

VISUAL REPRESENTATION OF NATURE IN THE LIBRARY

SOMAYEH ROUSTAEI SADRY

UNIVERSITI TEKNOLOGI MALAYSIA

VISUAL REPRESENTATION OF NATURE IN THE LIBRARY

SOMAYEH ROUSTAEI SADRY

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*This dissertation is dedicated to my beloved mother and father who have never failed
to give me every support and encouragement*

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ABSTRACT

Recent changes regarding the atmosphere of the educational environment such as library to cater to the academic needs of students has been taken into account in many universities. Modifying the library's traditional image with the use of photographs, paintings or any visual objects which depict nature may make a library more conducive for learning environment. The investigation is aimed at identifying and evaluating the most preferred learning environment of a library that caters to their academic needs in the context of preferred form of visual representation of nature among university students. Questionnaires were administered to 120 students of Universiti Teknologi Malaysia. The survey was conducted in the library of Universiti Teknologi Malaysia, Skudai. The collected data was analyzed to show the most preferred visual representations of nature. The findings indicated that the subject of plants, colors in nature and paintings with nature as subjects are the most preferred visual representations of nature among students. Another significant result of this study indicates their preference for specific type of color and attribute of nature and type of word. This research is significant because it can help designers to identify which components, attributes and type of visual representation of nature are important that can enhance the general educational environment of libraries.

ABSTRAK

Perubahan terkini terhadap persekitaran pembelajaran seperti perpustakaan untuk memenuhi keperluan akademik pelajar telah diambil kira di kebanyakan universiti. Meminda imej tradisional perpustakaan dengan menggunakan foto, lukisan atau sebarang objek visual yang memaparkan kesemulajadian mungkin boleh menjadikan suasana pembelajaran lebih selesa. Kajian ini bertujuan untuk mengenalpasti dan menilai pilihan paling utama persekitaran pembelajaran dalam perpustakaan yang dapat memenuhi kehendak akademik mereka dalam konteks bentuk pilihan representasi visual semulajadi. Borang soalselidik telah diedarkan kepada 120 pelajar Universiti Teknologi Malaysia. Tinjauan dijalankan di perpustakaan Universiti Teknologi Malaysia, Skudai. Data yang dikumpulkan dianalisis untuk menunjukkan pilihan paling utama representasi visual semulajadi. Hasil kajian di kalangan pelajar menunjukkan subjek tumbuhan, warna dalam semulajadi dan lukisan dengan subjek semulajadi adalah pilihan paling utama. Satu lagi hasil kajian yang signifikan juga menunjukkan pilihan pelajar terhadap jenis warna tertentu, atribut kesemulajadian dan jenis perkataan yang tertentu. Kajian ini penting kerana ia akan membantu pereka mengenal pasti komponen, ciri dan jenis representasi visual semulajadi yang penting untuk meningkatkan persekitaran pendidikan umum.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Our mood can be greatly affected with visual surroundings from experience. Many researches have been done on the visual effects of interior environment with special attention on textures, patterns, colors of materials. Lately, many physiological surveys have been conducted more than before and that have shown “that visual environments may affect human not only psychologically but also physiologically” (Tsunetsugu *et al.*, 2005, p.1341).

Nature is one of the visual elements that has strong impact on people's nature. Natural elements and nature in the interior design bring comfort, happiness and move people passive mind toward the environment. This shows the importance of designing in today's people's life. The learning environment influences user's perception when nature is presented in this kind of environment.

The planning and design of libraries have been primarily concerned with the preservation and security of materials and the efficiency of the library collection services and providing an inspiring learning environment. To design the interior of learning environment such as library, some principles are necessary to be considered. For example, the new interior design in the Seattle Public library, Dresden and Göttingen State University library and the Idea Stores in London give students access

to information guidance and skills possibility for communication and an inspiring working environment. These designs are based on the following important principles: (1) its building appliances, structure and design should give consideration to sustainability (2) the interior must offer a comfortable and attractive environment for both staff and customers (3) access to the library and its media should be obvious and easy for everybody (4) there should be multifunctional space for informal and formal communication between staff and customers (5) the library complex must adequately represent its institutional aims and philosophy (Hohmann, 2006).

1.2 Research Background

The nature writers (Leopold, 1966; Barry, 1977; Orr, 2004) and some environmentalists (Muir, 1961; Thoreau, 1995) maintained that people enjoy psychological and physical benefits from staying in the natural environment. Study of the environment issues in the last twenty years has favoured this contention. Using a variety of measures and methodologies, researchers revealed that exposure to the natural environment and depiction of nature reduces negative states and behaviors while increases positive ones. It is clear that exposure to nature could lead to most desirable outcomes (Hartig *et al.*, 2011).

Some benefits were reported on the basis of experimental data and survey with regard to nature experiences of various in environments with various scales (Kaplan and Talbot, 1983; Hartig *et al.*, 1991) from neighborhood parks (Grahn and Stigsdotter, 2003; Fuller *et al.*, 2007), leading to natural features around residences (Talbot and Kaplan, 1991; Wells and Evans, 2003), and gardens (Lewis, 1973; Dunnett and Qasim, 2000). The relevancy to the outdoor and indoor transition produced through windows “researchers have reported that viewing natural features provides psychological benefits” (Hartig *et al.*, 2003, p.422).

Many researches have been done on interior environment and the impact of nature on people's perception. The interior environment that is influenced by nature

and representation of nature with its positive effect on human is obvious in learning environment such as classrooms and libraries. The past researches have focused on the study of learning environment characteristics and its contribution to students learning. It was discovered that there is an important relationship between students' cognitive and affective outcomes and the learning environment (Waldrip and Wong, 1996; Wong and Fraser, 1996; Mcrobbie *et al.*, 1997; Goh and Fraser, 2000; Chionh and Fraser, 2009). In university campuses where the environment is interesting for students, it makes them enjoy their studies and inspire good academic achievement (Baek and Choi, 2002; Lizzio *et al.*, 2002; Tahir and Naqvi, 2006). The learning environment take dimensions which are consistently identified as determinants of learning as in most studies there is association between students' achievement and learning environment (Khine and Goh, 2002). The good learning environment is believed to lead toward increasing the students success while they perceive it as fulfilling, favorable and affirmative (Chang and Fisher, 2001). This study will examine the positive effects of visual representation of nature on students in the library.

1.3 Problem Statement

Libraries are still relevant in providing academic services despite the increase in technological developments in telecommunications (Bennett, 2006). It was argued that designing and building university libraries presently needs to review the mission of the entire educational system (Bazillion and Braun, 1995). According to Himmelfarb (1997) libraries are on the verge of a revolution. Therefore, there is an increase in emphasis on library spaces in terms of redesigning and utilization. Hence, the identified problem could be as stated below:

These days there are many problems with library interior design such as less privacy for students, not having suitable interior lighting and day lighting, lack of comfort, lack of suitable places for communication and etc but according to many literatures, the major problem of libraries is having monotonous and boring

atmosphere which affects students' achievement (Kilic and Hasirci, 2011; Kao and Chen, 2011; Lin *et al.*, 2010).

According to researchers above, the main problem of libraries interior is, not having lively atmosphere since most areas are quite and full of computers, books, book shelves, the compact book stacks and other utilities with users moving around with their individual academic works. Students usually come around with serious mood to the library. Therefore, the original aim of the renovation is to bring "a lively atmosphere to the library".

Some library users agreed that a suitable environment assists readers to be absorbed in natural beauty while reducing their stress and also inspire learning incentives of readers and the research creativity. The library "should be transforming itself to become more in tune with the needs of its users" (Kao and Chen, 2011, p.76). It is very important, as nowadays users are always rushing to get information. One of the functions of the library is to caution users to be patient in finding information by slowing down, take a mind break, read and enjoy the space. The "responsibility of the library is to achieve the goal of providing a location for stress-free reading, relaxation of mind and body, and even academic discussion" (Kao and Chen, 2011, p.84).

Therefore, one of the ways to address this problem is to bring representation of nature into the library. Changing the atmosphere of the library by introducing representation of the nature, attracts potential users to the library, address the academic needs of students and modifies the image of the library from an area full of books and computers to an area that people may relax and enjoy reading.

1.4 Research Aims

The aim of this study is to evaluate and outline the most preferred learning environment of a library that caters to the academic needs of university students in the context of preferred form of visual representation of nature.

1.5 Research Objective

Universally, research objective is designed to achieve a target when conducting a research in a subject area. For the purpose of this study, the objectives to be addressed in this study are listed below:

- 1) To identify the most preferred visual representation of nature in library from students' perception;
- 2) To investigate the relationship of component of nature with attributes of nature and visual representation of nature;
- 3) To investigate how visual representation of nature enhances the learning environment;

1.6 Research Question

- 1) What type of visual representation of nature students prefer to perceive most in the library?
- 2) What is the relationship of components of nature with attributes of nature and visual representation of nature?
- 3) How visual representation of nature enhances the learning environment?

1.7 Research Gap

The Tables 1.1 and 1.2 show the studies that were conducted on benefits of interior plants on people's perception in places like hospitals and offices. Few of them are done to change the atmosphere of library to enhance the general learning environment and catering the academic needs of students. Therefore, it can be noted that as far as this study is concerned, no research has been done to investigate student's preference for best visual representation of nature in libraries and its effect on students' perception. In the learning environment, the representation of nature is a notable factor that affects the students' perception in learning environment and then influences their attention capacity. With the Attention Restoration Theory (ART),(Kaplan and Kaplan, 1989; Kaplan, 1995), having contact with outdoor vegetation, viewing the natural elements from windows and indoor plants, they could all contribute to attention restoration (Kaplan, 1993). Being exposed to plants could bring about a restorative effect on attention at long and short breaks from work while leaving directed attention to rest more effectively (Kaplan and Kaplan, 1989). In fact, Kaplan (1993) came about the phrase 'micro restorative' experiences then advised that undirected attention could be brought up during very short breaks like glancing out of a window while working. Although several experiments were conducted to identify the restorative effects of nature interventions (Hartig *et al.*, 1996; Hartig *et al.*, 2003; Laumann *et al.*, 2003; Berto, 2005), very few studies have looked at possible benefits of representation of nature in interior places.

Table 1.1 : Review of previous researches on bringing plants into indoor places

TITLE	AUTHOR	DESCRIPTION	RESULT
Benefits of indoor plants on attention capacity in an office	Raanaasa <i>et al.</i> (2011)	To explore whether plants affect attention capacity in an office setting.	natural elements can affect cognitive performance in an office work environment
The connectedness to nature scale	Mayer <i>et al.</i> (2004)	Review the people's senses of oneness with the natural environment.	CNS (connectedness to nature scale) is a valid and reliable scale.
The psychological benefits of interior plants	Bringslimark <i>et al.</i> (2009)	whether indoor plants offer them benefits provided by experiences of nature outdoors.	indoor plants can provide psychological benefits such as stress-reduction and increased pain tolerance
Indoor plants may improve worker productivity and reduce stress in windowless environment	Virginia <i>et al.</i> (1996)	To examine the impacts of internal plants in working environment without window on human well-being and productivity.	speedy recovery from stress, a correlate of systolic blood pressure, in subjects who viewed nature scenes compared to those who viewed urban scene.
Stress-reduction effects of indoor plants in the built healthcare environment	Dijkstra <i>et al.</i> (2008)	To investigate whether the stress-reducing effects of indoor plants occur because such an environment is perceived as being more attractive.	stress-reducing properties of natural elements in the healthcare environment. it sheds light on the underlying mechanism causing stress reduction.
Selective attention and heart rate responses to natural environments	Laumann <i>et al.</i> (2003)	Influence of nature on people well being	Positive impact of nature on attention capacity and heart rate

Table 1.2 : Review of previous researches on interior design of library

TITLE	AUTHOR	DESCTIPTION	RESULT
Before there was a place called Library	Chang <i>et al.</i> (2010)	Effects of nature inside the library on students' learning	Positive effect of nature on students' learning
Making lemonade from lemons: A case study on loss of space at the Dolph Briscoe, Jr. Library, University of Texas	Tobia and Feldman (2010)	Renovating interior of library to attract students to the library and affect students achievement	Decreasing need to house collection and Increasing number of students in the library
A park in the Library: The "New Reading Paradise	Chen and Kao (2011)	Bringing nature into library to change the atmosphere of the library	Students were more inclined to use the library because of the nature inside the library called "New Reading Paradise"
New aspects of Library design	Hohmann (2006)	Changing the interior of library according to principle of design To offer an attractive and comfortable environment to meet needs of students	Satisfaction of students in terms of library interior design
"one sweet Library ": A case study on changing interior of library from the Health Sciences and Human Services Library, University of Maryland	Toocy (2010)	Presenting nature inside the library as an effective factor on students wellbeing	The most positive result of this renovation was the good will the library engendered at all levels of the campus and the "points" we accrued for being involved, positive, proactive participants in the renovation process
Daylighting concepts for university libraries and their influences on users' satisfaction.	Kilic and Hasirci (2011)	Influence of interior design factors such as lighting on students' s satisfaction	Due to applying interior design factors , users spend more time, their feelings of belonging and satisfaction are increased
Designing a creative learning environment	Anandasivam and Cheong (2008)	Changing physical environment of the library	Aesthetics and good interior design play important roles in the positive perception of library users.

According to Table 1.1, there have been many researches undertaken related to impact of nature on people and productivity. Some psychological benefits like reduction of stress and the improvement of attention capacity in indoor areas like

working place, learning environment or healthcare are due to exposure to nature or representation of nature. Table 1.2 shows that there are little researches that address some changes in interior design of library to change the boring and monotonous atmosphere of library and make that colorful. This makes new changes like renovating environment or presenting elements of nature or representation of nature in the library to meet the expectation of users and providing places for stress-free reading and relaxation of body and mind and even academic discussion. From past studies, it could be noted that gap exist in the research strongly suggests that there is a need to investigate students' preference for most preferred components of nature to be visually represented in library and its positive effect on students' perception.

1.8 Scope of Study

The scope of this study shall include doing a case study of Universiti Teknologi Malaysia (UTM) that represents other well established research universities in Malaysia. The reason why UTM as a research university is selected is that because research universities have extra concern about quality of education and any source of information such as the library itself. So the library is the most important part of research universities and it is an institution in itself. Therefore, there are many sophisticated facilities and many supporting services which can improve the quality of education in research universities. UTM students are allowed to use the library and study there. In order to answer questions of the questionnaire which are related to nature and place attachment there is a need to choose those students who are familiar with the library and prefer having representation of nature in the library as respondents. Because familiarity and preferring representation of nature are necessary to get student's perception regarding nature and place attachment questions.

According to the result of the exploratory questionnaire, among five senses (sight, sound, smell, touch, taste) the most frequency belongs to the sight sense

which means that representation can be limited to visual representation. So that visual representation will be considered as the scope of this study.

1.9 Research Methodology

In the process of conducting this study, the data were obtained and then analyzed quantitatively and qualitatively. A mixed method was used in the data collection process for this research (Kilic and Hasirci, 2011). Exploratory Survey was applied with 50 students to explore the importance of representation of nature in the library and then according to exploratory survey result, the primary questionnaire was designed to do the pilot test. A pilot survey questionnaire was used to gather preliminary information. This became a tool for compiling data about different perceptions of people about the preferred visual type of representation of nature in interiors of libraries. Finally after pilot test and revision of some question, the final questionnaire was designed. In this study questionnaire was used to collect primary data. The data were analyzed using SPSS 18 for quantitative while the content analysis was used for qualitative data. The process for research methodology is presented in Figure 1.1:

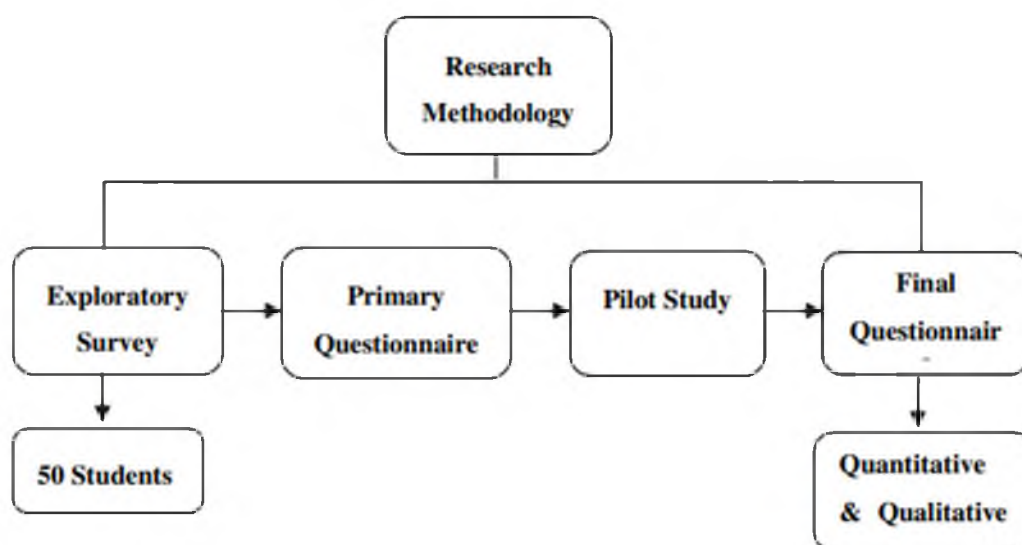


Figure 1.1 Diagram of Research methodology

1.10 Underpinning Theory

The theory on the stress reduction and attention restoration stated that exposure to the nature and elements of nature could reduce stress (Kaplan and Kaplan, 1989; Ulrich, 1983; Ulrich *et al.*, 1991) and increase attention restoration of students in library while they are reading in a place which is equipped by elements of nature in a reading area. So that bringing nature to interior places is effective to help students after a short break by sitting beside indoor nature in reading areas or looking at them may help to focus on their studies more effectively and increase their attention capacity. The Ulrich's (1983) theory is the foundation for many other studies on environmental influences on psycho-physiological stress-reduction. This theory is based on aesthetic and affective responses to visual stimulus. The theory states that an environment has some peculiarities that include moderate depth, moderate complexity, gross structural qualities, the presence of a focal point and natural contents such as vegetation and water. Those can bring out positive emotions, restrict negative thoughts, sustain non-vigilant attention and reduce physiological arousal.

Table 1.3 : Underpinning theories

Rachel and Stephen Kaplan (1989)	The Attention Restoration Theory
Ulrich (1983)	Adopts a stress reduction framework

1.11 Significance of Research

The result will help designers to identify which type of visual representation of nature students most prefer that can enhance the general learning environment as well as fulfilling the academic needs of students in pursuit of acquiring knowledge in campus libraries. The exploratory survey was conducted on UTM campus to

determine which interest and preference are given to the representation of nature that made it an important aspect of library.

The social, psychological and physiological benefits like respite from mental fatigue self-reflection, enjoyment and motivation can change the atmosphere of the library by bringing representation of nature into library (Ulrich, 1979; Kaplan and Kaplan, 1989; Ulrich *et al.*, 1991). In a study conducted in Finland and United States by Korpela and Hartig (1996) and Korpela *et al.*, (2001) they concluded that students accept natural environments for comfort and relaxation and they have improved more in this environment. Those places are often associated with good outcomes such as motivation which help students to enjoy their study and improve their academic expectations.

1.12 Structure of Thesis

The structure of this thesis will be in five chapters as described below:

- Chapter 1 states the general view of the study beginning with introduction, then the background of the study with problem statement. It states the scope, objectives and significance of study and the overall methodology.
- Chapter 2 is to report the review related literatures with definitions by different authors. It reports past studies on library as a learning environment, place attachment, attention restoration and different type of representation of nature. Some previous researches will also be reviewed to give a better view toward this subject.
- Chapter 3 presents the methodology of the research. It states the detailed explanation of survey including different parts of the questionnaire, demographic data of respondents and the sample size.

- Chapter 4 is regarding the analysis the data and discuss of the findings in detail. It is presented with tables and figures and presents an overall view of the findings. The discussion will be based on a combination of two or more short summaries which is presented in chapter five as the summary.
- Chapter 5 discusses the outcomes of findings as reported in earlier chapters and conclusion of the study.

1.13 Summary

This chapter introduces the importance of this study. It was discussed in this section to investigate students' preference for most preferred visual representation of nature in library and its positive effect on students' perception. In addition, this section gives a total overview of the research methodology and thesis structure. The next chapter discusses about the different type of visual representation of nature and related issues.

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