

EDU-ECO PARK AT BUKIT SERINDIT, MELAKA

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ABSTRACT

Park gives many benefits for people such as for socialization and integration, well-being, environmental and economic. The purpose of this study is to highlight the importance of green environment and wildlife conservation where people need to experience and value it, and recommend some designs to overcome the issues which can be used for Landscape architects in Malaysia related to the similar site's condition. The methods used here is by reviewing and analysing the final year student project based on her site observations including the inventory and analysis studies. Currently, The Bukit Serindit Recreational Park Melaka facing issues related to design such as underutilise, lack of connectivity between nodes, limit users to access the park; potential space are not well developed, effects the lacking of characteristics and space for outdoor activity; and reclamation of paddy field for residential purposes lead to reducing of green space. Edu-eco Park is chosen as a concept in the design by introducing more activities and facilities related to education and ecology approach to the park. This concept is to enriching the park in terms of human activities and the existing biodiversity in order to give solution to the lack of connectivity, under utilisation and reduction of green space issues. Thus, it is expected this park can sustain for future generation, and to become a new landmark and tourist spot in 2025; as well as the first Edu-eco Park in Melaka.

Keywords: Green environment, landscape design, nature, park

1. INTRODUCTION

The purpose of parks development in the city is to improve the effectiveness of urban service quality and creates an attractive city. It is also to create an environment that offers peaceful community living, equilibrium in physical, economic, social and environmental development aspects. It is therefore compulsory for park managers to plan, design and develop the park that subsequently can increase visitation.

Urban parks and open spaces in urban area need to be looked as a part of green infrastructure system. In their role as green infrastructure, parks and open space are a community necessity that can reduce flood control and storm water management costs. Ed McMahon and Mark Benedict (2003) has claimed that these areas can also protect biological diversity and preserve essential ecological functions while serving as a place for recreation and civic engagement as well as help in shaping urban form and reduce opposition to development, especially when planned in concern with other open spaces. According to McKinney (2006), urbanization is one of the factors that lead to species extinction. The decline in species richness is explained by the inability of many native species to cope with the environmental alterations associated with urbanization, eventually leading to extinction in the urban core. However, the impact of urbanization on biodiversity depends on the ecological structure of the urban and peri urban areas (Mackenstedt et. al., 2015).

To ensure that urban parks and open spaces in urban areas can serve as recreation and civic engagement, related parties such as municipal or city

council need to have an attractive scenes park because the unattractive will make people shy away from visiting again (Mohd Nazri et. al., 2014). Furthermore, the park also should provide information that can educate people as well as can increase their awareness of the importance of protecting our environment from degradation. The challenge for park design focuses on how a park can have all the functions intended but still be a place for people to enjoy its greenery and recreational activities (Suhardi et. al., 2014).

The ecological approach is used in this design where Edu-eco Park is used as an overall concept which will be explained later. An ecological approach is expected to solve the lack of connectivity, under utilisation and reduction of green spaces issues by creating human activities and enriching the existing biodiversity. According to Cranz and Boland (2003), the ecological parks are the emergence of a new model for the urban park, in response to the changing social needs. They also stated that the ecological parks connects fragments of open space into a comprehensive network, both to increase human well-being and benefit the natural systems besides as a method to minimize such impacts of city life as urban runoff, air pollution and traffic noises. In terms of urban park design, ecological park has brought a surge of concern for what has come to be known as sustainable development and ecological design of the park. Therefore, the purpose of this study is to highlight the importance of green environment and wildlife conservation where people need to experience and value it, and recommend some designs to overcome the issues which can be used for Landscape architects in Malaysia related to the similar site's condition.

2. WHAT IS PARK?

Park is a place where people can have pleasure, exercise, recreational and appreciate nature. This area comprise of an area of natural, semi-natural, or planted space of grassy areas, rocks, soil, and trees, as well as contain buildings and other artefacts such as monuments, fountains, playground structures, bench, picnic table and shelter. Many parks have trails for walking, biking and other activities.

Osman et. al., (2006) quoted that Whitaker and Browne in 1971 says that 'parc' or 'park' meant an enclosure containing animals for hunting. He further quoted that according to Turner in 1996, the world's first park was created when human first erected a fence to protect an area of land. At the early stage of park development, parks were developed as gardens for private use and enjoyment (Osman et. al., 2006). However, the main purpose of park development were change in the 19th century where the main purpose of city parks was to provide recreational opportunities and enjoyment and encourage

healthier life style for the urban working class as mentioned by Chadwick (1966) and Conway (1991) quoted by Osman et. al. (2006).

Parks is a community necessity and provides prosperity, wellbeing, social relation and daily life experience (Nor Akmar 2012). Park can protect biological diversity and preserve essential ecological functions. Some of the roles and functions of park are:

1) To preserve essential ecological functions and to protect biodiversity.

Numerous of parks associated with natural elements such as river, lake and forest. Indirectly, parks can help protect the biological of local flora and fauna, especially in urban setting. More than that, it also acts as wildlife habitat system and help to restore and maintain vital ecological functions and services.

2) To help shape urban form and compatible uses

Parks can enhance city aesthetics that can increases the attractiveness of a city. The design of the park in term of their elements can visual relief, separate incompatible land uses and complement the placement of new buildings, roads and infrastructure. For instance, Kuala Lumpur City Park has shaped Kuala Lumpur City into an ideal place to live, work, visit, and shop and relaxes.

3) To gained economic benefits

Parks can help in increasing the property value. According to Crompton (2000) parks and open space contributed to property values as what his says in the report of his study on parks and recreation:

"The real estate market consistently demonstrates that many people are willing to pay a larger amount for a property located close to parks and open space areas than for home that does not offer this amenity".

A park basically becomes one of a city's landmarks and attractions, a prime marketing tool to attract tourists, conventions and business. For instance, Perdana Lake Garden and Titiwangsa Lake Garden help shape Kuala Lumpur city identity and give residents pride of place. An organized events held in public parks such as arts festivals, athletic events, food festivals, musical and theatrical events often bring substantial positive economic impacts to their communities, filling hotel rooms and restaurants and bringing customers to local stores (Sherer, 2003).

4) To enhance public health benefits

When people access to parks, they will do exercise more. For example, people will walk around the parks, while relaxing their mind through nature appreciation. Indirectly, it helps in reduction of body fat and weight, and also increased in perceived energy.

Meanwhile, a study on nature and health done in Netherlands shows that in a greener environment people report fewer health complaints, more often rate themselves as being in a good health, and have better mental health (Sherer, 2003). This shows that presence of vegetation increase recovery rate especially in hospital; patients less stressed and need less nursing.

5) To act as pollution abatement and cooling

Sherer (2003) quoted Nowak findings on the effects of urban trees on air quality that trees in New York City removed an estimated 1,821 metric tons of air pollution in 1994. Furthermore, he mentioned that trees in an area with 100 percent tree cover (such as contiguous forest stands within parks) can remove the air as much as 15 percent of the ozone, 14 percent of the sulphur dioxide, 13 percent of the particulate matter, 8 percent of the nitrogen dioxide, and 0.05 percent of the carbon monoxide. Trees also can help keep cities cooler, mitigating the effects of concrete and glass that can turn cities into ovens under the hot sun.

6) To gained social benefits

Urban public parks can become a place for low income neighbourhoods to experience a sense of community, offer recreational opportunities for low income children and families due to no entrance fees. Meanwhile, (Sherer, 2003) mentioned that access to public parks and recreational facilities has been strongly linked to reductions in crime and in particular to reduced juvenile delinquency. He further mentioned that in Fort Myers, Florida, police documented a 28 percent drop in juvenile arrests after a new recreation centre in the heart of low income community has been built. Urban parks also creating stable neighbourhoods with strong community as Bandar Baru Sri Petaling residents' association chairman Tan Tai Tong says: "It is not just a park, but also a place for members of the community to foster closer bonds, on top of de-stressing themselves and maintaining a healthy lifestyle" (Bavani, 2007).

The most important thing is the park should promote understanding and protection of natural resources such as wetland and forest, enhance community pride, and encourage economic development. It preserves the natural beauty of the natural environment, protects the habitat of numerous species, and lifts the spirits of those who visit through educational and recreational experiences. Furthermore, park upgrading quality of life, as part of urban fabric, change the lifestyle and fulfil the social needs as well as act as green lungs of the city (Mohd Kher & Chamhuri 2008).

Edu-Eco Park is a park that is developed for educational purposes in order to educate, inspire and empower all people, including those with minimal access to nature, to be active stewards of the environment and their own well-being. The park widely defined type of open space and green environment. From pristine untouched wilderness areas, to damaged natural sites and small urban lots; Edu-eco parks cover a wide variety of subjects and sizes. The primary focus of Edu-eco parks is to connect people to the natural environment. Issues such as plant diversity, animal habitat, wetlands, stream ecology, macro invertebrates and much more can all be related to issues of water, soil and air quality and in return can be related to human lives. Edu-eco parks should cater to everyone. All ages, genders, ethnicity, and economic backgrounds should be addressed. In developing an Edu-eco park it is important to keep in mind the location of the park in relation to where people live. Parks closer to a person's home have a greater chance of connecting a person to that place.

Garrett Devier (2003) has outlined several elements of an Edu-eco Park that need to be consider as below:

1) Natural environmental experience

An Edu-eco park should connect people to the natural environment. Therefore streams, wetlands, ponds, lakes, and forests are some of the elements that need to use to connect people to the natural environment.

2) Learning center

A centre can be a small shelter or an overnight facility. They can serve as classrooms, places to get out of the weather, equipment storage and other functions.

3) Modelling of sustainable development

One of the goals of Edu-eco parks is to make a connection between a person's life and the natural environment. By modelling sustainable development practices, participants can better understand how these techniques can be applied to their own lives. Some examples are; sustainable building, green roofs, rain water harvesting, organic gardening, solar power, and composting.

4) Recreation opportunities

Environmental learning parks should promote a healthy lifestyle. A range of compatible site activities helps promote physical activity. Some of the activities can be walking, biking, canoeing, bird watching, and gardening.

5) Stewardship

Opportunities for stewardship are an important part of an Edu-eco park. Creating a sense of ownership among users and community members strengthens the connection between people and place.

6) Partnership

Many Edu-eco parks develop partnerships. These partnerships are

developed with like-minded, non-profit organizations that help with maintenance, facilitation and providing programs at the site.

7) Educators

Edu-eco parks offer a wide variety of programs and courses. These can be facilitated by paid staff, interns or volunteers.

It is clear here that, the aims of Edu-eco park is to protect the ecosystem in which develops, although these regions also serve as recreation and allow to the public about the nature of a particular place. Indirectly, Edu-eco Park helps to generate valuable knowledge about animals, plants and the rest of the members of the ecosystem in question.

3. THE SITE

The Bukit Serindit recreational park is selected as a final project design by Leng Li Thing, the final year student of Bachelor of Landscape Architecture. The park is surrounded by a residential area, namely Taman Seri Serindit on the Northwest, Tenaga Nasional Berhad stations (TNB) on the North and South nearby paddy field areas. The park coexists with a football stadium, a futsal court, a badminton court, two hockey field, a manmade pond and beautiful green spaces. However, all the facilities are located scattered and not proper planned. Adding to that the existing paddy field is proposed for residential developments make the green space is scarce for the area. Therefore, she looks a potential for this park together with the paddy field area as an important green infrastructure of Melaka state that need to be protected and conserve in the future. In addition, to create awareness the importance of wildlife and the paddy as the main food source for Malaysian. In line with this, she has come out an idea to transform the Bukit Serindit Recreation Park into a multifunction Edu-eco park.

The design objectives are: 1) To integrate the park with the surrounding nodes by creating linkages and better circulation; 2) To utilise the whole area by creating multifunction space, facilities and centres in the park; and 3) To conserve the existing paddy field while creating a nature exploration and create awareness purpose. This park was not depending on picturesque aesthetics to communicate the idea of nature; however, it is a part of an expanded field of landscape aesthetics.

4. THE METHODS

Site observations were conducted by Leng Li Thing on January 2015 until March 2015 and photos were taken to support the data. The purpose of the site observations were for the site data collection and land uses surroundings the

park such as nearby residential areas, villages, TNB's Electric power stations and schools. Besides that, data from the local authorities were also gathered. Supporting data was obtained from the local authorities and Li Thing has met up with an officer from the Majlis Bandaraya Melaka Bersejarah to understand the site better. The officer provided her data regarding some of the plants surveyed in Melaka except for this park. All the data gained were transformed into graphics as a medium to communicate the design process including the site inventory and analysis, and also design solutions to the site.

5. THE ANALYSIS

Leng Li Thing did the site inventory and site analysis in terms of contextual and site specific such as the existing land use, accessibility, circulation, nodes/landmarks, and flora and fauna. From her analysis, she found that there are many existing faunas in the site, especially migration stork in the paddy field areas, and a few fish species in the pond. There is also few species of bird habituated in a small hill in the park. She synthesised the potentials, constraints and solutions for the areas in the park (Figure 1). For example, the abandoned green space nearby the educational area is potential to have a linkage for the movement between the education area, park and paddy land; and she suggested providing activities and facilities such as an art gallery that can be connected to the paddy land. Another example, there is a constraint regarding the paddy field whereby to be developed as a residential area. She saw the potential for that area to be preserved as habitat for the existing fauna and emphasises the beauty of nature.

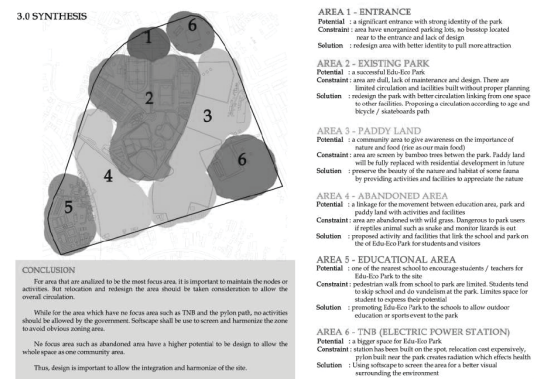


Figure 1: The Synthesis Plan (Li Thing 2015)

6. DESIGN SOLUTIONS

One of the ways in providing a place for urban peoples' to enjoy greenery and recreational activities is by developing Edu-eco Park. She chooses the concept because the park is surrounded by four educational institutional which are: Kindergarten, Primary School, Secondary School and a College.

'Edu' is derived from the word of education that means to provide an educational opportunity for people to learn and understand the landscape environment. An eco-park is a break down from the dichotomy between nature and culture. This allows all of the landscape potentially to have ecological value. Ecological parks are conceived as part of an integrated urban whole that can participate in solving larger urban and ecological problems. Ecological parks use sustainable design, construction, and management practices to reduce resource inputs and waste outputs.



Figure 2: The Bukit Serindit Master Plan
(Li Thing 2015)

Medeiros (2013) states, there are five learning activities: 1) Inspiring, 2) Exploring, 3) Reflecting, 4) Applying and 5) Connecting. Based on three precedent studies and Medeiros's statement, Li Thing used zoning to indicate the activities which are: Sport, Wildlife, Leisure, Nature and Arts zoning areas. For example, people can get inspired from exploring and connecting with nature such as the paddy field areas and existing hills where existing has become birds' habitat. The zoning is based on the characteristic and existing function of those areas. Active and passive activities are designed to fulfil the different needs of age groups. People also can reflect and get inspired while engaging with recreational activities or just observing surroundings such as lake and garden.

The park is designed to cater different types of users and all ages such as children, teenagers and elderly people. For teenagers or adults, they can engage in outdoor active recreational areas such as roller blade at the sport area located at the upper part of this park. While for the elderly, they can either do exercise in the park or strolling.



Figure 3: Aerial Views of Outdoor Active Areas
(Li Thing 2015)

Pathways are proposed to connect surrounding land uses such as from the nearby schools and residential areas to connect to the park so that the park is easy to access. A bridge is designed across the paddy field to connect the residential areas to the park. Shuttle service is provided for people who prefer not to walk and the shuttle has a stop point at each zone area. For those who like to engage with active activity, they can rent a bicycle to explore the whole park. People also can jog according to the designated pathway.

Plantings with various functions such as screening and sense of welcoming are used as educational medium too. Along the road and pathway, shaded areas are proposed; functions as greenway trail also to give comfort to users. A combination of local trees and other tree species are planted along the main road as greenway trails also in the park to create ecological diversity to this park. The local trees such as the Melaka trees (*Phyllanthus emblica*) are also to give a sense of belonging to the users. Besides the Melaka tree have medicinal values (FRIM, 2014). The greenways can attract wildlife to come such as birds, squirrels and butterflies; in which can be a new habitat for them. Colourful plantings also used to enhance areas such as in the mini and flower garden.

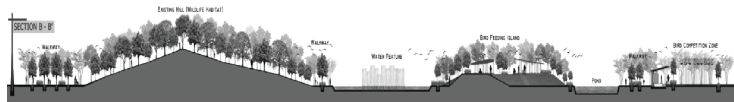


Figure 4: A Cross-section of the Conservation Area in the Wildlife Zone (Li Thing 2015)

The most interesting design is the Art gallery where the building concept is from the paddy seed development. Each part of the building represents each component such as the leaf, seed and roots (Figure 5). It is to create awareness to people whereby paddy is the main food source for Malaysian. It is also emphasised open concept where people can enter from many sub-entrances, and fewer barriers are used. However, there are two main entrances: from the Education centre and housing areas. The Art gallery is also connected to the explorative trail at paddy area from the Education centre, whereby people can see stages of paddy development there.



Figure 5: The Detail Areas of the Art Gallery (Li Thing 2015)



Figure 6: Vertical Gardens at the Art Gallery to Attract Wildlife such as butterflies (Li Thing 2015)



Figure 7: Exploring the Paddy Field
(Li Thing 2015)

Facilities proposed in the Art gallery are: Amphitheatre, display areas, food stall, souvenir shop, 'surau' and toilet. The amphitheatre at the centre also has an ecological benefit where if there are heavy rains, it can function as a retention pond. Welcoming sculptures with water features are designed to give a strong statement to the main entrances. There are two sculptures of paddy farmers at the corner: at the left and right side in front of the Art gallery area, and other sculptures at the back of the building. Melaka trees are planted to give a sense of welcoming to users from the nearby residential areas. The trees have historical values that can be learnt and appreciated by younger generations; hence as heritage trees to the Melaka state.

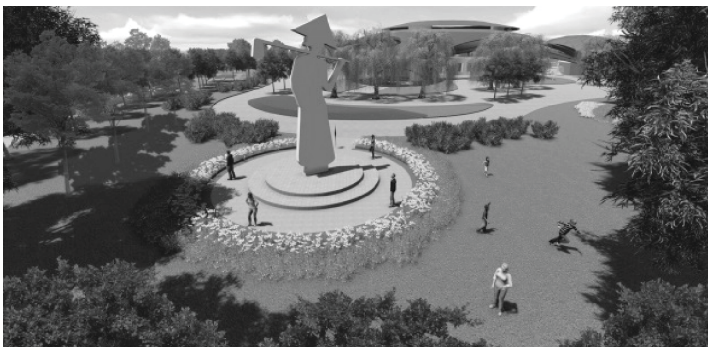


Figure 8: The farmer's sculpture
(Li Thing 2015)

7. CONCLUSION

In summary, the student has managed to design a comprehensive design by connecting surrounding land uses with the park through greenways approach. Passive and active activities designed make the park as a centre for all ages. The paddy field as a dominant area in the park give new experiences and exposure to urban children where they can learn much about nature. The paddy field also complements the existing park as a whole large green infrastructure; which can be attractions to and act as new habitat for wildlife. Besides that, the park is potential to be a new tourism spot for Melaka. This study highlights the importance of green environment and wildlife conservation where people need to experience and value it. So they can appreciate and protect the environment, and pass the value to younger generation. Besides, the Bukit Serindit Recreational Park is expected to become a new landmark and tourist spot in 2025 and the first Edu-eco Park in Melaka. This study can assist planners, landscape architects and other profession to understand about the benefits of Edu-eco park and the approach can be used to a site that has similar issues. Future study is suggested on how urban children can involve in designing green environment (such as parks and gardens) so that they can appreciate and attach to nature.

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