attention [4]. Green fitness, green care, and seeing beautiful panoramas in green space all increase human well-being via psychological, social, and direct health benefits. Several researchers have looked at the relationship between green space and academic achievement in an institutional context, hypothesising that green space might improve performance and, in the long run, help to close such gaps. Despite the fact that numerous evaluations have examined the relationship between nature and student health, there is still a need to investigate the correlation between student perception of green space.

This study seeks to identify the location of green space on the UTHM Parit Raja campus, as there has been no previous research on the subject. Furthermore, the perception of the UTHM Parit Raja campus must be considered in this study to determine how the campus community utilize the green space. The importance of this study is to identify areas for improvement in how to use green space to its full potential in the future, as well as to ensure that the green space area percentage is in accordance with existing standards. This study is to identify the green space location at UTHM Parit Raja campus by using Geographic Information System (GIS Software) and calculate the percentage of green space area. With the currently accessible orthophoto map of UTHM Parit Raja campus, this study is much less time consuming. The available orthophoto map is then used in GIS Software to proceed with identification and calculation. Finally, to find out student's perception towards green space by making questionnaires to fill out by the campus community. The sample size is UTHM Parit Raja students, and the outcomes will be analysed using Microsoft Excel.

The objectives of this study are to identify green space in UTHM Parit Raja campus according to the institutional setting requirement using standard green space setting and to measure student perception of green space on UTHM Parit Raja campus.

2. Materials and Methods

The materials and methods section, otherwise known as methodology, describes all the necessary information that is required to obtain the results of the study.

2.1 Identify Green Space in UTHM Parit Raja

Figure 1 shows the flowcharts of identifying green space in UTHM Parit Raja campus according to the institutional setting requirement using standard green space setting. Based on the flowchart, objective 1 is about identifying the green space in UTHM Parit Raja according to the institutional setting requirement using green space index by using an orthophoto map of UTHM Parit Raja that is analyzed

by Global Mapper software. The orthophoto of UTHM Parit Raja is then used to locate green places. After that, the Global Mapper is used to measure the green space index by area. Area percentage standards are used because the university area is a public area used by all members of the public other than students.

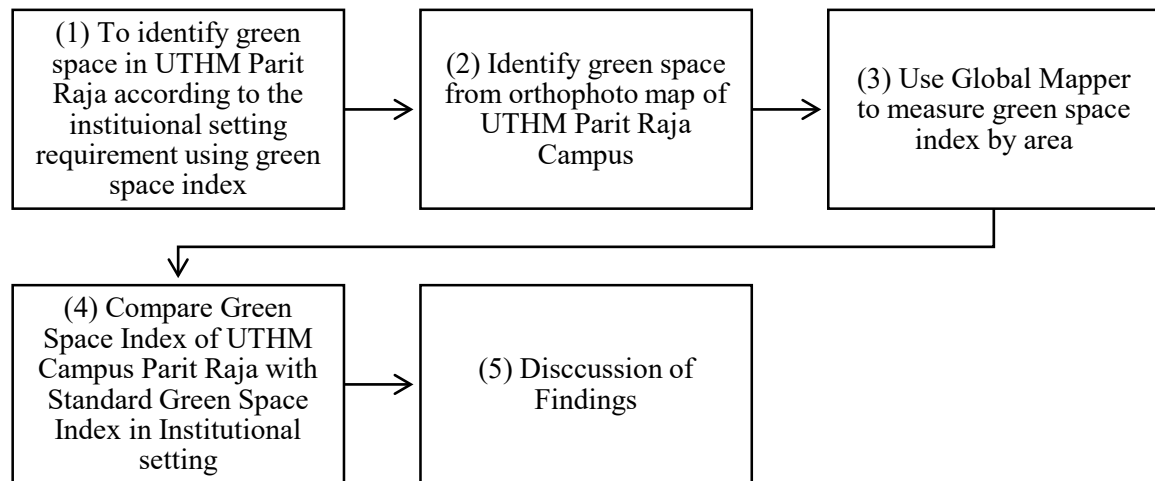


Figure 1: Simplified flowcharts of identifying green space in UTHM Parit Raja campus according to the institutional setting requirement using standard green space setting.

2.1.1 Standard Green Space Setting

Area percentage standards are used because the university area is a public area used by all members of the public other than students. An observable comparison of the population ratio is suitable for use in residential areas compared to university areas. The first criterion is to obtain the total number of study areas. Next, the formula below is used to identify the study area such as identifying green space to facilitate the calculation of the area [5]:

$$\frac{\text{Area of Green Space (sq m)}}{\text{Total Area (sq m)}} \times 100 \% = X \% \quad \text{Eq. 1}$$

Finally, to identify whether the area has green space according to the standard green space setting is to see the result of the percentage of area exceeding or equal to 10% from the whole area where, $X\% \geq 10\%$ Achieve Standards Green Space Setting and $X\% \leq 9.99\%$ Did Not Achieve Standards Green Space Setting.

2.2 Survey Students' Perception of Green Space in UTHM Parit Raja

Figure 2 shows the flowcharts of measuring student perception of green space in UTHM Parit Raja campus. First, survey instrument development is divided into two sections: respondent background and student perception. Following that, the instrument's validity and reliability are used to ensure that the data is reliable and repeatable, and that the results are correct. In this context, the content validity will be assessed using the Lawshe Table, while the instrument's reliability will be determined using the Alpha Cronbach's method. Before the actual study, a pilot test was conducted to ensure the instrument's validity and reliability. This pilot test was conducted to obtain an overview of the questionnaire's quality, to test the instrument's effectiveness, and to test the survey methodology's validity.

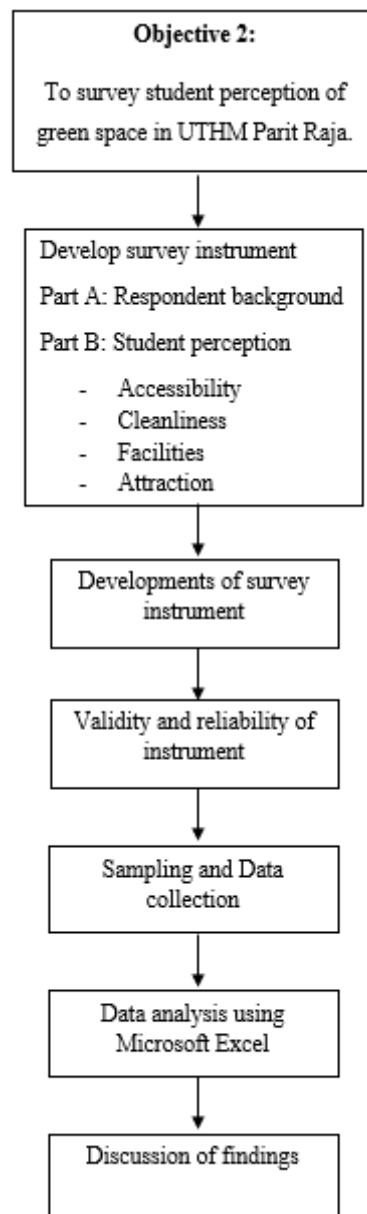


Figure 2: Simplified flowcharts of measuring student perception of green space in UTHM Parit Raja campus

2.2.1 Research Instrument

This questionnaire aims to know how these green spaces been used on daily basis. Furthermore, to know how students in UTHM Parit Raja looks after their campus green space and what are the activities the students do at the green space. The questionnaire will be using different types of scale such as agreement, frequency, accessibility, and attraction by using Likert scale.

The questionnaire is divided into two sections, A and B. Part A focuses on the respondent's background. Section B, on the other hand, focuses on students' perceptions of accessibility, cleanliness, amenities, and appeal. The questionnaire concludes with an open question section where consumers can express their thoughts on potential changes to and concerns about UTHM Parit Raja's green space. Section B is graded on a 1–5 Likert scale. A frequency scale is also employed. Using a frequency scale,

analyse behaviours or cognitive processes. Both of these measures will be included in the questionnaire survey.

2.2.2 Validity and Reliability of Instrument

In order to assess validity in this study, expert review is usually done first, and it involves specialists in either the issue being surveyed, or in questionnaire design in general, or both, and it is common to utilize numerous experts ranging from 3 to 6 experts. This study gathered three reviews from three professionals on the experienced panel of the UTHM community. Before distributing the questionnaire to students at the UTHM Parit Raja campus, the experts commented on each item and suggested ways to improve it.

The concept of research instrument reliability then refers to a study's or questionnaire's consistency and stability. Before the actual study, a pilot test was conducted to ensure the instrument's validity and reliability. This pilot test was carried out to obtain an overview of the questionnaire's quality, to test the instrument's effectiveness, and to test the validity of the survey methodology. [6] The pilot test should be 10% of the total sample as respondents. [6] As a result, the Cronbach's Alpha was used to assess the instrument's dependability. When the number of items is small, Cronbach's Alpha has a small value. A minimum of 0.6 Cronbach's Alpha is recommended and accepted.

Table 1: Table of Cronbach’s Alpha result conducted by pilot test

| VARIABLES | DESCRIPTION | VALUE | INTERNAL CONSISTENCY |
|------------|--------------------------|----------|----------------------|
| K | # of items | 14 | |
| $\sum s^2$ | Sum of the item variance | 14.25778 | EXCELLENT |
| s^2x | Variance of total score | 102.44 | |
| α | Cronbach’s alpha | 0.927035 | |

Table 1 shows the result of Cronbach’s Alpha. This study got an excellent for internal consistency with the value of 0.93.

2.2.3 Sampling Data and Collection

A simple random sampling procedure is used in this study. This sampling technique is intended to ensure that every unit or subject in the UTHM Parit Raja community has an equal chance of being selected as a research responder. The procedure for simple random sampling includes identifying population subjects, labelling population subjects based on their number, randomly selecting subjects, and solving the missing respondent issue. [7]

Data collection is the systematic acquisition and measurement of information on variables of interest, such as the degree of appreciation of UTHM Parit Raja students, that allows us to answer our second objective and assess the results. The data is collected using Google Forms, an online platform. Google Forms is an online form that is open to everyone, and the programme allows users to design and update surveys online while collaborating with other researchers in real-time.

2.2.4 Data Analysis

There are two data analyzed for “The Identification of Green Spaces in UTHM Parit Raja Campus”. Firstly, measure the area of green space in percentage by global mapper software. Comparison of the calculation follow the green space setting, a specified percentage of land to be allocated for open space (e.g., 10% from the total development area is allocated for open space) [5]

The second data is student perception of green space in UTHM Parit Raja. The platform used is Google Form and Microsoft Excel. Google form is for the platform to collect research data based on questions, while mean score in Microsoft Excel is for the analysis of data that has been obtained. Use

of google form to distribute questions about student perception. The use of Microsoft Excel to find the mean score based on data collection.

3. Results and Discussion

3.1 Result of Calculation Percentage of Green Area Using Global Mapper

According to research, the overall green space area of the UTHM Parit Raja campus exceeds the minimal need set by the Malaysian National Urbanization Policy (NUP) with 63.74% green space in UTHM Parit Raja. Hence, in comparison with the stated requirement by the NUP, UTHM Parit Raja campus did well in passing the requirement.

3.2 Analysis of student perception of green space in UTHM Parit Raja

Table 2: Mean Score Interpretation of The Likert Scale

| Likert Scale (Five Levels) | Score | Likert Scale (Three Levels) | Mean Score | Mean Score Interpretation |
|----------------------------|-------|-----------------------------|-------------|---------------------------|
| Very Rarely | 1 | Rarely / Dissatisfied / | 1.00 - 2.33 | Low |
| Rarely | 2 | Uneasy / Disagree | | |
| Neutral | 3 | Neutral | 2.34 - 3.66 | Moderate |
| Frequently | 4 | Frequently / Satisfied / | 3.67 – 5.00 | High |
| Very Frequently | 5 | | | |

The data from respondents is gathered regarding the student’s perception of green space. **Table 2** shows the mean score interpretation of the Likert Scale. All the data was analyzed based on the five-level Likert Scale.

Table 3: Summarization of mean score

| Category | Mean Score | Mean Score Interpretation |
|---------------|------------|---------------------------|
| Accessibility | 3.6275 | Moderate |
| Cleanliness | 3.706 | High |
| Facilities | 3.6015 | Moderate |
| Attraction | 3.91 | High |

Table 3 shows the summarization of mean score in each category. According to the findings, accessibility and facilities both have a moderate mean score interpretation. This means that there is still room for improvement in both of these categories. For example, UTHM Parit Raja should create a platform for students to use an app to navigate the green space. The navigation does not provide with calculated distance to green space, estimated time to arrive at green space, and points of interest. The UTHM Parit Raja administration could also construct additional facilities, such as an outdoor hall where students could gather for activities such as festivals and campaigns, or an outdoor convocation ceremony. This strategy undoubtedly promotes student relationships and allows for social contact with

everyone. Furthermore, for universities that prefer to remain competitive, a greater emphasis on and investment in outdoor areas is critical. [8]

The cleanliness and attractiveness category, on the other hand, performed admirably in terms of increasing student satisfaction at the UTHM Parit Raja campus. **Table 3** data show that the mean score for each is 3.706 and 3.91, respectively. This explains why students are pleased with the green space's cleanliness and why the green space is appealing enough for students to visit and spend time in the UTHM Parit Raja campus green space. Neither green space (whether students were aware of it or not) nor intentional intentions to engage in nature experiences were linked to green space visits, according to these findings. Rather, the survey found that students expect a wide range of experiences from their visits to green spaces. Being able to conveniently visit a park was another prominent reason for its use such as being in transit. [9] Additionally, associations between perceived green space and psychological wellness imply that students' perceptions of green space influence the quality of their experience and willingness to return to green space. Furthermore, connections between perceived green space and psychological wellbeing demonstrate that students' perceptions of green space affect the quality of their experience as well as their likelihood to return to green space [10].

4. Conclusion

To summarize the findings, the total area of green space in UTHM Parit Raja campus required by the institutional setting is successfully achieved with a percentage of 63.74% land covered in green space. Hence, UTHM Parit Raja surrounded by the natural elements needed for the campus community. Then, this study aims to correlate between the green space location in UTHM Parit Raja campus and the student's perception about green space in UTHM Parit Raja. Furthermore, the feedback from the survey of students' perception is evaluated as the green space area reflects the students' perception. Therefore, this study is successful since its able to prove the relation between both of the objectives.

However, the questionnaire revealed that the majority of respondents' perceptions of students are moderate. The findings are noteworthy in terms of the time spent by students at the UTHM Parit Raja campus, and they also reflect the earlier assumptions' predicted outcomes. This suggests that students at the UTHM Parit Raja campus chose not to spend their free time on the UTHM campus's green space. As a result, despite students spending less time than necessary, the overall survey findings reflect a positive concern about the green space on the UTHM Parit Raja campus.

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