



Nature as a Stimulating Learning Environment for Design-based Students

Haikal Hazman Hashim, Zuraini Denan

Kulliyyah of Architecture and Environmental Design,
International Islamic University of Malaysia, 53100 Kuala Lumpur, Malaysia

haikal.hazman@trhamzahyeang.com, zurainidenan@gmail.com.

Abstract

Stimulating design base students in an appropriate learning environment is crucial in motivating the students to produce creative works. Refreshing atmosphere with full of green, natural topography and comfortable micro-climate are considered ideal criteria of the learning environment, which also the core of sustainable design. The research attempts to investigate the importance of natural environment to design students, based on the analysis of observation and questionnaire surveys. For a preliminary study, the research analysed three samples of design schools in Selangor, Malaysia. Findings indicate that students prefer having natural environment in surrounding, and it can stimulate the students' creativity process.

Keyword: Design; schools; natural; environment

eISSN 2514-751X © 2018. The Authors. Published for AMER ABRA cE-Bs by e-International Publishing House, Ltd., UK. This is an open-access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), ABRA (Association of Behavioural Researchers on Asians) and cE-Bs (Centre for Environment-Behaviour Studies), Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia.
<https://doi.org/10.21834/aje-bs.v3i11.333>

1.0 Introduction

In recent years, the establishment of new design (art and architecture) schools in Malaysia is rapidly increasing. Many private schools less considerate of their context compared to government schools. Locating the schools within a natural green setting that could induce peaceful and stimulating learning atmosphere has become expensive due to the land value, construction and maintenance cost. Furthermore, most of natural environment that still preserved is far from the city centre, where public transportation is infrequent. The concern is not only it is a healthy environment for students' learning environment, but also the connection transpires between them is significant for the students. Unfortunately, the natural environment, even though is emphasized to be essential for sustainable living, healthy lifestyle and inspiration to learning environment, but the hassles of the maintenance seems to precede the reason of not to preserve. Furthermore, schools located in a hot humid climate are unlikely to be outdoor enjoyable places to stay because of the hot, humid and rainy weather. Advance technology also has made students conveniently staying in-door and only uses internet to find information. Less application of first-hand experience and lack of senses have led to lack of emotion and deep thoughts to the out-come of current design students' projects.

The main aim of the research is to investigate the importance of preserving natural environment in the design (art and architecture) schools, in order to shape and stimulate the students design creativity. The objectives are 1) to observe and analyze the chosen schools natural environment and 2) To find out the students' opinion whether natural environment is an influence in their learning process.

2.0 Literature Review

Natural environment has been a source of knowledge exists from the beginning of mankind. Not only it provides a supplement of fresh air and food to the people, its creation has mysteriously formed by god to help people in solving problems of daily life on earth. As stated in the Quran verses 13:3 *"And it is He who spread out the earth, and set thereon mountains standing firm and (flowing) rivers; and fruit of every kind He made in pairs, two and two; He draweth the night as a veil over the Day. Behold, verily in these things there are signs for those who consider."* According to Islamic beliefs, Allah has created the earth for us to live in comfort. The natural and beautiful surrounding such as the sea, green and mountains is a gift by Allah for our daily use. (Brockwell, 2014). It is clearly stated that human are created together with its natural environment for them to survive and learn how to survive by using all the elements within the environment. The equilibrium of his creation is to balance the system, in order for human and other being to live harmoniously. It is an advice for human not to be extreme and uncontrolled, which has bad effects to their lives and place they live in.

2.1 Learning from the History

History has revealed that nature has been the source of inspiration from a painting of caveman to the architectural masterpiece of the modern era. The vernacular architecture approach has forward the significant of nature into the interpretation of design, manifestation of the physical form and application of material use. This humble approach is to teach us to apply what belong to land, climate and surrounding, which actually the most appropriate elements that can sustain. The ethnic Minangkabau people, for example has high respect and appreciation towards nature, that most of the cultural and living attributes are influenced by the nature. It is clearly stated in the famous Minangkabau saying “Alam takambang jadi guru”, interprets as the surrounding environment is the teacher or source of reference. For example, the front elevation of the traditional house –Rumah Gadang has to face the east where the sun rises as a sign of respecting the sun. The north end walls (*pangkal*) are always facing the mountain and the south end walls (*hujung*) are facing towards south. The building materials derived from the nature; the timber and bamboo strips wall and floor boards, river stone for the column plate and the thatch (palm fiber) roof. The significant roof forms derived from horn of a buffalo (Kennedy.J, 2004). The construction of column and wall of Rumah Gadang which is slanted and with the stone as the column plate provide resistance towards the vibration of earthquake. The carved wooden motives in the interior of the house are based on floral and geometrical representation of nature. This reflect their Islamic belief and culture (Elda Franzia, Yasraf Amir Piliang and AceplwanSaidi, 2015) The lives of Rumah Gadang can reach to hundred years with frequent maintenance. Other ethnic groups and tribes also have strong belief in nature such as the Chinese and Japanese.

2.2 Architectural Precedent

Many great architectural masterpieces have close association and relation to nature. Either the design is inspired by nature or the physical form of the building sat harmoniously with nature as a sign of respecting and honoring the nature. For example, the famous design of Sydney opera house is said to derive from the concept of shell, the Olympic Stadium in Beijing is a reflection of a bird nest and the SagradaFamilia in Barcelona is creative interpretation of organic architecture. The popular design approach which based on nature called the biomimicry design concept has explored the idea of nature as an inspiration or reference. Nature has inspired architect in designing human habitat and it appears to be an impressive and creative work of art. The concept has many success stories; from burrs from burdock plants to the invention of valcro and from the termite mound to the building with energy efficient system. Not only it inspires designers but the product based on biomimicry has increased the demand and profit. Yurtkuran et al (2013) experiment on biomimetic design in architectural education showed a positive response among the students. The students found it interesting, informative and enjoyable. Indeed, the biomimicry method or any similar ideas trigger should be part of the education syllabus of architecture and design degrees to let the young generation aware and explores the potential in design innovation (El Zaieny, 2012). In her study, selected case studies emphasize that integrating biomimicry within interior environments requires introducing the approach at the very stages of the design process, ideally prior to any preliminary ideas have even been produced. To the extend, it

also involves inviting a biologist to the design table as a full team member. El Zaieny also identifies that using biomimicry as a problem solving methodology will help us discover sustainable and effective solutions to the most important issues in the interior environments: day lighting, thermal comfort, energy efficiency, durability, and productivity. There are other similar concepts that have close reference to nature, namely vernacular architecture, sustainable design, green design and eco-friendly design. Architect should be sensitive to the context and surrounding of the building. Good architecture should blend with nature harmoniously. A great architect such as Frank Lloyd Wright in his Falling Water project has proved that building and nature can marries harmoniously.

2.3 Health, Awareness and Education

Nature can enhance the quality of healthy living. It is stated that nature such as parks and green spaces may stimulate social interaction and de-stressing through exercise or communication and provide a peaceful setting. Having green at workspace can also help office workers to be more focus. (Kaplan and Kaplan, (1989) and Heerwagen, J.H. and G.H. Orians (1993) agree that nature in urban area that was designed as parks and walkways integrated into building offer peaceful and motivating environment and inspire knowledge seeking, curiosity and attentiveness. According to Kirkby, M (1989), nature experience is essential to motivate imagination and creativity, cognitive and intellectual growth and social relationship. Study by Shibata, S and N. Suzuki (2002), shows that participants performed better on creative task in rooms having foliage plants, compared to no plants. This study interprets that nature has provide inspiration and trigger the participants' creativity. Nature provides positive environment for learning and interaction, thus it alleviate mental stress and illness.



Fig. 1. (a) Students studying on the turf of the La Salle City Campus soft landscape; (b) View of center atrium with irregular glass walls and organic shape of workspaces.

(Source: author)

Learning about environment in the appropriate environment assist student in better understanding and led to actual practice in the future. Current trend lifestyle emphasizes on sustainability and green in production and everyday practice. Being in the surrounding which

has lots of green and untouched nature may create awareness on the sensitivity of having nature in the surrounding. Advantage and disadvantage of being surrounded by nature can be a good experience for the future designers to be aware of the problem and to learn how to solve it. Mahdavinejad et al., (2013) found out it is important to implement the nature-oriented architectural learning in the current architectural school programs as it will encourage socio-cultural participation in the students' knowledge seeking process. Yukseka, I. (2013) highlights the importance of integrating the nature related courses in architectural education. The research found that most schools surveyed have included the nature conscious knowledge only under different name courses.

3.0 Methodology

Two methods were chosen for the investigations: Observation and questionnaire surveys. Three selected samples of design school were chosen; Kulliyah of Architecture and Environmental Design, International Islamic University Malaysia (KAED, IIUM), Malaysian Institute of Art (MIA) and Raffles Design International (RDI). The institutions were selected as each sample representing varieties of design work from architecture, art and fashion. They were also situated at different settings; university campus, commercial area and residential area.

3.1 Observation

Observation on the three samples documented on the background of the buildings and students' activity in using the outdoor spaces within the institutions' layout. The criteria of the checklist are: establishment, architectural image and surrounding context. See Table 1.

3.2 Questionnaire surveys

A set of simple questionnaire was designed to measure the preference of students on the outdoor learning environment. The students of the three design colleges were chosen as the samples, each representing different design variations. They are architecture, art and design (painting, fashion and etc). The questionnaire was designed to obtain both facts and opinions from the participants. The questionnaires were distributed to twenty (20) students from each school.

4.0 Results and Discussions

The results from two methods have been successfully gathered within three months for this preliminary study. The results and analysis will be explained based on the method delivered.

4.1 Observation

The observation of the three schools shows some variations. Table shows that IIUM has an advantage of being part of university master plan, the location and setting has given IIUM exposure to natural surroundings. Locating in a valley, IIUM is placed within a hills and rivers.

In KAED, IIUM there are two courtyards that has been used one as working area as it is near to workshop and laboratory and the other one as students' events such as sports, dinner and barbeques. Surrounding the building the students can view rivers, hills and greenery. The other two schools since they are small private schools the management did not spend on the luxury of natural environment. Situated in a commercial area the MIA eating area in between building and the shaded five foot walkways has become the leisure part for the students to gather. Most of internal spaces have been used for classroom and studio/workplace. The surrounding area of the building is roads and car park. The semi-open restaurant with a tropical ambiance nearby has become part of the student hang-out place. The RDI which is located at a residential area is within a calm and quiet area. Having gate around the compound and similar to the neighbouring context, has made the students constrained within the school compound. Students prefer to be in-door as the surrounding has no proper place to hang-out. Besides being in quiet neighborhood, not much of natural environment that inviting to the students. The green merely a minimal soft landscape which can easily maintained such as in an office or a house.

4.2 Questionnaire surveys

The questionnaire surveys were successfully responded. Sixty questionnaires were analyzed. Figure 2a is the summary of the number of students responded to the questions. Five significant questions (Figure 2b, c, d, e and f) were extracted from the questionnaire set to highlight the findings of the research. At all schools, most respondent seems to be more of female students than the male students. Students from commercial and residential setting do not prefer having outdoor classes. Both MIA and RDI have less than 50% students who prefer outdoor setting for their learning environment, as shown in Figure 2b. Majority of students (80% of IIUM, 50% of MIA and 75% of RDI) thinks that nature can reduce stress. (See Figure 2c). However, 50% of MIA respondents and 70% of RDI respondents do not think that learning outdoor can stimulate creative thinking. See Figure 2d. Perhaps, having used to the environment which lack of nature and spend most of the time indoor have made them comfortable to be indoor rather than outdoor. Not many study spaces available outdoor that they used to spend time can also be another reason why MIA and RDI students were not likely to prefer outdoor learning environment. As shown in Figure 2e, most students from all schools agreed that they can acquire ideas from nature and majority agrees that nature is important to design students (Figure 2f).

5.0 Conclusion

In summary, the research has highlighted the importance of having nature at the surrounding, of design schools. Besides healthy living, nature is important as source of ideas, natural learning environment and to increase awareness and appreciation for design base students. Overall, the observation and questionnaire survey findings indicate encouraging preference towards preserving nature. Students who study at the the surrounding that lack of nature, have inclination to think that having outdoor classes will not help stimulate creative thinking.

Planning of design based school should be creatively done to overcome undesirable climatic problem while achieving comfort and sustainability.

Table 1. Summary of the Observation of three design schools: IIUM, MIA and RDI

ASSESSMENT CRITERIA	KULLIYAH OF ARCHITECTURE AND ENVIRONMENTAL DESIGN, (IIUM)	MALAYSIAN INSTITUTE OF ARTS (MIA)	RAFFLES DESIGN INTERNATIONAL (RDI)
Background	 <p>Built in 1997 and part of IIUM Gombak campus <i>(asterisk)</i>.</p>	 <p>Built in 1967 and occupying commercial (shop house) building</p>	 <p>Built in 1994 and occupying residential 4-storey bungalow renovated building.</p>
Architectural Images	 <ul style="list-style-type: none"> • Design with the concept of east meet west architectural design. • Standardization with other <i>Kulliyah</i> buildings (images and material applied) 	 <ul style="list-style-type: none"> • Typical commercial shop-house building design • MIA building occupying 6 whole units of shop lots with boxy shape - all tinted glass facade. 	 <ul style="list-style-type: none"> • Modern house design with latest construction materials and features • A bungalow with its own yard, converted into college building. • Part of the facade looks commercial with retrofitting of shading devices.
Building Layout and surrounding context		 <ul style="list-style-type: none"> • Situated at the edge of <i>Melaka's</i> commercial area. • Linear space arrangement and less green space. • The corridor is the only shaded open space. 	 <ul style="list-style-type: none"> • The bungalow lot has its own green compound and gated fence. • The plan is following typical double-storey bungalow house.

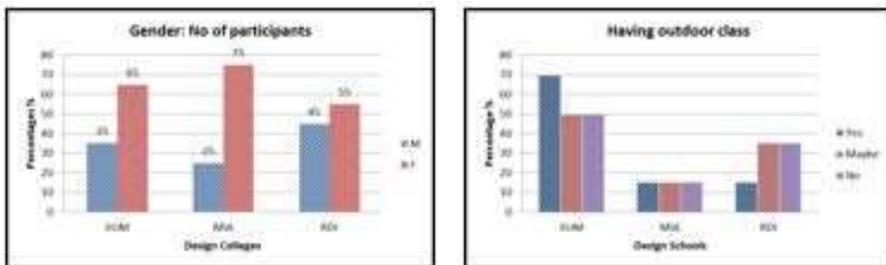


Figure: 2(a) Percentage of male and female respondents of each school; (b) Students opinion of having outdoor class

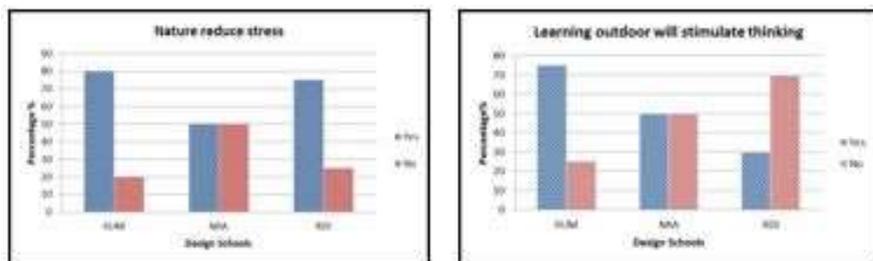


Figure: 3(a) Students opinion whether nature can reduce stress; (b) Students opinion whether learning outdoor can stimulate creative thinking.

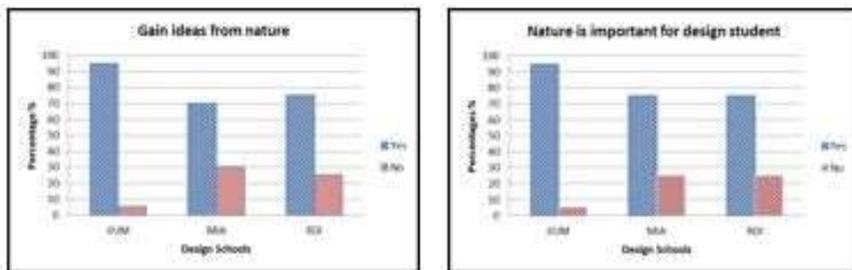


Fig. 4. (a) Students felt that ideas can gain from nature; (b) Students opinion whether nature is important to them

References

Brockwell, J. (2005). Quran and Science: Islam and Earth Day. <http://www.islamicvoice.com/May2005/QuranandScience/>, accessed on 11th May 2014.

- Elda Franzia, Yasraf Amir Piliang and Acep Iwan Saidi. (2015). *International Journal of Social Science and Humanity*, Vol.5, No.1, January 2015, www.ijssh.org/papers/419-H00026.pdf, accessed on 7th Sept 2014., pp44-49.
- El-Zeiny, Rasha M.A. (20).Biomimicry as a Problem Solving Methodology in Interior Architecture . *Procedia- Social and Behavioral Sciences*, 50, 502 – 512
- Frantz, C.M. and Mayer, F. S. (2014). The Importance of Connection to Nature in Assessing Environmental Education Programs. <http://www.sciencedirect.com/science/journal/0191491X/41/supp/C>, accessed on 10th June 2014.
- Heerwagen, J.H. and G.H.Orians(1993).Humans, Habitats, and Aesthetics. In Keilert, S.R. and E.O, Wilson (eds). *The Biophilia Hypothesis*.Island Press/Shearwater Books, Washington D.C. , pp138-172.
- Kaplan,R. and Kaplan, S. (1989). *The Experience of Nature: A Psychological Perspective*, Cambridge University Press, New York.
- Kennedy, Joseph F. (2004). *Building Without Borders: Sustainable Construction for the global Village*. New Society Publisher.
- Kirkby M. (1989). Nature as Refuge in Children's Environment. *Children's Environment Quarterly* 6:7-12
- Mahdavinejad, M.J. et. al.(2013). Nature-Oriented Architectural Learning in Contemporary Educating Environment Paradigms. *Procedia- Social and Behavioral Sciences*, 131, 432-435.
- Semra Sema Uzunoglu. (2012). Aesthetics and Architectural Education,*Procedia Social and Behavioural Sciences*, 51, 90-98.
- Shibata, S., and N., Suzuki. (2002), Effect of the Foliage Plant on Task Performance and Mood. *Journal of Environmental Psychology* 22, 3: pp.265-272
- UNESCO. (1977). The Tbilisi Declaration, Intergovernmental Conference on Environmental Education, Oct. 14-26, <http://resources.spaces3.com/a30712b7-da01-43c2-9ff0-b66e85b8c428.pdf>. Accessed on 10th May, 2014.
- Yukseka, I. (2013). The Evaluation of Architectural Education in the Scope of Sustainable Architecture. *Procedia - Social and Behavioral Sciences*, 89, 496 – 508.
- Yurtkuran, S. et.al. (2013). Learning from nature: Biomimetic Design in Architectural Education. *Procedia- Social and Behavioral Sciences*, 89, 633-639.