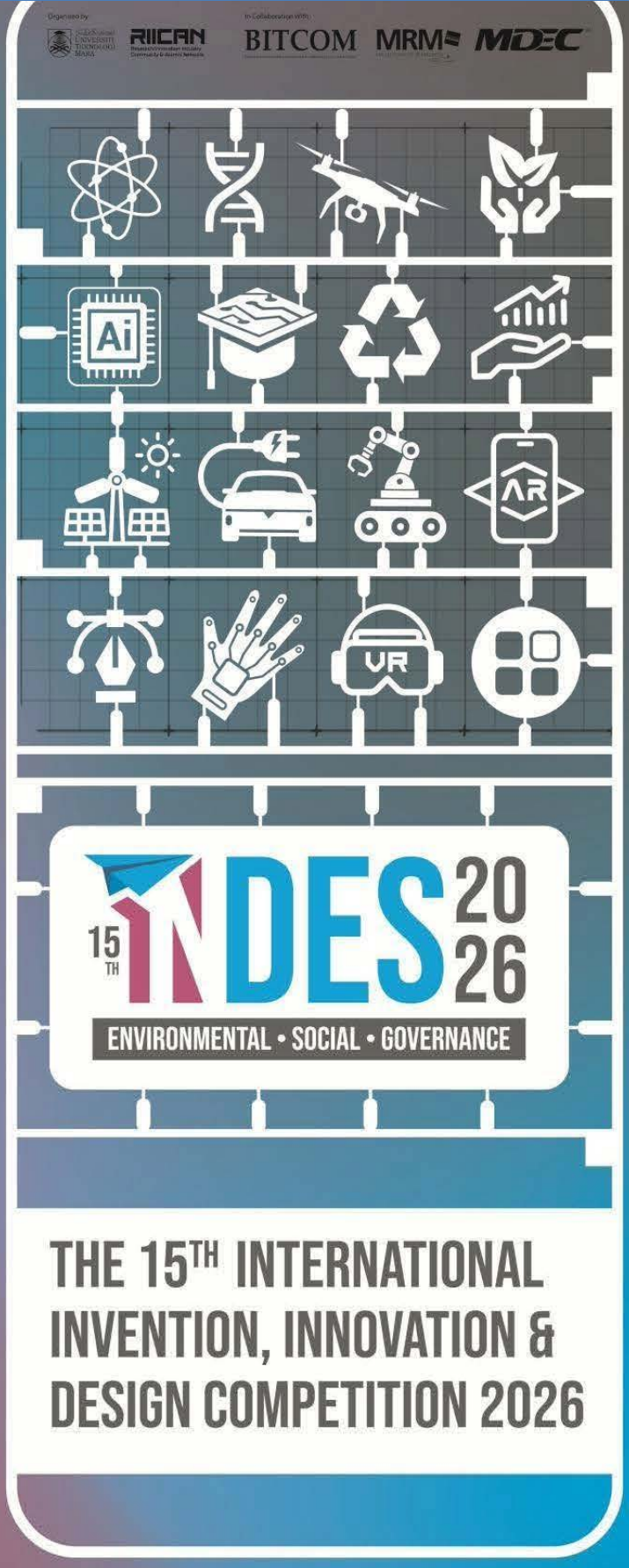


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THE 15th INTERNATIONAL
INVENTION, INNOVATION &
DESIGN COMPETITION 2026

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MIRRORA 360° ROTATING MULTIFUNCTIONAL STANDING MIRROR INTEGRATING RATTAN WEAVING AND MINDI WOOD FOR SUSTAINABLE LIVING

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ABSTRACT

The increasing demand for multifunctional and space-efficient furniture in modern living environments has driven innovation in interior product design. This study introduces Mirrora, a 360° rotating multifunctional standing mirror that integrates rattan weaving and mindi wood as sustainable materials. The product is designed to address user needs for practicality, aesthetics, and environmental awareness, particularly for individuals living in compact spaces. The design approach combines functionality and sustainability by incorporating storage features into a rotating mirror structure, enabling users to efficiently organize personal items such as makeup and accessories. Using natural materials reflects sustainable design principles that emphasize local resources and environmentally responsible production. This study employs a design methodology consisting of four stages: Plan, Design, Develop, and Deploy. The findings indicate that Mirrora improves space efficiency and user convenience while supporting sustainable material use.

Keywords**:** multifunctional furniture, standing mirror, sustainable design, rattan weaving, mindi wood

1. INTRODUCTION

Interior design continues to evolve alongside lifestyle changes, especially in urban environments where space is increasingly limited. Users today require furniture that is not only aesthetically pleasing but also functional and space-efficient (Ching, 2014). One emerging solution is multifunctional furniture, which integrates multiple uses within a single product.

Standing mirrors, traditionally used for reflection, have evolved into both decorative and functional elements in contemporary interiors. The integration of additional features such as storage enhances usbility and contributes to spatial efficiency, particularly in bedrooms and compact living spaces (Fiell & Fiell, 2013).

Furthermore, growing environmental awareness has encouraged designers to adopt sustainable materials and practices. Sustainable design emphasizes efficient resource use, durability, and reduced environmental impact (Papanek, 1995). Materials such as rattan and mindi wood are renewable and widely available in Indonesia, offering both aesthetic and ecological advantages (Ratnasingam & Ioras, 2013).

This study aims to design and develop a multifunctional standing mirror that integrates sustainability and usability through innovative material and structural approaches.

2. METHODOLOGY :

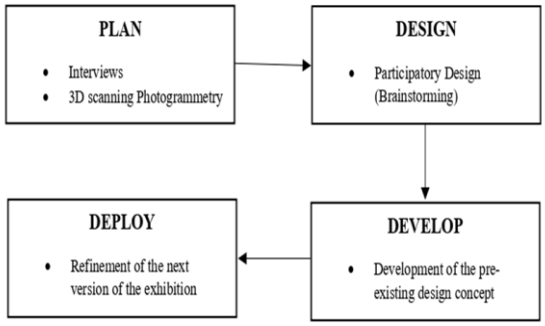


Figure 2.1 Framework

This study applies a design-based methodology consisting of four main stages: Plan, Design, Develop, and Deploy.

a) Plan

This stage focuses on identifying user needs and market opportunities through observation and behavioral analysis. The approach follows user-centered design principles, emphasizing the importance of understanding user habits and daily activities (Norman, 2013).

b) Design

The design stage involves concept development through brainstorming and visual exploration. The Mirrora concept emphasizes a 360° rotating mechanism, integrated storage, and the use of rattan weaving combined with mindi wood. Design decisions are based on balancing aesthetics, ergonomics, and functionality (Ching, 2014).

c) Develop

In this stage, the design is refined into technical specifications, including material selection and construction methods. The use of local materials supports sustainability and enables collaboration with small-scale industries (UKM) (Ratnasingam & Ioras, 2013).

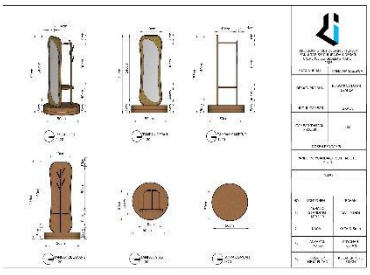
d) Deploy

The final stage involves presenting the design through visualization, documentation, and preparation for implementation or exhibition.

3. FINDINGS :

The design process of Mirrora follows the Plan–Design–Develop–Deploy approach, beginning with identifying user needs related to multifunctional furniture for compact living spaces. The process continued with design exploration, including form development, integration of a 360° rotating system, and material selection using rattan weaving and mindi wood. Furthermore, the development stage involved collaboration with local craftsmen (UKM) to ensure the feasibility of the design in real production conditions. The final stage focused on refining and presenting the product as a ready-to-use multifunctional furniture piece.

Table 3.1 Design and Production Process with Local Craftsmen

Design Phase			

Production Process (UKM)			
Final Product			

The design process resulted in several key findings. Users, particularly women aged 18–50, require practical solutions for organizing personal items such as makeup and accessories, as multifunctional furniture enhances convenience and efficiency in daily routines (Norman, 2013). In terms of functionality, the 360° rotating feature improves accessibility and usability by allowing users to access all parts of the product without repositioning it.

From a material and aesthetic perspective, rattan weaving provides a natural and warm visual character, while mindi wood ensures structural strength, reflecting sustainable design principles (Papanek, 1995). Moreover, the growing global demand for multifunctional and sustainable furniture indicates strong market opportunities for this product (Fiell & Fiell, 2013). However, several challenges remain, including maintenance requirements, structural durability considerations, and competition with mass-produced furniture.

4. CONCLUSION

Mirrora demonstrates how design innovation can address modern lifestyle needs by integrating functionality, aesthetics, and sustainability into a single product. The rotating mechanism and storage features improve spatial efficiency and user convenience.

The use of rattan weaving and mindi wood supports sustainable design principles while highlighting the value of local materials and craftsmanship. The Plan–Design–Develop–Deploy methodology proves effective in guiding the design process systematically.

Future development may explore material optimization and broader market applications to enhance product durability and competitiveness.

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