E-BOOK OF EXTENDED ABSTRACT

THE 14TH INTERNATIONAL INVENTION, INNOVATION & DESIGN COMPETITION 2025

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Organized by:

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ECO-LESTARI HUT; A SELF-SUSTAINING AND RESILIENT LIVING SPACE FOR ELDERLY PONDOK COMMUNITIES

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ABSTRACT

The Eco-Lestari Hut (ELH) is envisioned as a sustainable prototype for ageing Muslim communities, blending the traditional "Pondok" concept with modern principles of environmental, social, and cultural sustainability. ELH serves as a reimagined model that integrates culturally sensitive design, green infrastructure, and inclusive community support systems to provide high-quality living environments. This study employs a structured, three-stage methodology to guide the development of the ELH model. In the first stage, an extensive literature review explores traditional pondok architecture and environmentally friendly building practices. The second stage involves primary data collection through interviews, surveys, and field observations with Pondok residents. The final stage focuses on developing a prototype that harmonises traditional wisdom with modern green technologies. The findings highlight the potential of ELH to promote sustainable ageing through a holistic, culturally rooted, and environmentally responsible approach. Importantly, the ELH model incorporates key principles of Universal Design Standards, ensuring accessibility, safety, and ease of use for elderly residents. By addressing mobility, sensory, and usability needs within the physical environment, the ELH prototype supports ageing in place with dignity and autonomy. This positions ELH as a future-ready model for Muslim retirement living that is inclusive, adaptable, and aligned with global standards for elderly-friendly design.

Keyword: Eco-Lestari Hut, Pondok Community, Universal Design Standard and Green Technology

1. INTRODUCTION

Fifteen per cent of Malaysians will be over 60, increasing to 23% by 2050. This demographic shift presents social and healthcare challenges, as older individuals generally require more support. The main challenge in managing pondok facilities is ensuring efficient practices to meet growing societal demand, which can enhance performance and support better living standards for retirees. The Eco-Lestari Hut is a thoughtfully designed accommodation unit that caters to the needs of Malaysia's aging population within the *Pondok* village setting. Specifically tailored for elderly residents, the hut includes sustainable features with elder-friendly layouts to promote comfort, safety, and independence (Abdul Majid et al., 2019). It also incorporates sustainable features like passive cooling, solar energy, and rainwater harvesting to support environmentally responsible living. Eco-Lestari Hut fosters both spiritual engagement and community interaction, key to enhancing emotional well-being and reducing isolation (Kojetin et al., 2005; Dewees, 1999). The Research objective for this project is to design the Eco-Lestari Hut with specific features that enhance the comfort, accessibility, and well-being of elderly residents, while ensuring the design is in harmony with the spiritual and communal values of a religious center.

2. METHODOLOGY

The methodology for this study is divided into three stages to guide the systematic development of a sustainable pondok model, known as the Eco-Lestari Model. The first stage involves a comprehensive literature review to explore existing research on traditional pondok designs and environmentally friendly building practices. In the second stage, primary data is collected through interviews, surveys, and field observations involving pondok communities. The third stage focuses on the design and development of a prototype sustainable pondok that integrates traditional wisdom with modern green technologies.

3. FINDINGS

The design encompasses eco-friendly elements yet requires low maintenance, complete with ample bedroom space with an attached toilet, spacious dining as well as kitchen and laundry areas that are accessible to a drying area. This design can minimise unnecessary movement for the elderly. The living room overlooks an edible terrace garden, which can provide natural ventilation and natural lighting. An area for livestock and compost can provide natural resources as well as create "village vibes" for the elderly. These elements can promote a zero foot-print to the surrounding area as well as enhance positive environmental impact. By having natural light during the day and a solar system providing natural lighting for the night. Water may come from a water harvesting system. The edible garden is watered from the water harvesting system. A 3R rubbish bin will also have a composting system that can supply organic fertiliser compost. This can promote good health for the elderly.

Figure 1: Eco Lestari Hut

4. CONCLUSION

The potential of ELH is to promote sustainable ageing through a holistic, culturally rooted, and environmentally responsible approach. The design of the ELH model is to ease the mobility by providing ample space in the room as well as in other areas. All designs are based on the latest Uniform Building By-Laws 1984. The design of the ELH ensures safe access (ramp) and eco-friendly features with a built-in edible garden for residents. All four elements, namely, sunpath, cross-ventilation, water

harvesting and ramp (Figure 2), contribute to the ELH prototype supporting ageing in place as a better way of life for Muslim retirement living that is inclusive and adaptable.

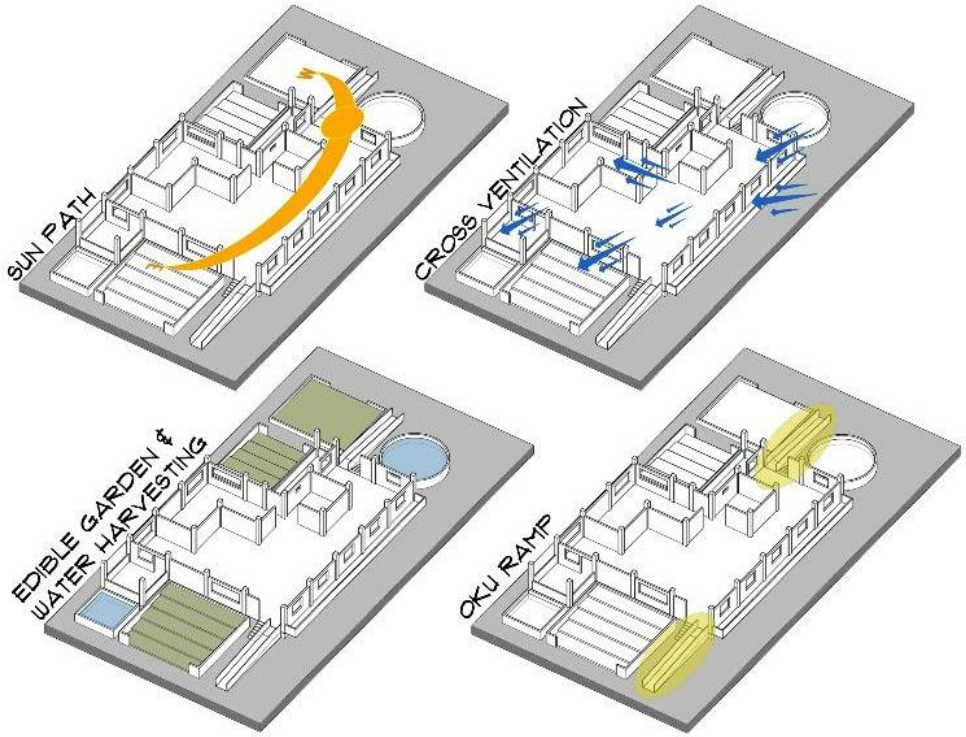

Figure 2: ELH sustainable elements

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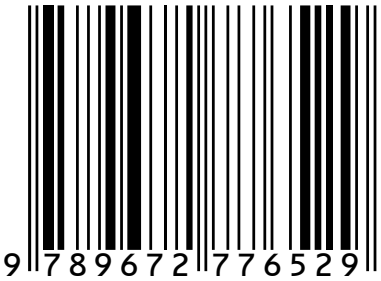

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