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Survey on Injecting Green Design Ideas into Student's Interior Design Project

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Abstract

Interior Design works has become more important than it used to be as the interior works takes quite a big chuck in an overall construction works. Nowadays, the clients want to play bigger role in implementing the interior task and eager to use or have the green or sustainable building idea to be implemented into their interior and also on their exterior project. So, interior design with sustainable factors has become more important. Designers began to address the internal problems of their environment and recognize the importance of interior design role. In the meantime; while some interior designers using sustainable environmental design criteria in their design solutions, the study examines how they apply it as a component for the design problem has not been done. Thus, we must look back into the academic sectors where this field must play an important role in producing the designers especially the interior designer with fair knowledge on environmental friendly designs or in today term as design with sustainable or green design factors. Therefore, with the above goals, this research become an initial platform trying to measure on the students sensitivity in applying interior design sustainable issues into their academic studio projects. This study however will discuss on design studio project that addresses sustainability through an environmentally based research focus. Students somehow start the project with a research component, interpreting the usefulness of interior?s sustainable material and the sustainable implications in the process of design decision been made. The process of recycling interior materials is advisable to use as well as recycling in the usage of interior products (i.e. furniture etc.). Furniture manufactured from not-recycled friendly materials are also been looking into not to be considered in the design. Therefore, this study examines the environmental conditions of a continuing practice of the sustainable interior design.

Index terms— sustainable education; teaching sustainable; sustainable interior; sustainable design.

1 INTRODUCTION

n order to educate the next generation that sustainability is not a method, but as a standard practice; it is critical that we consider teaching practices that incorporate in depth understanding of sustainable practice. The sustainable envelope proposes the use of a more than typical building materials and decision in designing within an unarticulated shell -and as design process of conceiving a sustainable interior design. The investigation of sustainability in Interior Design necessitates the exploration of sustainability beyond the specification of materials to incorporate an appreciation for the limitations of the environment (Schneiderman, 2008). Having agreed with the quote, the paper investigates the latest batch of students in intention to know how they apply the sustainable knowledge into their studio project systematically.

The research had been started earlier with the involvement of 33 Year 3 Interior Design students enrolling in 2009; a so-called Batch 1 for segregation in the study. There are also 16 third (final) [Batch 2] year students been selected in this research and for Phase 1; their Interior Design Studio projects conducting in Semester 1 Session 2010/2011 beginning in July 2010 and ends in November 2010 become part of the survey. There is Phase 2 study which is the continuation of Phase 1 being done in Semester 2 for more detail survey research. The students are in Universiti Sains Malaysia in Penang, Malaysia and all are the Malaysian citizens of Malay and Chinese descendent with one Saudi Arabian student. Initial also has been done on the previous batch focusing on 33 students; all local Malaysian with two Iranian students, two People Republic of China students and three Indonesian students. This group seems the focus of this research.

2 II. THE PROCESS AND INITIAL STUDIES -US LEED CERTIFIED BUILDINGS CASE STUDIES

Most of the references in this research have been using LEED factors as a main guide in ensuring the sustainable inputs being achieve into the students studio projects. Leadership in Energy & Environmental Design (LEED) is an internationally recognized green I Global Journal of Human Social Science Volume XI Issue IX Version I verification that a building or community was designed and built using strategies intended to improve performance in metrics such as energy savings, water efficiency, CO 2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts. Developed by the (USGBC), LEED is intended to provide building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

Since its inception in 1998, the U.S. Green Building Council has grown to encompass more than 7,000 projects in the United States and 30 countries covering 1.062 billion square feet (99 km²) of development area. The hallmark of LEED is that it is an open and transparent process where the technical criteria proposed by USGBC members are publicly reviewed for approval by the almost 20,000 member organizations that currently constitute the USGBC.

Here is some of the selected LEED certified buildings act as guide in having the American buildings example in green building index aspect in relation to the green design factors of the students studio projects. The examples are the Santa Monica Civic Center's parking garage in California; the proposed Calatrava 's designed sky-high Spiral Tower in Chicago, Illinois; Bank of America Tower in New York City; Townhomes in Sebastopol, Northern California and David L. Lawrence Convention Center in Pittsburg, Pennsylvania (see Figure 1, Figure 2 and Figure 3). 1st LEED Parking Garage

? The materials used in construction were recycled and finished with low-VOC paints and finishes.

3 LEED certified

Spiraling Calatrava Chicago Tower (USA)

? The tower also features a greywater system, which captures rainwater and reuses.

Platinum LEED Certification

? The design of the building makes it environmentally friendly, using technologies such as floor to ceiling insulating glass to contain heat and maximize natural light, and an automatic daylight dimming system.

4 Category/ Use type: Tower

? The building is made largely of recycled and recyclable materials.

Bank of America Tower (New York, USA)

-Platinum LEED Certification i) The design of the building makes it environmentally friendly, using technologies such as floor to ceiling insulating glass to contain heat and maximize natural light, and an automatic daylight dimming system.

ii) The tower also features a greywater system, which captures rainwater and reuses.

iii) The building is made largely of recycled and recyclable materials. ii) Bamboo floors make beautiful use of rapidly renewable materials

iii) The impressive gray water recycling system is the first approved for large scale use in Sonoma County using recycled water from bathing, washing and laundry to providing 100% of the water needed for landscape irrigation.

5 David L. Lawrence Convention Center

Pittsburg, Pennsylvania, USA -Gold LEED Certification i) Natural light is in abundance at the DLCC where over 75% of the entire building is naturally lit.

ii)The building is designed with a natural ventilation system which allows natural fresh air to cool the building.

iii) An on-site water reclamation plant recycles waste water from sinks, drinking fountains and faucets for use in commodes.

6 U.S. Green Building Council

certain sustainable product i.e. paint and bamboo floor. All the paint companies shown here having either zero Or low V.O.C. and it is a requirement to have these features (see Table 1 for information and Figure 4 and Figure 5). Students have shown great interests in specify these sustainable materials in their building quantities report and also shown the product details in their material sample board. Students also are expected to do their own research on sustainable products information as part of their tasks in the studio projects. International products i.e. Nippon paint is one of the companies which is in the fore-front in the green product application in interior design sectors by producing consumer and environmental friendly product. By the end of Semester 2, 14 students managed to submit their projects for final presentation. The six graphs below were derived from the study from the report done by the students together with their submitted drawings. The report contains explanation of the project including the concept and also showing the building specifications including the costing and the materials sample. The series of graphs below were derived from the formulation of identifying sustainable inputs from the literature research and also from the easy access of the internet. Among the focus of study at this juncture is touching on the sustainable floor input, wall material, recycle materials, sustainable lighting issues and also to the rain water harvesting idea.

Also, the type of ventilation use for the roof types are including for the graph analysis. These are the basic green design ideas which always been mentioned in the studio briefing individually or in a group to be taken care-off. The afford of having this series of graphs help to analyze on the degree of input from the students in inserting the sustainable issues into their tasks after work it out for about a year. After this, they will be out in the market taking the challenges on having green interior design issues in real practice. For ranking purposes, again number 4 is for the most popular choice for rating purposes(with some graph using and 5 as their highest ranking) where 1 is the least popular input for the survey . Even their progress grade has been inform through facebook and hence reducing real paper works usage and hence more sustainable way approach in studio handling. Students can also post in the facebook on their progress in designs and will get instant comments from the lecturers before meet at the studio. Some of the important findings in the graphs have been posted in the network in order for the students to monitor on their progress achievement especially on the sustainable inputs level. It seems like there are quite a positive input in using this social network in improving the interactions between the students and lecturers. The idea in developing more input on the sustainability seems more achieved by using the facebook medium with students seem making note on the usage of green design ideas into their project. There is an opportunity to have the progress chart on sustainability inputs of the projects being shown in facebook. The display of the graph helps the students in alerting them on their achievement in having a sustainable studio project. The lecturer even somehow use facebook to It is interesting to have the social utility network in one of the ways running the studio. For this research, one group has been initiated from the facebook network to communicate with each other at any time. Students can be informed at any time of the day on the information and data that they need to know. download students progress grade in ensuring they are aware on the level they are getting so far on their works. Overall, this social utility network giving quite a big impact in the daily progress of getting students awareness especially on the sustainable input study. It seems like the communication between the students and the lecturers are not limited in the studio only but also can be done at any time of the day and at any place!. In the process of delivering inputs on sustainability interior design into the studio works, several critiques session has been done to ensure the ideas been delivered in good order. Getting the final year interior design students by exposing themselves into the green design effects at the academic level hopefully can give positive effects to the environment when they go out in real practice very soon. There is an opportunity for the students to have a formal presentation to the School Dean and being briefed on their achievement especially on the sustainable interior input. A group of other lecturers from different part of the school's program i.e. Building Technology, Planning, Architecture and Quantity Surveyor have been giving Bamboo and natural timber seems being the most popular choice for flooring. However, the students seems still making quite a positive awareness on all other flooring materials to be considered to be used Fig. 12. Summary on sustainable input using for wall (Sem.2 Batch 2). The graph indicated 4 types of wall materials are among higher quoted for the task which are using V.O.C. paint, natural timber and stone; and having green wall (see Figure 12). Most of students quoted the green wall materials for their building specification report and the materials being shown in their material sample board. Few students dedicated a specific chapter located within their report explaining the usage of the said sustainable wall materials. The pattern show good students practice in applying sustainable wall materials within their projects thus giving better chances on having green design when they out practice. All the 3 inputs are for having natural air running through the buildings. Having natural air running across the building is good green design practice in term of health factor for the occupant. Certain students having the vast glazed opening within their glass wall for good internal-external air flow. The graph shows some consideration in implementing air ventilation as one of the green design factor to be implemented into interior design issues (see Figure 14). within their project (see Figure 11). Having identified 10 types of sustainable floor materials and getting most of the students to be able to have these materials within their projects indicating quite a success in making green design awareness as far as having the green floor is concern.

Lighting is one of the important sustainable criteria in green design feature. The lighting graph shows fair range of sustainable lighting inputs to be handled by the students. Having sun shading i.e. building external window sun shading or simply letting natural sun light deep into the interior space can greatly reduce the usage

of artificial lighting (see Figure 13). Students are ensuring in knowing the morning and evening sun principles while arranging window position in getting a maximum morning sun light into their café area for example The issue on having rain water harvesting as part of individual design always mentioned but hardly been considered seriously by the students. This is reflected in Figure 15 above as quite a small number of students really keen to explore this idea. Most of the LEED gold or platinum projects in the USA seems having this kind of green feature located at the lobby of the building to be enjoyed by the users. Thus having rain water harvesting for the internal building use become a popular feature in the USA. With is considered the least, having recycle glass chandelier to light-up the internal space is a superb thing to do. The above graph in Figure 16 shows more students having recycled textiles being put in studio practice as well as recycle sisal carpet. These recycle materials drawn from the literature study are more frequently been find and interestingly found in some student's material sample board.

Consideration of environmental issues in construction projects has economic, ecological and social implications. It must be put in an overall context and undertaken in an objective and rational way (Gauzin-Muller,2002). Having sustainable design knowledge for students to apply it into their studio works is as important when they are in real practice. There is more demand out there now for healthy earth-friendly products and manufacturers; large and small; are meeting the need with stellar alternatives (Sharkey, 2008). As a summary, the graph (see Figure 17) indicated consistence input has been achieved for this exercise in ensuring sustainable design issues being rightly exposed at academic level first for the students to face the practice with real sustainable environmental design element practice.

Through the sample taken during the survey, respondents seems giving fair feedback in ensuring the importance's of having positive environmentally friendly design. Better score seems being shown in the first three rows of the graph indicated the frequency of green impact inputs has been considered by most of students. This sign giving good indication in having environmentally sustainable design at academic level can generate better understanding in implementing the green factors being tackled at real design practice level. More studies about environmentally, economically and socially sustainable interior design will be necessary to contribute to the further refinement of an interdisciplinary body of knowledge in sustainable design. It is important to know the state of environmentally sustainable interior design practice (Kang, 2009

7 CONCLUSION

The green approach is simply 'responsible design'. Having a responsibility to sustain life and land with every design decision made are the great things to do. As we see bigger role playing by the Interior Designer in contributing the process of designing the built environment; 'green' is an umbrella term for a myriad of elements considered as part of the process. With the option we have of having no planet B, future generation of Interior Designer must well equip and well aware how important to have sustainable green design. Thus certain initial conclusion can be derived from the study where most of graphs indicated that by stressing the importance of the green design, students can be guided and produced satisfied results.

There are still much rooms can be filled to improve the implementation process of the sustainable issue within the academic field. As a prominent public university, Universiti Sains Malaysia already being labeled as the key player in having these sustainable role really being applied and the affords are well known and well receive among the region top universities; this Interior Design Sustainable Studio exercise can be made as standard practice. Whether lifecycle analysis, reducing landfill, buying local, downsizing, salvage, repurposing, heirloom design, anti-allergy, reducing VOCS or day lighting for productivity. These are to name a mere few. Sustainable interior design pulls away from changing trends and synthetic culture, returning to a more traditional, local and natural way of living. Furthermore, with the Federal Government policy in encouraging better living environment as shown in the Federal Government staff double storey terrace housing in new city like Putrajaya, Malaysia; looking into the comfort of having sustainable homes with sustainable interior feature can become the Malaysian trend lately (Talib, 2011).

To combine these elements and accomplish a design solution that offers a practical, functional, stylish and ethical interior, alongside the occupant's requirements can be quite a feat. In that challenge lies a new perspective. The holistic approach is to acknowledge that as humans we are only visiting the earth, we are not the owners. Together these offer a more intelligent method, one that respects our future. The research indicated that the up and down of the graphs lines giving better clues that the challenge in training students with green and sustainable design attitude received quite a good outcome.

For years we have been engaged in a consumer driven culture, buying without thought. Media has helped us begin to grasp the seriousness of our man made actions, making way for sustainable building methods and raised public awareness in Malaysia, Europe or in the USA. However, green principles usually stop on pre interior fit. What's inside the building is just acknowledge the value of sustainable interiors as an integral part of design and build and not an afterthought.

1

Figure 1: Fig. 1 .

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Figure 2: Fig. 2 .

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Figure 3: Fig. 3 .

Figure 4:


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Figure 5: Fig. 4 .


5

Figure 6: Fig. 5 .


6

Figure 7: Fig. 6

Figure 8:

Figure 9:

Figure 10:

Figure 11: Fig. 9 .

Figure 12: Fig. 10 .

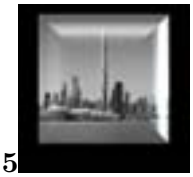
Figure 13: Fig. 11 .

Figure 14: Fig. 13 .

14

Figure 15: Fig. 14 .

Figure 16:

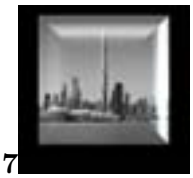


15

Figure 17: Fig. 15 .

16

Figure 18: Fig. 16 .



17

Figure 19: Fig. 17 .

1

Quick Research on Sustainable Materials.	WALL MATERIALS	SUSTAINABLE CONTEMPORARY MATERIALS AND ELEMENTS FOR INTERIOR SPACE:	
1	Materials	Paint	
	Company	Nippon /World-wide. HQ-Japan	Paints (Malaysia)
	Products	Nippon Odour-less Wall Sealer, Nippon Odour-less Premium All-In-1,	
	Information	1. Formulation contains low Volatile Organic Compound (VOC) level. 2. Nippon Paint is the world leader in anti-corrosion and chemical resistant technology. 3.The currently manufacture over 10,000 different paint formulations and the paints manufactured can be categories under decorative / architectural coatings, automotive finish, industrial protective coating and fishing vessel paints. 4. Formulated to be extremely stain repellent and can be easily removed. 5. Formulated styrene acrylic water-based wall sealer with exceptionally low odor for interior use.	use coatings,
2	Materials	Paint	
	Company	Benjamin Paints(USA),	Moore Nature
	Products	Natural Arborcoat Waterborne Exterior Stain	Zero Paint, VOC
	Information	1. Compound (VOC) 2. Virtually odorless without sacrificing style or performance. 3. designation is Benjamin Moore's assurance environmentally friendly coatings meet and often exceed the strictest industry standards.	Low Volatile Organic The Green Promise that its
3	Materials	Paint	
	Company	Green Seal USA	
	Products		

2

Figure 21: Table 2 .

						Rain Water Harvesting-Sustainable Input IV. Analysis					
5 0	AGUSTHENG ?		JOYEE ?	LEE YING	MOHAMAD ?	WAN ?	Interior Deco use	Interior Deco use	4		
								2 0	FLOORS WALLS LIGHTING AIR VENTILATION RAIN WATER HARVESTING RECYCLE FURNITURE		
Recycle Materials -Sustainable Input Analysis											
5 0	AGUSTHENG ?		JOYEE ?	LEE YING	MOHAMAD ?	WAN ?	Recycled Textiles	Recycled vintage glass ie chandelier	Recycled Sisal-Carpet		

Figure 22: Summary: Sustainable Input (Batch 2 - Sem 2) Chart

216 V. 1 2 3 4 5 6 7 8 9

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[9]December

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