

# **Green Building Index Practices and Principles: Awareness Among the Malaysian Architecture Students**

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**ABSTRACT** – This study aimed to identify the awareness level among the architecture students towards green building practices and principles. This is a survey study and using questionnaire as instrument. The items in the questionnaire were constructed by referring to GBI Assessment Criteria. The collected data were analyzed using mean score and standard deviation. Findings showed that the level of awareness of architecture students on the practices and principles of greenhouses was at a high level ( $M=3.14$ ,  $SD=.442$ ) in general. In conclusion, the university should take this opportunity to improve the existing curriculum in terms of content and implementation so that architecture students can be given extensive opportunities to gain knowledge, exposure and experience without boundaries, as they are the future green building designer and practitioners.

## **1. INTRODUCTION**

The concept of green building has been introduced, which is not only related to design, but also takes into account various aspects from the perspective of the surrounding environment in order to reduce its impact on the surrounding environment. The importance of green buildings, according to [1], includes a controlled ecosystem, increased property values, and increased efficiency in the use of resources such as energy, water, and building materials, in addition to reducing the impact of construction on user health [1]. However, just because a building has been graded and received a Green Building Index (GBI) rating as a green building does not mean that it meets the criteria for long-term effects in terms of energy efficiency (Shraddha Pandey, 2015). As a result, it will have an indirect negative effect on the greenhouse gas that causes global warming [2].

Although greenhouse practises and principles have been introduced for a long time, many Malaysians still do not understand the meaning of knowledge in terms of the relationship between greenhouse practises and sustainable development. As a result, education is the most effective way to promote sustainable development and increase human ability to solve environmental and development problems by nurturing self-awareness to care for the environment [3]. Abdullah et al. [4] discovered that increasing environmental awareness through education is an encouraging effort in sustainable development, as well as fostering green house practises and principles. Educational institutions,

such as schools, colleges, and universities, are also critical in developing and implementing green house practices and principles [5]. This is because these green practices have been taught and practised in schools, colleges, and universities. This effort yielded a positive response, demonstrating that the younger generation can be raised to be aware of, understand, and practise environmentally friendly practices through the educational system [5]. Therefore, it is clear that educational institutions are the primary channels of social environmental education that exist today in an effort to solve environmental problems through knowledge, skills, moral values, and adequate actions [5]. Thus, this study aimed to identify the awareness level among the architecture students towards green building practices and principles.

## **2. METHODOLOGY**

The research design for this study was a survey, and the instrument was a questionnaire. The questionnaire, which contained 66 items, was designed to assess architecture students' awareness of green house practises and principles by referring to the GBI criteria [6]. Cronbach's alpha was used to evaluate the instrument's reliability, and the results show that the alpha value was 0.87. A total of 278 Architecture Program students from semester 1 to semester 8 from two well-known Malaysian universities were randomly selected as a sample in this study. The collected data was analysed using descriptive statistics such as mean score and standard deviation. According to [7], the level of awareness of green house practices and principles can be measured through a green assessment tool. In Malaysia, the industry responsible for coordinating the green building recognition system is the Green Building Index (GBI). GBI is a green building assessment system that was first established by the Association of Malaysian Architects (PAM) and the Association of Consulting Engineers Malaysia (ACEM) in assessing the environmental design and implementation of buildings based on six main criteria, namely (i) Energy Efficiency (EE), (ii) Indoor Environmental Quality (EQ), (iii) Site Planning & Management Sustainability (SM), (iv) Materials & Resources (MR), (v) Water Efficiency (WE) and (vi) Innovation (IN).

## **3. RESULTS AND DISCUSSION**

According to Table 1, the SM has a very high level based on a mean score ranging from 3.3 to 4.0 ( $M =$

3.71, SD =.607). Then followed by the elements of MR (M = 3.65, SD =.646), EQ (M = 3.48, SD =.681), and WE (M = 3.36, SD =.749). The element of EE is performing well, with a mean score ranging from 2.5 to 3.2 (M = 3.12, SD =.776). Meanwhile, the element of IN is performing well, with a mean score ranging from 1.7 to 2.4 (M = 1.74, SD =.221). In summary, architecture students' overall awareness of green house practices and principles is high (M = 3.14, SD =.442). Figure 1 illustrates the distribution of the level of awareness of greenhouse principles among architecture students in descending order of the mean score, with a line on a secondary axis as a percentage of the total.

Table 1 Analysis of studies on the level of architecture students' awareness of green house principles

| Elements                                       | M           | SD          |
|--|-------------|-------------|
| Sustainability Site Planning & Management (SM) | 3.71        | .607        |
| Materials & Resources (MR)                     | 3.65        | .646        |
| Indoor Environmental Quality (EQ)              | 3.48        | .681        |
| Water Efficiency (WE)                          | 3.36        | .749        |
| Energy Efficiency (EE)                         | 3.12        | .776        |
| Innovation (IN)                                | 1.74        | .221        |
| <b>Overall</b>                                 | <b>3.14</b> | <b>.442</b> |

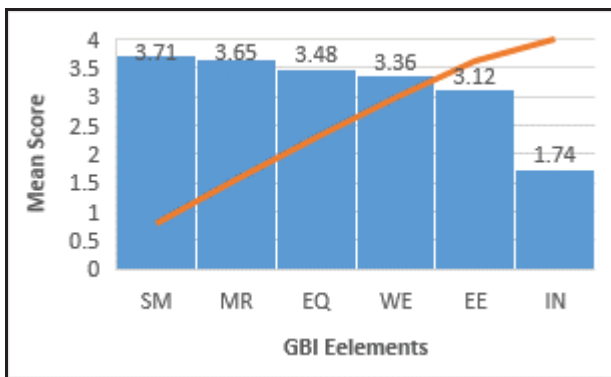


Figure 1: Level of architecture students' awareness of green house principles in descending order

The results of the study show that the majority of architecture students are aware of the green house principle that can be measured through the Green Building Index. This is in line with the findings of a study by [8], who stated that as many as 75 percent of IPT students agree that GBI helps in boosting construction with the concept of green development. This is because buildings that have received recognition from the GBI have their own status that is different from conventional buildings. The construction of a building can also be guaranteed to be green for the earth. Indirectly, this can nurture the students to meet the conditions that need to be followed in order to build a building that can meet all the conditions set by the GBI.

#### 4. CONCLUSIONS

In conclusion, the level of understanding and attitude of architecture students toward green house practices and principles is critical, as they are the next generation responsible for sustainable development. According to the [9], architecture students must be

trained to perform a variety of tasks such as planning, architectural design, landscape design, urban design, interior design, leading and coordinating the input of other disciplines in the design team form and construction, and maintaining contact with authorities and management during construction supervision. As the next generation of professional architects, architecture students must be able to think, act, design, and inspire clients and communities on sustainable built environment issues; consider integrity and inclusiveness; and take a comprehensive and holistic approach to industry and community leadership challenges.

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