

e - Proceedings



Proceeding for International Undergraduates Get Together 2024 (IUGeT 2024)

"Undergraduates' Digital Engagement Towards Global Ingenuity"



Co-organiser:

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

Bauchemic (Malaysia) Sdn Bhd

Universitas Sebelas Maret

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Eco-Cafe Retreat

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ABSTRACT

The Eco-Café Retreat is a timber pavilion designed to provide a serene escape and vibrant community hub within an urban environment. Utilizing sustainable materials and passive design principles, the pavilion creates an inviting, energy-efficient space that seamlessly integrates with its natural surroundings. Timber, chosen for its renewable qualities and low environmental impact, forms the primary structure, offering both strength and aesthetic warmth. The open-plan layout features large windows and skylights, maximizing natural light and ventilation, while the thermal mass properties of timber and high-quality insulation ensure indoor comfort with minimal energy use. The centerpiece of the pavilion is its coffee shop, which emphasizes sustainability through locally sourced products and flexible seating arrangements that cater to social interactions. Outdoor seating on expansive decks and patios further connects patrons with nature. Landscaping elements, including green roofs and native plant gardens, enhance the pavilion's environmental harmony. The Eco-Café Retreat exemplifies sustainable design, promoting community engagement and environmental stewardship, and serving as a model for future architectural projects that balance ecological responsibility with human-centered design.

KEYWORDS: Timber pavilion, coffee shop, sustainable design, passive design, community space, environmental architecture

DESIGN DESCRIPTION

The Eco-Café Retreat is a timber pavilion designed to provide a serene escape and community hub within an urban environment. This compact yet innovative structure leverages sustainable materials and passive design principles to create an inviting, energy-efficient space that harmonizes with its natural surroundings. Timber, chosen for its renewable nature and low environmental impact, is the primary building material. The pavilion's open-plan layout features exposed timber beams and columns, offering both structural strength and a warm, aesthetic appeal. Large, strategically placed windows and skylights maximize natural light, reducing the need for artificial lighting and enhancing the sense of openness. Passive design strategies are integral to the pavilion's energy efficiency and indoor comfort. Natural lighting floods the interior through floor-to-ceiling windows, while operable windows and vents provide cross-ventilation, ensuring a continuous flow of fresh air. The thermal mass properties of timber stabilize indoor temperatures, minimizing reliance on mechanical heating and cooling systems. High-quality insulation further enhances energy efficiency by maintaining comfortable indoor conditions yearround. The pavilion's centerpiece is its coffee shop, which features a flexible layout to accommodate communal tables, cosy corners, and bar seating. The café emphasizes sustainability through a menu of locally sourced coffee and snacks, supporting local farmers and reducing environmental impact. Expansive decks and patios extend the coffee experience



outdoors, allowing patrons to enjoy their drinks amidst nature. Landscaping elements, including green roofs covered with native plants and thoughtfully designed outdoor seating areas, blend the pavilion seamlessly with its surroundings. Meandering pathways through landscaped gardens invite visitors to explore and relax in a natural setting, fostering a deeper connection with the environment. The Eco-Café Retreat not only promotes sustainability but also enhances community interaction and well-being, making it a model of environmentally responsible and human-centered design.

NOVELTY AND UNIQUENESS

The Eco-Café Retreat stands out for its innovative integration of sustainable materials and passive design within a compact, 12-square-meter space. Utilizing locally sourced timber, the pavilion harmonizes with its natural surroundings while emphasizing energy efficiency through natural lighting, ventilation, and thermal mass. Its flexible layout fosters community interaction, while green roofs and landscaped gardens enhance biodiversity. This unique blend of eco-friendly architecture and community-focused design makes the Eco-Café Retreat a pioneering model for sustainable, human-centered spaces.

BENEFITS TO MANKIND

The Eco-Café Retreat promotes environmental sustainability by using renewable timber and passive design strategies, reducing its carbon footprint. It enhances community well-being by providing a serene, natural space that fosters social interaction and mental relaxation. The pavilion's emphasis on locally sourced products supports local economies and reduces environmental impact. By serving as a model for sustainable design, it educates and inspires others to adopt eco-friendly practices, contributing to broader environmental and social benefits.

COMMERCIAL POTENTIAL

The Eco-Café Retreat has significant commercial potential due to its unique blend of sustainability and community appeal. Its compact, scalable design can be easily adapted for various urban and rural settings, attracting environmentally conscious consumers. The pavilion's distinctive aesthetic and eco-friendly ethos enhance its marketability, drawing foot traffic and generating revenue for the coffee shop. Additionally, its versatility as a venue for community events and gatherings increases its utility and profitability, making it an attractive investment for businesses focused on sustainability and community engagement.

CONCLUSION

The Eco-Café Retreat represents a paradigm shift in architectural design, seamlessly integrating sustainability with community engagement. By prioritizing renewable materials, passive design principles, and a welcoming atmosphere, the pavilion not only reduces environmental impact but also enhances social interaction and well-being. Its scalable and adaptable design offers commercial viability in various settings, catering to a growing market of environmentally conscious consumers. As a beacon of eco-friendly innovation, the Eco-Café Retreat sets a precedent for future developments that prioritize both environmental stewardship and human-centric design, paving the way for sustainable urban and rural spaces that benefit communities and the planet alike.



ACKNOWLEDGEMENT

We, the members of Eco-Cafe Retreat Project, would like to extend our deepest gratitude to everyone who contributed to the success of this project. This journey has been one of collaboration, learning, and mutual support, culminating in a project that we are proud to present. First and foremost, we express our sincere thanks to our project supervisor, Ms Ainsyah, whose guidance, expertise, and patience were instrumental in steering this project towards its completion. Her insights and feedback were invaluable, and her encouragement motivated us to excel. We are also deeply grateful to UiTM Seri Iskandar's faculty and staff, particularly those in the Architecture Department, for providing us with the resources and environment conducive to our research and development efforts. Their assistance in navigating academic and logistical challenges was crucial.

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