



Promoting Aging in Place Through Restorative Green Outdoor Environments for Residential Landscape Design

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Introduction

Residential site design is challenging because it directly affects the quality of life of the people who live with the design each day. Well executed residential site design can positively influence the quality of life by eliminating functional conflicts on the site, providing proper recreational and leisure amenities, and creating an environment that is visually and functionally pleasurable (Booth, 1999). The site surrounding a residence is the most important environment. It serves numerous utilitarian, aesthetic and, psychological functions for the residence as well as for visitors, neighbours and passers-by.

According to the Malaysian National Statistics Department's (NSD) Population Projection 2010-2040 document, the Malaysian population aged 65 and over is projected to increase more than three-fold of the 2010 population. This will lead Malaysia in becoming an aging population by 2021 (www.statistics.gov.my). Senior citizens are expected to constitute 11.4 per cent of the total population, or 4.4 million people. Given this data it is imperative to come up with design solutions for the outdoor environments that target specifically the aging population. Having access to nature and the outdoors has long been considered therapeutic for elderly residents (Rodiek, 2006). Research is beginning to confirm that spending time outdoors may improve sleeping patterns, reduce pain, decrease urinary incontinence, verbal agitation, speed up recovery from disability and increase longevity (Connell, Sanford & Lewis, 2007; Fujita et al., 2006; Jacobs et al., 2008;

Takano et al., 2002). This project addresses the needs for an outdoor environment for senior citizens where landscape architects can help design to support the needs of this specific population.

Project Brief

The client for this project required an outdoor environment with restorative quality which could support healthy and active lifestyles specifically for older users and also for other family members. Environments with restorative quality are defined as spaces which may provide opportunities to reduce fatigue. Restoration meanwhile is the process of recovery from stress that involves numerous positive changes in psychological state, in levels of activity in physiological systems and, often in behaviours or functioning (Ulrich, 1991). This project was intended to design an outdoor environment for a residence to support aging in place. The site was located at Section 4, Bangi, Selangor and the owners are both elderly, who would like the outdoor environments to suit their daily activities during their retirement days. The objective of the project was to design an outdoor environment for a residence, using a proper design process to produce a quality, functional and aesthetically pleasing landscape design which could support health and ease the stress of daily life.

Site Analysis

The site located at Lot 2, Jalan 3/6J, Bandar Baru Bangi. The site has a total area of 13,800 square feet. A quarter of the land is the outdoors and provided the ample space for the design of a garden. The site is surrounded by residential areas to the west, south and

eastern side while the northern part is facing a secondary school. The location of the school has exposed the house to loud noises during school hours and the adjoining areas were used for parents parking and waiting to pick up their children from school.



Figure 1 & 2: A site inventory and analysis was carried out at the entrance of the residence.



Figure 3: A horticulturist assisted with the identification of existing plants and recommendations of new plants for the project.

The design process

An inventory of the area was carried out to assess the existing condition which included the view, vehicular circulation surrounding the area, loud noises, soil and existing facilities. In addition, an interview with the residents was also carried out in order to identify their needs and preferences. The client would require an area with a rose garden placed near the entrance of the house. Another requirement was to have an open lawn area where the residents can have gatherings such as the in-coming wedding ceremony of their daughter. The proposed activities should be able to cater for older residents, therefore plants with low maintenance are

proposed in the garden. A horticulturist was consulted concerning the existing plants and those suitable to be planted. After the site visit, the inventory and analysis plans were produced followed by the synthesis plan, idea development and the conceptual plan. Finally, a Landscape Master Plan was proposed with the design solutions for the residence.

The concept

The Restorative Garden theme was derived based from the restorative concept where it was defined as a process of recovery from stress that involves numerous positive changes in psychological state, often through the activities and behavioural functioning. The Restorative Garden mentions four approaches which could be applied in the design (Ulrich, 1999). The garden design should be able to provide social supports (for patients or family), providing a sense of control (in the choice of the type of spaces and level of privacy), physical movements (accessibility and way finding) and offering natural surroundings and distractions (sensory, plants and sound).

Recommendations

Based from the analysis and the clients needs, a design recommendation was proposed. The categorization was based on the restorative green outdoor environment checklist (Faris et al., 2012). The checklist includes seven themes (location and view; accessibility; layout and space; seating arrangement; planting; design details and, practical services). For location and view, a welcoming entrance was to be proposed and the garden should be easily viewed from

the windows inside the house. The garden should also be easily accessible for all. A way finding system should also be included for easy navigation throughout the garden. In relation to layout and space, a hierarchy of spaces and paths were also recommended in order for the residents to have a sense of control in selecting the type of spaces they want to be in. A transitional area was also recommended between the house and the outdoor garden in an effort to encourage users to come out and enjoy the garden. As for the seating arrangements, the design should also provide choices for the users where different types of seating should be offered. There should also be the variety of fixed and moveable seats in the garden. The users should also be offered the choice of either seating in the open or under a covered area. The plantings proposed should be able to provide multi-sensory experiences to the garden users in terms of the colours, textures and smell. Lastly, the design details such as the use of contrasting colours in the hard landscape materials were encouraged. Other design elements which contributed to the restorative qualities are the use of water features, sculptures and even play equipment for the younger users.

Design Solution-Students Work

Three projects were selected as case studies and their design solution are described as below.

1-Restorative Garden

The student, Tan Chee Cheat applied the Restorative Garden concept where the four aspects supporting the restorative theory (social support, sense of control, physical

movement and nature distraction) were applied in order to reduce stress and improved health outcomes. The elements related to restorative qualities such as providing way finding in the garden in the form of coloured round objects throughout the garden which also can be used to sit on. Other elements included water features, covered and open sitting areas. Different type of spaces were designed to create different experiences such as a semi-enclosed patio, a family bar-

beque area and a timber decking spaces for the family. Change of level can be seen with provision of ramps to cater for those in wheel chair and walking sticks. Overall, the bold approach in the use of contrasting colour and variety of spaces had managed to create qualities required for a restorative garden for older users and other family members as well.



Figure 4: Proposed Landscape Masterplan by Alex Tan Chee Cheat



Figure 5: The Section elevation and aerial view of the proposed site

2-Stimulating the Sense

Yeoh Ai Wah proposed the concept Stimulating the Senses where she stresses on the use of elements which could trigger the senses. For example, the use of water intended to stimulate the users' hearing and at the same time tried to mask the loud noises coming from the school area. The selection of plants was from the species which could produce sweet smells. The use of vibrant colours for the hard landscape elements was intended to provoke the visual

of the residents while they are in the garden. Easy access as one restorative garden approach can be seen given a priority in the design. The clear linkages surrounding the house were intended to promote movement and physical activities. However, the use of pebbles as the pathway material may not be suitable as the stones may cause difficulty for users on wheelchairs or walking sticks.



Figure 6: The Master Plan for the proposed landscape by Yeoh Ai Wah

3-Meditation Garden

The student introduced the concept of Meditation Garden in her design. The concept was intended to provide a sanctuary for the owner, away from the stressful daily life and enjoying the garden through the simple and uncomplicated design solution. A sanctuary was tried to achieved in the proposed garden design through the use of water where the sound produced was intended to give calming effect and drown the noise of the surrounding traffic. Small outdoor meditation garden was also created in line with the concept in creating the garden as a place for the owner to mentally de-stress. Accessibility was given a priority in the design where clear demarcation of the pathway can be seen throughout the garden area. Different textures in the use of the material and plants were intended to create different spaces and stimulate the sense of touch. Yap Wai Yee had also applied the bold and contrasting colour in the design in order to visually stimulate the

users and the contrasting colour that would help older garden users to find their way. In order to create a sanctuary meant for private use such as meditation, the design can be improved by including more buffer plants at the peripheral of the residence .



Figure7: The Master Plan for the proposed landscape by Yap Wai Yee

Discussion And Future Study

As a whole, the students have shown the ability to design and present their ideas for a residence in which to create a restorative environment and support aging-in-place. The understanding of the restorative theory and the design approaches have been applied accordingly in all the design solution. In spite of the potential health benefits, outdoor areas are reported as being under utilized by the elderly. Very few evidence-based designs have attempted to measure the effect of landscape features on outdoor usage by the elderly (Berentsen, Grefsrud & Eek, 2009).

Following this, the next step of the project was to construct the proposed design and test the success of the garden through its activities and usage. A further study of this project may apply questionnaire focusing on the users

perceived restorative potential of the garden using the Perceived Restorativeness Scale (PRS) as part of the questionnaire.

In rapidly aging population, it is increasingly important to find cost-effective ways to promote and maintain health in older adults. The outdoor environment in a residential area may provide a health promoting opportunities for people preferring to age-in-place. Landscape architects can help to design outdoor environments that could support the needs of older residents living in their homes. Aspects such as providing places for privacy; provide sensory stimulation to increase mental alertness; opportunities for socializing; spaces for outdoor activities; provide a sense of security and, good accessibility should be taken into consideration. This project could also add to the existing knowledge when designing the outdoor environments for individual homes, nursing homes or retirement communities.

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