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THE ACCLAIMED LANDSCAPE OF KNOWLEDGE SHARING
"Harmony in Spaces : Blending Heritage, Nature and Design"

E-PROCEEDING



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THE ACCLAIMED LANDSCAPE OF KNOWLEDGE SHARING
"Harmony in Spaces : Blending Heritage, Nature and Design"

“ Harmony in Spaces : Blending Heritage , Nature and Design ”

ORGANISED BY

*College of Built Environment
Universiti Teknologi MARA Selangor Branch
Puncak Alam Campus*

CO-ORGANISED BY

*Department of Built Environment Studies and Technology
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Seri Iskandar Campus*

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LAKE BIODIVERSITY CONSERVATION : IMPACT & BENEFIT FOR HUMAN

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ABSTRACT

Lakes have an important role in human life and ecosystems and the importance of preserving freshwater lakes cannot be disputed. Lake gives benefit to create positive social, culture and physical development in community and It highlights the interconnection between human activities and environmental health. However, the conservation of the lake is still not comprehensive where there is still a lack of awareness or enforcement to the environment of lake. The method of research is using quantitative methods research which using quantitative data research is focuses on gathering non- numerical data to gain insights into people's attitudes, perceptions, behaviors, and experiences on lake. Tasik Iskandar faces litter and pollution issues due to weak enforcement. Visitor opinions on cleanliness vary, but most enjoy the lake. The study recommends better enforcement, cleanliness measures, and infrastructure. Collaboration between authorities and the public is crucial for the lake's well-being. These finding can be a powerful tool for assessing the impact of conservation efforts and guiding future initiatives to protect these valuable ecosystems. This will help preserve or improve the Lake area to be a better Picnic spot for the local community.

Keywords: *Human well being, Ecosysytem, Water quality, Recreational, Preservation*

INTRODUCTION

A lake is believed to play an essential and multifaceted role in various ecological, hydrological, and socioeconomic systems. Its significance extends far beyond its serene surface, making it a focal point for research

in a multitude of disciplines. The lake should be preserved as a valuable resource that serves as an eco-tourism destination, a vital watershed, and a recreational area for the local community. Preserving biodiversity in freshwater environments, with a particular emphasis on lakes is of utmost significance for the maintenance of ecological balance and the welfare of humanity. Povilaitis and Querner (2008) argue that the preservation of biological diversity and ecosystems relies heavily on the significance of lakes. However there are challenges in sustaining the lake where due to the lack of enforcement against the lake. Nevertheless, it is still disputed whether the effectiveness of enforcement against the lake is effective or not. Thus, an enforcement study of the lake needs to be done. The aims and objectives of the study are focused on preserving the lake's environmental and recreational value, ensuring its long-term sustainability, and promoting community and ecosystem well-being where it is focused on residential areas.

LITERATURE REVIEW

Definiton of Lakes

A lake can be defined as a naturally occurring or human-made inland body of standing water, typically freshwater, surrounded by land or It can be described as a sizable expanse of stagnant or slowly flowing water that fills a substantial inland basin by as explained by Robert K. Lane in the Encyclopedia Britannica. In the study by Thomas (2010), a lake is broadly characterized as any inland body of water, excluding oceans, possessing a considerable size, capable of impounding water, and exhibiting minimal or horizontal water movement. Although the definition of a lake lacks precision, these water bodies typically receive their water supply from various sources such as rivers, rainfall, the melting of ice and snow, or groundwater. Lakes can be categorized as open or closed systems: open lakes permit water inflow and outflow through rivers or other outlets, whereas closed lakes primarily lose water through evaporation. Additionally, lakes can be classified based on the nature of their water as freshwater or saline, and they serve as vital habitats for diverse aquatic life, including fish, plants, and other organisms.

Human Well-being

Lakes have a significant impact on human well-being, both in physical and psychological terms. A one research found that individuals living in proximity to lakes reported higher overall well-being, with factors like access to clean water, recreational opportunities, and aesthetic enjoyment playing pivotal roles in this assessment. The presence of lakes has been associated with improved mental health, reduced stress, and increased life satisfaction. Berkes and Folke (1998) explore the role of cultural values and traditional knowledge in shaping human interactions with the environment. They argue that indigenous perspectives can provide insights into sustainable resource management and contribute to the overall well-being of communities. The literature reveals a complex interplay between human well-being and the environment. Understanding this relationship is crucial for developing holistic approaches that promote sustainable development and ensure the well-being of current and future generations.

Lake Ecosystem

Ecosystem services vital to human welfare are abundant within lake ecosystems. The article "The value of the world's ecosystem services and natural capital" by Costanza et al. (1997) published in the journal *Nature*, discusses the concept of ecosystem services and the valuation of natural capital. The authors explore the idea that the Earth's ecosystems provide a wide range of services that are essential for human well-being, such as clean water, air purification, climate regulation, and more. These services have often been taken for granted and not accounted for in traditional economic models. Schindler (2006) discusses the profound impact of human activities on lake ecosystems, particularly in the context of eutrophication. His research highlights the consequences of nutrient enrichment, algal blooms, and the degradation of water quality, emphasizing the need for sustainable lake management practices.

Restoration Ecology

Restoration ecology, as illuminated by Thompson and Brown (2018), emerges as a beacon of hope in the context of reversing the degradation of lake ecosystems. The work of Thompson and Brown not only underscores the critical importance of this ecological discipline but also provides valuable

insights gleaned from successful restoration projects. Through these case studies, the authors showcase the tangible potential of restoration ecology as a transformative force in revitalizing and renewing lakes that have suffered from environmental degradation. By delving into the specifics of these successful restoration endeavors, Thompson and Brown elucidate the practical applications of restoration ecology principles. This includes the strategic reintroduction of native species, habitat reconstruction, and the implementation of sustainable management practices. The documented outcomes of these projects serve as compelling evidence that, when approached with careful planning and a thorough understanding of ecological dynamics, restoration ecology can yield positive results in terms of both biodiversity recovery and overall ecosystem health.

Water Quality Affect

Water quality affects aquatic ecosystems and biodiversity. Changes in water quality, including temperature and nutrient levels, can lead to eutrophication and harm aquatic life (Carpenter et al., 1998). Changes in water temperature can also have profound effects on aquatic ecosystems. Temperature influences the metabolic rates, growth, and reproduction of aquatic organisms, making it a critical factor in their survival (Brett, 1971). Human activities, such as discharges from industrial processes or power plants, can elevate water temperatures in specific areas, leading to thermal pollution. This can disrupt the natural thermal regimes of rivers and streams, affecting the distribution and behavior of aquatic species (Vörösmarty et al., 2010). In addition to temperature and nutrient levels, the pH of water is another crucial factor that significantly influences aquatic life. The acidity or alkalinity of water can affect the solubility of minerals and nutrients, as well as the physiological processes of aquatic organisms (Davies and Day, 1998). Rapid changes in pH, often caused by acid rain or industrial discharges, can have detrimental effects on the health of fish, invertebrates, and aquatic plants. Moreover, the presence of pollutants, such as heavy metals, pesticides, and pharmaceuticals, poses a severe threat to water quality. These contaminants can accumulate in aquatic ecosystems, leading to bioaccumulation in various organisms. The toxicity of these pollutants can result in deformities, reproductive issues, and even mortality among aquatic species (Chapman, 1996). Sedimentation is another critical aspect of water quality that affects aquatic habitats. Excessive sediment

runoff from agriculture, construction, or deforestation can cloud the water, reducing light penetration and hindering the growth of submerged aquatic vegetation. This, in turn, can impact the availability of food and shelter for many aquatic organisms (Allan, 2004). Furthermore, changes in water flow and hydrological patterns can have far-reaching consequences for aquatic ecosystems. Dams, irrigation projects, and alterations to natural watercourses can disrupt the migration of fish, disrupt sediment transport, and alter the habitat structure, leading to declines in biodiversity and ecosystem health (Poff et al., 1997). It is essential to recognize the interconnected nature of these factors and the cumulative impact they can have on aquatic ecosystems. Efforts to mitigate water quality issues often require a holistic approach that considers the various stressors and their synergistic effects on the health and sustainability of aquatic environments. Sustainable water management practices, conservation efforts, and pollution prevention strategies play a crucial role in preserving the delicate balance of aquatic ecosystems and safeguarding biodiversity.

METHODOLOGY

This questionnaire survey was distributed and involved local people, visitors and tourists at Tasik Iskandar which is the area often visited by local nearby. The research instrument used to collect the data is an online questionnaire. In this research, the methodological approach used is a quantitative method. This technique was conducted by distributing a questionnaire form (Google Form platform) to people that come and visit at Tasik Iskandar. The survey form contains sixteen questions. The first part is mainly regarding the respondent background such as status, locality and frequency. The second part focuses on questions regarding research objectives. The final part is respondents giving comments/suggestions related to lake environment perspectives or improvements at site study. The survey has been done by sharing the Google Form link with visitors and local residents at Tasik Iskandar who had been visited to site study and it took two weeks to conduct a survey which reached a total of 44 respondents.

RESULT & DISSCUSION

Demographic Of The respondent

In this section A, the aim is to gathered information about the background of respondents, such as age, gender and race

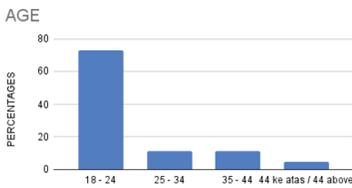


Figure 1: Age

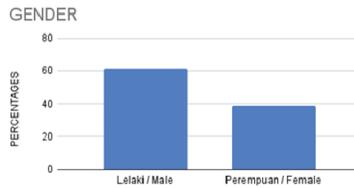


Figure 2: Gender

The age distribution of visitors to Tasik Iskandar is as follows: 72.7% fall within the 18- 24 age range, 11.4% are between 25 and 34 years old, another 11.4% belong to the 35-44 age group, and the remaining 4.5% are 44 years old and above. Among the 44 individuals who visited Tasik Iskandar, 27 (61.4%) were male, and 17 (38.6%) were female. Overall, this demographic information can be valuable for park management and stakeholders to tailor their offerings and services to the preferences and needs of the diverse age and gender groups, creating a more inclusive and enjoyable experience for all visitors to Tasik Iskandar.

Respondent Perception

In Section B, the inquiry aims to uncover respondents' perspectives on the lake environment surrounding the study site.

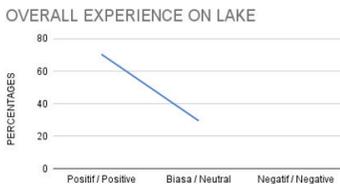


Figure 1: Experience On Lake

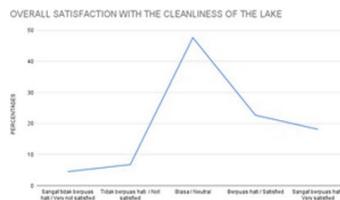


Figure 2: Lake Cleanliness Satisfaction

A significant majority of individuals, totaling 70.5%, reported having a positive experience on the lake (figure 1). In contrast, 29.55% expressed a neutral sentiment about their experience. Examining the satisfaction levels regarding lake cleanliness, (figure 2) a small percentage of respondents (4.5%) reported being very dissatisfied, while 6.8% expressed dissatisfaction. The majority, comprising 47.7%, maintained a neutral stance. On the positive side, 22.7% were satisfied, and 18.2% were very satisfied with the cleanliness of the lake.

This finding supports the study by Thompson and Brown (2018) mentioned that the positive sentiment towards lake experiences also aligns with the principles of restoration ecology. The positive experiences reported in this study could be indicative of the positive outcomes of restoration efforts, contributing to the overall well-being of individuals living near restored lake. These findings suggest that a significant majority of respondents had a positive experience on the lake, with a smaller percentage expressing a neutral sentiment. When it comes to lake cleanliness, a notable portion of respondents had a neutral stance, while there were also varying degrees of satisfaction and dissatisfaction, with a higher percentage expressing satisfaction compared to dissatisfaction. These results can be valuable for understanding public perceptions of the lake experience and identifying areas, such as cleanliness, where improvements or interventions may be needed. Further analysis or follow-up studies could explore the factors contributing to satisfaction or dissatisfaction and inform potential strategies for enhancing the overall experience.

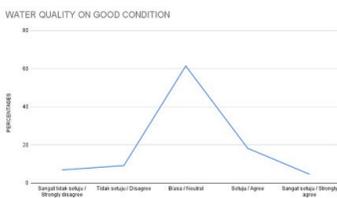


Figure 3: Water Quality

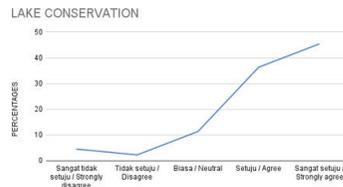


Figure 4: Conservation for Lake

The survey results indicate varying opinions on the water quality of the lake (figure 3). A minority, constituting 6.8%, strongly disagree the water quality is on good condition, while 9.1% simply disagree. The majority, at 61.4%, hold a neutral stance. On the positive side, 18.2% agree, and 4.5%

strongly agree that the water quality in the lake is in good condition. The survey data reveals strong support for the conservation towards the lake (figure 4), as a combined 82.2% of respondents either agree (36.7%) or strongly agree (45.5%). Conversely, those opposing conservation efforts amount to only 6.8%. The notable 45.5% expressing a strong endorsement for conservation underscores a particularly robust consensus. A small percentage (2.3%) disagrees, while 11.4% remain neutral.

In conclusion, the overwhelming majority of respondents express support for conservation efforts, reflecting a widespread desire to prioritize the preservation of the lake. The varying opinions on water quality suggest the need for further exploration of specific concerns and considerations within the broader context of lake conservation. This discussion opens avenues for examining potential strategies to address concerns and enhance community engagement in sustaining the environmental health of the lake

Respondent General Suggestion

In the final section (Section C), participants were asked to provide general comments and suggestions aimed at proposing future ideas for the conservation and enhancement or improvement of Tasik Iskandar. To address the issues in section C regarding the proposal for improvements, the AtlasTi version 9.0 method is used for data analysis. The findings are presented in the Figure below.

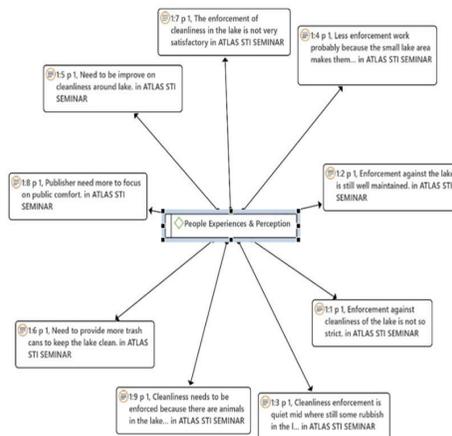


Figure 5. People Experience & Perception Towards Tasik Iskandar

Based on the various opinions expressed about the enforcement of cleanliness in the lake, it is evident that there is a range of perspectives on the current state of affairs. Some individuals believe that enforcement is not very strict and needs improvement, while others feel that it is well-maintained. There is a common concern about the presence of rubbish in and around the lake, indicating a need for increased efforts to ensure cleanliness. The size of the lake seems to affect how often it's checked. Some think the rules aren't strict because it's not a big area. People are asking for better cleanliness around the lake, like more trash cans to keep it neat. People are also concerns about the animals in the lake, so it's really important to keep it clean. To sum up, everyone agrees that we need to pay more attention to keeping the lake clean. Different opinions suggest we should talk more and work together – authorities and the public – to fix things. We need to focus on making the lake a clean and enjoyable place for everyone, including the aquatic life.

This finding supports the study by Robert K. Lane, as discussed in the literature review, where lakes are defined as inland bodies of standing water surrounded by land. The concern about the presence of rubbish and the need for increased efforts to ensure cleanliness aligns with Lane's description of lakes as bodies of water impounded by various water sources. The classification of lakes as open or closed systems, with open lakes allowing water inflow and outflow, is relevant to the discussions on the enforcement of cleanliness around the lake.

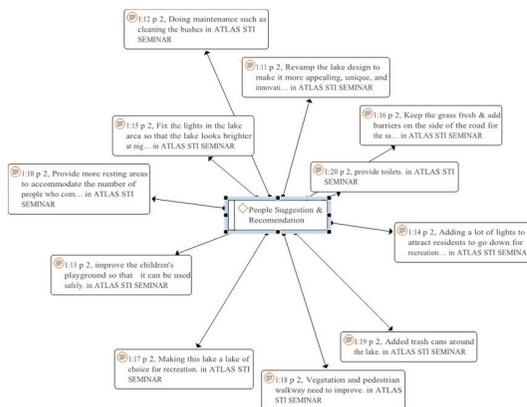


Figure 6. People Suggestion & Recommendation Towards Tasik Iskandar

The community suggestions for Tasik Iskandar highlight a collective vision to conserve and enhance the lake. The vision for Tasik Iskandar involves enhancing its appeal and functionality. This entails adding resting areas, giving the lake a unique design, and ensuring regular maintenance for safety and visibility. With a focus on family-friendly features, improved nighttime recreation through lighting, and overall infrastructure enhancements, there's a commitment to creating a favored recreational destination.

he community suggestions for Tasik Iskandar highlight a collective vision to conserve and enhance the lake. The vision for Tasik Iskandar involves enhancing its appeal and functionality. The community's goal is to transform Tasik Iskandar into a secure, visually attractive haven while preserving its natural beauty.

CONCLUSION

In summary, Tasik Iskandar, a crucial lake, faces challenges like litter and pollution due to weak enforcement. Visitor opinions on cleanliness and water quality vary, but most enjoy the lake. The study shows a need for better enforcement, cleanliness measures, and infrastructure. Visitors, mainly aged 18-24, suggest adding resting areas and improving lighting for a family-friendly experience. To secure the lake's future, there's a call for collaboration between authorities and the public to enhance its appeal while preserving its natural beauty. In essence, the study highlights the importance of community involvement and sustainable practices for the well-being of Tasik Iskandar.

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Sekian, terima kasih.

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Saya yang menjalankan amanah,

SITI BASRIYAH SHAIK BAHARUDIN
Timbalan Ketua Pustakawan

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Setuju.

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