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Proceeding for International Undergraduates Get Together 2024 (IUGeT 2024)
"Undergraduates' Digital Engagement Towards Global Ingenuity"

2nd Edition



Organiser :

Department of Built Environment Studies and Technology, College of Built Environment, UiTM Perak Branch

Co-organiser :

INSPIRED 2024. Office of Research, Industrial Linkages, Community & Alumni (PJIMA), UiTM Perak Branch

Bauchemic (Malaysia) Sdn Bhd

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Aqua Bloom: An Outdoor Seating Innovation that Combines Tradition, Sustainability, and Functionality for Tropical Climates

Pandu Purwandaru¹, Aisa Zahratu Yasmin^{2*}, Arya Ikhsan Risqy³ & Nihayatul Hikmah⁴

^{1,2,3,4}Interior Design Department, Faculty of Art and Design, Sebelas Maret University Surakarta, Indonesia. St. Ir. Sutami 36 Kentingan, Jebres, Surakarta, Central Java. Indonesia 57126

*aaisazahra@student.uns.id

ABSTRACT

The project presents a custom-designed outdoor seating solution for the Student Hub in Perak, Malaysia, with key attention to adaptation to the tropical climate and local environmental context. Inspired by the shape of "Bunga Raya", the national symbol of Malaysia, the design integrates aesthetic elements that reflect the local cultural identity, reflecting the local cultural identity. The seating aims to enhance the quality of students' outdoor experience by harmoniously combining comfort, protection and visual beauty. By utilizing a combination of Cengal wood material due to its abundant availability in Malaysia, iron, and membrane roofing, the design creates an elegant balance between traditional elements and modern technology, while effectively responding to the challenges of the tropical environment. The protective membrane roof not only offers protection from extreme weather but also comes with an efficient rainwater management system, significantly reducing environmental impact. This approach reflects a commitment to sustainability and comfort, making it a functional and aesthetic element that is highly responsive to environmental and user needs.

KEYWORDS: Timber Wood, Sustainability, Tropical Design, Student Activity Center, Rainwater Management System.

DESIGN DESCRIPTION

1. Overview and Objectives

This design focuses on creating a permanent outdoor seating structure at the Student Hub, Perak, Malaysia, designed to adapt to the tropical climate. Inspired by the bunga raya, the national symbol of Malaysia, the design integrates local cultural elements to create an area that is functional, sustainable and aesthetically pleasing. The seating aims to enhance students' outdoor experience with comfort, protection, and visual appeal.

2. Key Features

- a. **Membrane Roof:** Provides shade and protection from sun and rain, with the ability to filter UV rays and reduce heat. Semi-transparent membrane material maintains a natural ambience.
- b. **Rainwater Management System:** The subsurface infiltration system absorbs and stores rainwater, reducing runoff and supporting groundwater recharge.
- c. **Ergonomic Seating:** Designed with student anthropometric data in mind for comfort and safety, functionality and performance.

3. Functionality and Performance

The structure withstands harsh tropical conditions, with Cengal wood and steel for durability and minimal maintenance. The seating can accommodate multiple users, ideal for communal spaces in student activity centers.

4. **Aspects of Fusion Timber**

The Fusion Timber theme blends Cengal wood, steel, and membrane, creating a synergy between tradition and modern technology. Cengal wood, known for its weather resistance, is combined with steel and innovative membranes to enhance structural integrity and sustainability.

5. **Target Audience**

Designed for university students, this structure provides a comfortable and inclusive space to relax and interact, accessible to all ages and physical abilities.

6. **Applications and Use Cases**

Placed in an outdoor area near a lake, the structure is suitable for informal study sessions, group discussions, or simply enjoying the natural surroundings.

7. **Benefits and Advantages**

- a. **Sustainability:** Using local materials and rainwater management systems for sustainability.
- b. **Cultural Relevance:** Inspired by botanical flowers, adding local cultural elements.
- c. **Weatherproof:** Materials and construction are designed for tropical climates.

8. **Technical Specifications**

Dimensions: 2000mm (L) x 2000mm (W) x 2000mm (T); Materials: Cengal wood, steel, membrane; Colors: Natural wood finish with metal accents; Load Capacity: 500 kg max.

NOVELTY AND UNIQUENESS

The novelty of this design lies in its holistic response to the tropical environment, combining traditional and modern elements in a way that enhances functionality and sustainability. The integration of the membrane roof with natural wood and steel is innovative, providing a solution that balances aesthetic appeal with practical considerations. Design inspiration from Bunga Raya adds cultural depth, making the seating not only functional but also symbolically meaningful.

BENEFITS TO MANKIND

1. **Environmental Impact:** With the selection of sustainable materials and the implementation of an efficient rainwater management system, the design minimizes environmental impact and supports proactive sustainability practices. This approach not only reduces the ecological footprint but also promotes environmental awareness among users.
2. **Quality of Life:** This seating enhances students' quality of life by providing a comfortable and attractive outdoor space. These spaces encourage social interaction and connectedness with nature, creating an environment that supports physical and mental well-being.
3. **Cultural Connections:** The integration of design elements inspired by local culture strengthens the connection between users and their environment. By honoring and highlighting cultural symbols such as botanical flowers, the design fosters a sense of pride and ownership of the space and increases emotional attachment to the place.

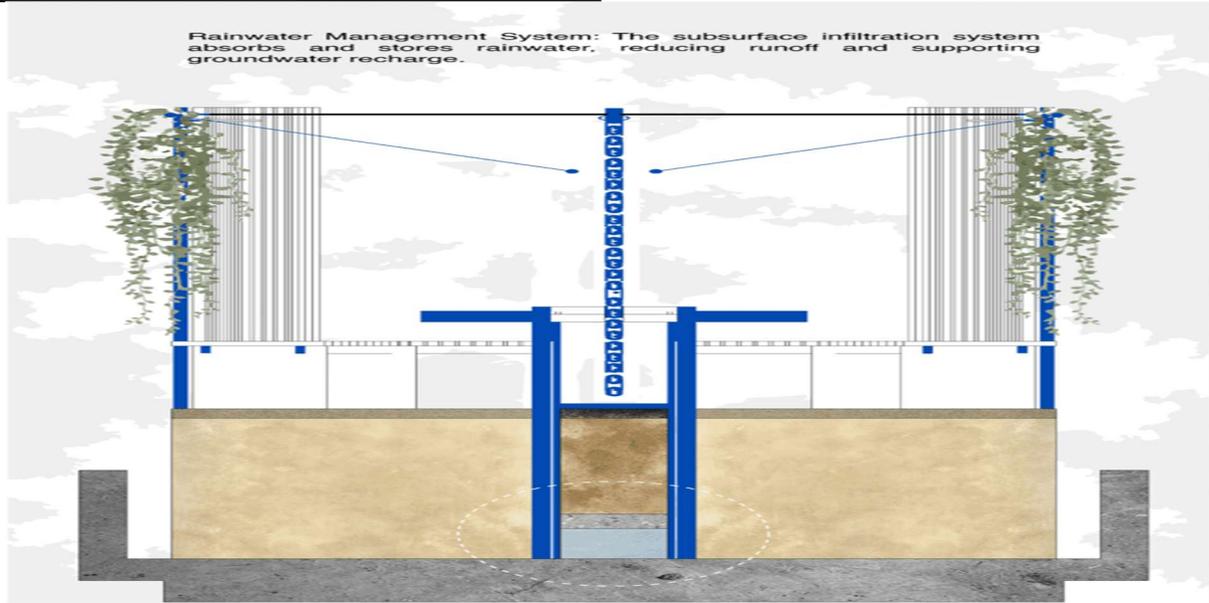


Figure 1: Aqua Bloom

COMMERCIAL POTENTIAL

The design has strong commercial potential due to its versatility, sustainability and cultural relevance. It can be marketed to educational institutions, parks and public spaces, especially in areas with similar tropical climates. The use of durable and locally sourced materials ensures that the product is cost-effective and environmentally responsible. The aesthetic appeal and functionality of the design make it appealing to a wide range of potential buyers, while its modular construction allows for easy scaling and adaptation to different locations.

CONCLUSION

Aqua Bloom exemplifies the perfect blend of tradition and modernity, sustainability and functionality in an outdoor seating structure designed to meet the challenges of a tropical climate. By carefully responding to the needs of the local environment and highlighting local cultural

values, the design offers an innovative and forward-looking solution for a student center. In the future, further development could focus on the exploration of more innovative materials and the application of adaptive technologies to further enhance sustainability and the quality of the user experience.

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Prof. Madya Dr. Nur Hisham Ibrahim
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Universiti Teknologi MARA
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