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## Landscape Visual Studies in Urban Setting and Its Relationship in Motivational Theory

Noriah Othman<sup>a,\*</sup>, Noralizawati Mohamed<sup>a</sup>,  
Mohd Hisham Ariffin<sup>b</sup>, Mohd Ali Waliyuddin A. Razak<sup>c</sup>

<sup>a</sup>Centre of Landscape Architecture Studie

<sup>b</sup>Centre of Construction Management Studies

<sup>c</sup>Institute of Graduate Studies

Universiti Teknologi MARA, Shah Alam 40450, Malaysia

### Abstract

Increasing number of botanic gardens in Malaysia shows that botanic gardens are important to the urban citizens. Visitors are motivated to visit these gardens for many reasons. The reasons were appreciation of plant aesthetics values, design of the gardens, visual qualities and recreational purposes. Other reasons were social interaction, psychological, health and ecological function. This study focused on factors that motivate the visitors to visit Penang Botanic Gardens and their profile. One of the factors that contributed to visitation is the visual elements in the gardens.

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### 1. Introduction

Urban green spaces provide an increasingly important opportunity for people to connect with the natural world. However, today's scenario of urban living lifestyle with the intense development reflects the diminished value of natural resources and their benefits (Johannes, 2012; NurHuzeima and Hush, 2012). Botanic gardens, generally located within cities, are known as urban green spaces that offer many

\* Corresponding author. Tel.: +6-019-2616030; fax: +6-03-55444353.  
E-mail address: [noriaho@yahoo.com](mailto:noriaho@yahoo.com).

benefits to urban citizens. Their role is not limited to preserve existing vegetation and improving natural environment, but also provide social and psychological services to urban inhabitants thereby improving the liveability and quality of cities and towns (Murray et al., 2007; Ward et al, 2010).

The unique character of botanic gardens can be seen in the existence of plants biodiversity which can be associated with environmental conservation and education (Ballantyne et al., 2008; Chavez and Sharrock, 2013) and these offer opportunities for people to enjoy and learn about a wide range of plant diversity and to benefit from the sense of well-being that botanic gardens provide. Botanic gardens are rarely isolated entities but connect ecologically, culturally and socially with the surrounding locality and people (Oldfield, 2008). Jones (2000) stated that botanic gardens can be a showcase for interrelationships among plants, animals and humans and their interdependent thus understanding these relationships can promote awareness in environmental conservation to the users and the visitors.

## 2. Literature Review

Understanding individuals' motivations for visiting botanic gardens and other similar outdoor spaces is important as the numbers of people visiting botanic gardens increases each year (Noralizawati et al., 2011). Previous study has shown that many reasons motivating botanic garden visitation and these motivations include appreciation of plant aesthetics values, design of the gardens, visual qualities and recreational purposes (Connel, 2004; Nordh et al., 2011). Other reasons were social interaction, psychological, health and ecological functions (Chiesura, 2004; Sanesi et al., 2006). A study was conducted by Nordh et al. (2011) on visitation motivation of small parks and open spaces in Oslo, Norway and they have concluded that attributes that affect visitor motivation when seeking psychological restoration were water elements, trees, ground cover such as grasses. This study indicated that users were motivated to visit botanic gardens and similar outdoor spaces for mental relaxation and clarity. Other studies on visitor motivations have shown that in reality, botanic garden visitors are often motivated to pursue a wide range of leisure activities outside of horticultural interests. These activities included spending social time with friends and family, physical and mental relaxation, or other hobbies (Ballantyne et al., 2008; Ward et al., 2010). The theory of human motivation in natural area has been explored by Noralizawati et al., (2011) and according to them, this theory is very important to measure the successful of landscape design in recreation areas. Motivation also play as a central role to determine human's reason on something that they like and preferred to (Noralizawati et al., 2012).

The basic theory of landscape visual quality is that aesthetic values are inherent inside the property of the landscape. This theory is used by many researchers to explore and reveal the beauty of landscape elements in natural setting and its connection to visitor's motivation to a particular place. Since visual landscape quality is one of the factors that contributed to visiting motivation, their relationship is pertinent in need to be emphasis. According to Thalany and Alias (2013), motivation is a basic strength in human behavior. Their study on the visitors' motives for visiting Bako National Park showed that visitors visit a national park for four factors, which are challenge excursion, social trip, nature tour and getaway outing. Therefore, the visitor's preferences and motivation for visiting certain places need to be observed and recorded for future planning. Previous study have shown that any changes to the existing natural settings of Penang botanic gardens can caused public dissatisfaction, thus landscape changes is not favorable by the users (Noralizawati et al., 2011). Other research showed that lack of the plant maintenance and the surroundings also contributed to low rating of a particular spaces (Mohd Akmal and Noriah, 2011; Normiadilah and Noriah, 2010; Suria et al, 2013). Connell (2004) and Ballantyne et al. (2008) have commented regarding the use of botanic gardens as public spaces. They have found that the profiles of visitors, the level of satisfaction they obtain from various offerings and how the visitors compared to other public green spaces is mostly unreported. Personal communication with the users of

Penang Botanic Gardens has confirmed the above statements. Little is understood about these gardens' visitors and users, their motivations to visit, and the outcomes/benefits they receive from these visits. A study is undertaken with these objectives: (1) to determine factors that contribute to users/visitors motivation, (2) to investigate the profile of botanic garden users/visitors and (3) to identify reasons for visitation to this botanic garden.

### **3. Background**

#### *3.1. Current botanical gardens scenarios in Malaysia*

In comparison with other international botanic gardens such as Singapore Botanic Gardens and Royal Botanic Gardens, Kew, that are well established, botanic gardens in Malaysia has a lot of opportunities for improvements. According to Galbraith et al. (2010), the main roles of botanical gardens are for education and research purposes such as teaching and botanical research. Other roles are related to recreation and social interaction. Earlier, like other international botanic gardens, Malaysian botanic gardens basically function for plant conservation, education, tourism, source of economy, as well as provide a place of recreation. However, interviews with Penang Botanic Garden officers indicated that, at present, the primary function of many botanical gardens in Malaysia is focused on recreation and the secondary function is for education. This scenario can be seen through the engagement of the users and the visitor's activities. People come early in the morning and late afternoon for brisk walking, tai-chi, jogging, cycling and other activities involving recreations rather than just educational purpose.

Recently two parks in Malaysia have been upgraded to botanic gardens. They are Perdana Botanical Garden and National Botanical Garden, Shah Alam. Previously, known as Perdana Lake Garden and was built in 1888, this garden is newly named as Perdana Botanical Garden, Kuala Lumpur in 2011, and will go through 2 phases of transformation to fulfil its role as a botanic garden. National Botanic Garden, Shah Alam is located in Selangor was transformed from an agriculture park. This transformation will enhance the role of the park as a place for plant conservation, for scientific research, display and education besides other benefits related to psychological, restoration and recreational benefits. Therefore, it is not surprising that the number of botanical gardens in the world increase day by day. Previous research shows that, there are approximately 2500 registered botanical garden worldwide (Wilis, 2004; Sanesi et al., 2006; Ward et al., 2010). Malaysia also not excluded from this scenario. Increasing number of botanic gardens in Malaysia shows that botanical garden is important to the public.

Certain botanical garden in Malaysia has lost much of its natural heritage and landscape visual quality over the years. Statistically, the botanical gardens in Malaysia have over two million visitors annually visited the garden thus making it as one of the most visited destinations by Malaysian citizen (Department of Penang Botanic Gardens, 2011). This popular area is now facing some of visual degradation where the landscape visual quality had changed over time. According to Malaysian Nature Society (2010), the visual degradation happened because more and more people have visited these places to enjoy nature and thus this automatically puts pressure on the environment and its visual impact. Improper landscape planning and weak study on plants suitability will also give negative environment setting of this natural area too.

#### *3.2. Research area*

Penang Botanic Gardens is located at the Northwest coast of Peninsular Malaysia. Penang Botanic Gardens was selected because it is one of the oldest botanic gardens in Malaysia and it is situated on an urban island. This botanic garden was established in 1884 by the British from the old granite quarry site and is more popular known as Waterfall Gardens at that time. The main botanical garden area is 72 acres,

while the total area of botanical gardens including the forest area is 592 acres. Penang Botanic Gardens was recorded as the only public botanical garden in Malaysia as reported in Development and Management of the Penang Botanic Gardens report 2007. This botanic garden is not only a place for plants collection and education but since 1957, but is also a place for recreational park. It is bounded by evergreen tropical rain forest which has strengthened the characteristic of the oldest botanical garden in Malaysia. This garden is open to visitors from 5am to 9pm and basically visitors come early in the morning to do exercise such as jogging, walking, cycling, and tai-chi and picnicking. Until now Penang Botanic Garden received many user daily and visitors especially during weekends and when event was held. Department of Penang Botanic Gardens is the related government agency that is responsible to any development of Penang Botanic Gardens. This agency involves in conservation work within the national and international framework for the conservation of biological diversity integrating techniques in ex-situ and in-situ conservation efforts. It also provides outreach programs designed to inform, educate and create public awareness and appreciation for nature and gardening. In addition, this agency collaborates with the national and internationally in development and implementation of botanical, horticultural and ecological research programs.

#### **4. Methodology**

Qualitative and quantitative methods were used in this study. Both secondary and primary data have been gathered. The majority of the data were collected through surveys and interviews of the garden users/visitors. Additional primary data were collected from the personnel of Department of Botanic Gardens. The observations on the users/visitors behaviour were carried out as a pilot study to gain information on the time they spend in the gardens. These all methods were used in gaining data and information to discover the findings and to give solution in solving problems towards visitor's satisfaction. For collection and selection of photographs, this research applied an environmental sampling technique as introduced by Kaplan and Kaplan (1989). According to them, grouping the criteria in the selection of photographs of the site is needed because people react to what they experience in terms of commonalities, classes and categories.

##### *4.1. Qualitative survey / interview*

Interviews were conducted face-to-face with the Penang Botanic Gardens Agriculture Officer of Botany and Plant Conservation Unit at Penang Botanic Garden department to get clear information. The interview also involves Penang Botanic Gardens visitors. Face-to-face interviews is very important because it's allow researchers get instant feedback from the respondents and collect further information through observation (Mohamed Ikhwan and Masran, 2012; Rashid and Wong, 2010). The selection of respondents was through random sampling. The content analysis was carried out based on the satisfaction results and open ended comments by the respondents.

##### *4.2. Quantitative survey / questionnaire*

The respondents were the Penang Botanic Garden users and visitors. The first step in the making of questionnaire is to do selection of attributes and variable related to the visitor's motivation towards visiting botanical gardens. In this questionnaire, respondents were asked to rate the statement the reasons they visited to Penang Botanic Gardens on 5 points Likert scale which 1= strongly disagree, 2=disagree, 3=moderate, 4=agree, 5=strongly agree. The 5 points Likert scale was used to determine the reasons and the purpose of respondent's visitation. Respondents are also requested to answer open-ended and closed-

ended questions. One of the sections in the survey form is on the demographic variables of the respondents. Information on the gender, education background, marital status and age will assist the researchers to understand how these factors relate to visiting motivation. However, only some of these profiles will be reported which will focus on the significant mean differences on the respondent preferences. The researchers set up a place for the respondents to fill up the survey forms at the exit of the botanic gardens to ensure the activities of the users are not disturbed. The respondents were brief by the researchers and those who are willing to participate are given the forms to be filled up. The estimated time to complete the forms is between 10 to 15 minutes. Collected data were analyzed using the Statistical Packaging for Social Science (SPSS) version 20.0.

## 5. Results and Discussion

### 5.1. Demographic survey

The total number of the respondents who participated in this survey was 281 peoples. From the demographic survey results shows that the highest numbers of ethnic with 41.6% were Malays, followed by Chinese 39.9%, and Indians 18.5%. The frequency of respondents based on gender shows that the percentages of male respondents were 53% while female 47%. Based on demographic survey of age also shows that, 20 years and below was 24.2%, between 21 to 30 years was 21.4%, between 31 to 40 years was 19.2%, between 41 to 50 years was 20.3%, and lastly 51 years and above with 14.9%. Most of the respondents with 53% were married, while 47% are single. The education level of respondents shows that primary school with 2.5%, lower secondary school (PMR) with 4.6%, upper secondary school (SPM) with 17.8%, Diploma with 39.9%, respondents with Degree education 25.6%, Master with 6%, and last but not least PhD with 3.6%. In this demographic survey, data on the respondents' occupations were also collected. The highest number of respondent's occupation was working at private sector with 31.7%, followed by self-employed with 28%, student with 27.4%, respondents who work at public sector with 8.2%, retiree with 2.8%, and last but not least housewife with 1.8%. The monthly household incomes of the respondents were divided into 7 categories. First is < RM1,000 with 10.3%, next is RM1,001-RM3,000 with 13.5%, RM3,000-RM5,000 with 21.7%, RM5,001-RM10,000 with 20.6%, >RM10,000 with 10.3%, and lastly no income with the results of 23.5%, is the highest percentage.

### 5.2. Mean result of 'reasons for visiting Penang botanical gardens'

Reasons for visiting Penang Botanic Gardens in this study is divided into 12 statements which are recreational activities, enjoy the scenery, love to look at the vegetation, love to look at the landform (topography), love to look at the water bodies, love to look at the monkeys, for research purpose, photo-shoot, educational activity, release tension/boredom, spend time with family, and spend time alone. Table 1 shows the comparison of mean rating between ethnic and reasons for visiting Penang Botanic Gardens. Photo-shoot achieved highly significant difference at  $p < 0.01$  when the mean result shows Malay (mean=4.03), Chinese (mean=3.69) and Indian (mean=3.54). Educational purpose achieved significant difference at  $p < 0.05$  when the results shows Indian with the lowest (mean=2.92) followed by Chinese (mean=3.31) and Malay (mean=3.50). Other than that, there were no other reasons that have significant difference based on three main ethnic groups in Malaysia. The highest reason that motivate the Malay respondents to visit Penang Botanic Garden is to spend time with family (mean=4.17) and the lowest reason is the viewing the monkeys (3.28), the highest reason for Chinese is the scenery (mean=4.18) and the lowest reason is similar with the Malay (mean=3.09), for Indians the highest is the recreational (mean=4.31) and the lowest is for educational reason (mean=2.92).

Table 1. The comparison of mean rating between ethnic and reasons for visiting Penang Botanic Gardens

<b>Ethnic Reason</b>	<b>Malay (n=117)</b>	<b>Chinese (n=112)</b>	<b>Indian (n=52)</b>	<b>F</b>	<b>Sig.</b>
Recreational	4.15	4.00	4.31	1.64	0.20
Scenery	4.18	4.18	4.13	0.05	0.95
Vegetation	4.09	3.97	3.87	1.39	0.25
Landform	3.97	3.94	3.83	0.35	0.70
Water bodies	4.03	3.78	3.75	2.15	0.12
Monkeys	3.28	3.09	3.35	0.90	0.41
Research	3.32	3.11	2.96	1.35	0.26
Photo-shoot	4.03	3.69	3.54	4.55	<b>0.01*</b>
Educational	3.50	3.31	2.92	3.18	<b>0.04*</b>
Release tension	4.13	4.10	3.94	0.61	0.55
Spend time with family	4.17	4.01	3.77	2.41	0.09
<b>Spend time alone</b>	<b>3.63</b>	<b>3.81</b>	<b>3.87</b>	<b>0.92</b>	<b>0.40</b>

1. Preference rating scale is 1= strongly disagree, 2=disagree, 3=moderate, 4=agree, 5=strongly agree

2. \* Significant differences at  $p < 0.05$

3. \*\* Highly significant differences at  $p < 0.01$

Table 2. The comparison of mean rating between respondent's occupation and reasons for visiting Penang Botanic Gardens

<b>Occupation Reason</b>	<b>Public Sector (N=23)</b>	<b>Private Sector (N=89)</b>	<b>Self Employed (N=79)</b>	<b>Housewife (N=5)</b>	<b>Retiree (N=8)</b>	<b>Student (N=77)</b>	<b>F</b>	<b>Sig.</b>
Recreational	4.22	4.00	4.10	4.00	3.25	4.34	2.15	0.06
Scenery	4.09	4.11	4.11	4.20	4.50	4.29	0.67	0.64
Vegetation	3.91	4.02	3.97	3.80	4.13	4.04	0.19	0.97
Landform	3.83	3.91	3.85	3.40	4.00	4.09	0.85	0.51
Water bodies	3.96	3.88	3.65	2.80	4.25	4.12	3.06	0.01*
Monkeys	3.04	3.26	3.27	1.80	2.50	3.34	1.87	0.10
Research	2.91	3.44	3.05	2.40	2.50	3.22	2.22	0.05
Photo-shoot	3.78	3.71	3.76	1.80	3.13	4.12	3.76	0.00**
Educational	3.22	3.42	3.20	1.80	3.25	3.45	1.62	0.16
Release tension	4.04	3.90	4.04	4.40	4.25	4.31	1.52	0.19
Spend time with family	4.22	4.06	3.81	4.80	4.00	4.13	1.37	0.24
<b>Spend time alone</b>	<b>4.09</b>	<b>3.71</b>	<b>4.11</b>	<b>2.40</b>	<b>3.50</b>	<b>3.43</b>	<b>4.39</b>	<b>0.00**</b>

Preference rating scale is 1= strongly disagree, 2=disagree, 3=moderate, 4=agree, 5=strongly agree

\* Significant differences at  $p < 0.05$

\*\* Highly significant differences at  $p < 0.01$

Table 2 shows the comparison of mean rating between occupation and reasons for visiting Penang Botanic Gardens. Occupation categories were divided into seven categories which are the public sector, private sector, self-employed, housewife, retiree, and student. There are two reasons that achieved highly significant difference at  $p < 0.01$  which is photo-shoot and spend time alone. The highest mean for photo shoot is from the students (mean=4.12), followed by public sector (mean=3.78), self-employed (mean=3.76), private sector (mean=3.71), retiree (mean=3.13) and the lowest is from housewife (mean=1.80). For the reason to spend time alone, the highest mean is from self-employed (mean=4.11), next is public sector (mean=4.09), followed by private sector (mean=3.71), retiree (mean=3.50), student (mean=3.43) and the lowest is from housewife (mean=2.40).

The water bodies achieved significant difference at  $p < 0.05$  with the highest mean is from retiree with (mean=4.25), followed by student (mean=4.12), public sector (mean=3.96), private sector (mean=3.88), self-employed (mean=3.65) and the lowest is from house wife with (mean=2.80). The highest mean for



public sector is recreational and spend time with family (mean=4.22), while the lowest is research (mean=2.91). For the private sector the highest mean is scenery (mean=4.11) and the lowest is the monkey (mean=3.26). The highest mean for self-employed is the scenery and to spend time alone (mean=4.11) while the lowest mean (mean=3.05) is the research. The highest mean for housewife is to spend with family (mean= 4.80) and the lowest mean reasons are monkeys, photo-shoot and educational (mean=1.80). With the mean (mean=4.50), scenery is the highest reason why retiree come to Penang Botanic Gardens while monkeys and research is the lowest mean (mean=2.50). For the last category, the student, the highest reason is the recreational (mean=4.34) and the lowest reason is the research (mean=3.22).

### 5.3. Result of open-ended and closed-ended survey

In this study respondents were asked to answer closed-ended question, and the question is ‘will you visit Penang Botanic gardens again?’ while the open ended is ‘give reason for your answer’. The respondents need to give the reasons of what motivated them to come again or what is the reason for not coming again based on the answer of closed-ended question. Based on the survey result, 97.9% respondents say ‘yes’ and they will come again and 2.1% respondents say ‘no’.

Table 3 shows the results from an open-ended question. From the analysis, 252 respondents give the reasons while 29 respondents give no comment. Majority of respondents (N=82, 29.2%) said that they will come again for exercise. Second highest percentage is because Penang Botanic Gardens is a beautiful place (N=47, 16.7%). These reasons are the main respondent’s motivation to visit Penang Botanic gardens again. The reasons for the lowest percentages are “work here” (N=1, 0.4%) and “not fun” (N=1, 0.4%).

Table 3. Result to revisit the botanical garden






Reasons	Frequency	Percentage	Rank
Exercise	82	29.2 %	1
Beautiful place	47	16.7 %	2
No comment	29	10.3 %	3
Hangout with family and friends	25	8.9 %	4
Enjoy the natural beauty	24	8.5 %	5
Near to residence	15	5.3 %	6
The best garden/park in Penang	10	3.6 %	7
Relaxing	10	3.6 %	7
Release stress	9	3.2 %	8
Leisure	8	2.8 %	9
Routine activity	6	2.1 %	10
To find out any new changes	4	1.4 %	11
Meditation	2	.7 %	12
Photo-shoot	2	.7 %	12
Help to maintain the facility	2	.7 %	12
See the monkey	2	.7 %	12
Far from residence	2	.7 %	12
Work here	1	.4 %	13
Not fun	1	.4 %	13
<b>Total</b>	<b>281</b>	<b>100 %</b>	

### 5.4. Result for visual assessment using photographs


The photograph assessment is based on marital status rating. Preference rating scale is 1= strongly dislike, 2=dislike, 3=moderate, 4=like, 5=strongly like. Table 4 shows photographs that achieved the top three highest rated and top three lowest rated by respondents. Based on the photographs, the highest mean

rating (mean=4.13) is photograph that contained well maintained landscape, clean, safe, and planted with topiary ornamental plant. These results can be associated with the facts that the respondents feel safe, comfortable and the images are pleasing to the eye. Photographs that show images planted with big tree, scattered developed the feeling of lack of safety. According to Sabrina and Nik Hanita (2012), ornamental vegetation roles are for aesthetic and ecological values and also one of the alternative methods in greening urban areas. The lowest total mean rating (mean=3.15) is photograph that shows the monkeys on the pedestrian ways. There are many cases reported by the users to the Penang Botanic Gardens officer regarding the monkeys. They disturbed and chased the visitors thus the monkey’s behaviour makes the respondents feel unsafe and uncomfortable.

Table 4. The top three highest mean rating of preferred photograph based on respondent’s marital status

Marital status	Single (N=132)	Married (N=149)	Total mean	F	Sig.	
<b>Top Three Highest Mean Rating</b>						
1		4.19	4.08	4.13	1.01	0.32
2		4.11	3.94	4.02	2.09	0.15
3		4.13	3.83	3.97	5.58	0.02*
<b>Top Three Lowest Mean Rating</b>						
1		3.05	3.24	3.15	0.76	0.38
2		3.46	3.15	3.30	4.02	0.05



3		3.50	3.46	3.48	0.08	0.78
<ol style="list-style-type: none"> <li>1. Preference rating scale is 1= strongly dislike, 2=dislike, 3=moderate, 4=like, 5=strongly like</li> <li>2. * Significant differences at <math>p &lt; 0.05</math></li> </ol>						

## 6. Conclusion and Recommendations

From the results and discussion, it can be concluded that the main factor for Malay and Chinese respondents motivated to visit Penang Botanic Gardens is because of the scenery, while the main reason by Indian is for recreation. There are many positive reasons that motivate respondents to visit again this garden. The most reason is for exercise (N=82, 29.2%). This factor is related to the respondent's residence, because majority of the respondents is the local people who live nearby the gardens. Results on photograph visual assessment shows majority of the respondent give high rate for photograph that contained well maintained landscape, safe, clean and planted with ornamental topiary plants rather than bushes, and scattered plants. This shows respondents want a place that is tidy, proper maintained and safe for them to explore and doing activities. The lowest rating is photograph that shows the monkeys on the pedestrian walkway. This factor probably will affect the visitor's visitation if the problem is not properly tackle by the Penang Botanic Gardens authority because the monkeys will caused the visitors felt uncomfortable and scared. Majority of the respondents were willing to visit Penang Botanic Gardens again. This shows that Penang Botanic Gardens have their own attraction and have potential to be improved. The management of Penang Botanic Garden also needs to improve the visual quality and preserve the natural landscape setting because the visitors motivation are associated with it and to ensure continuous visitation by the users.

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