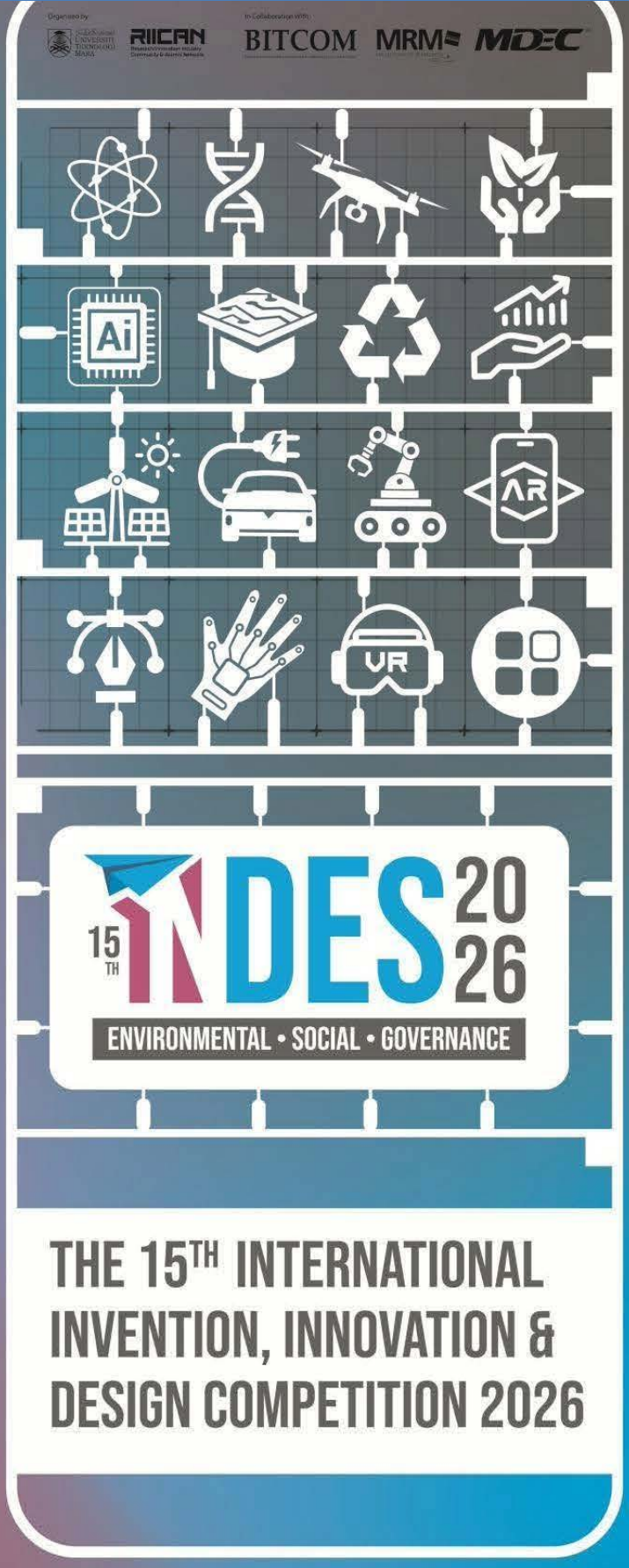


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EXTENDED ABSTRACT

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THE 15th INTERNATIONAL
INVENTION, INNOVATION &
DESIGN COMPETITION 2026

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PRESERVING LESEHAN CULTURE THROUGH A FOLDABLE FLOOR CHAIR TO MAINTAIN EQUALITY IN SOCIAL GATHERINGS

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ABSTRACT

Indonesia's communal culture revolves around floor-sitting gatherings such as *arisan*, *pengajian*, and neighborhood *RT/RW* meetings that are deeply tied to national value. While these gatherings remain central to social life, prolonged floor-sitting without proper support poses a serious health concern. Low Back Pain (LBP) prevalence reached 43% among Indonesians aged 60 and 46.5% among middle-aged adults. Nonetheless, conventional chairs are rarely used in *lesehan* settings because sitting elevated above one's peers is perceived as socially impolite that leads to a conflict between physical necessity and cultural conformity. This paper therefore proposes the Foldable Floor Chair, a legless lumbar backrest crafted from teak wooden frame, cushion covered with linen, and simple hinges that allow it to fold easily for convenient storage; providing lumbar support without raising the user above floor level. By employing the Double Diamond approach and taking into account ergonomic, cultural, and practical aspects, this solution provides a strategy that is medically supportive, socially non-intrusive, and feasible.

Keyword: Lesehan, Lumbar, Foldable Chair, Teak Wood, Social Gatherings

1. INTRODUCTION

Indonesia is a society shaped by deeply rooted communal values, most visibly expressed through the behavior of floor sitting, known as *lesehan*, which underpins numerous social gatherings to everyday life. Activities such as *arisan* (rotating savings and social meetings, *pengajian* (islamic study circles), and neighborhood association meetings (*rapat RT/RW*), are routinely conducted with participants seated on the floor for extended periods. Data from the Indonesia Longitudinal Aging Survey (ILAS) 2023 confirm that more than 65% of Indonesian elderly actively engaged in community events, which underpins the importance of these social gatherings in their social lives.

The physical challenges of sitting on the floor for extended periods present a significant and increasing health issue. Low back pain (LBP) among Indonesians aged 60 years is 43% and middle-aged adults, the prevalence reaches 46.5%, with prolonged sitting without support is identified as the main ergonomic risk factor. (Makiyyah et al., 2023). From a biomechanical perspective, the lack of lumbar support when sitting on the floor encourages a spinal posture that significantly increases disc pressure and muscle tension.

The main obstacle is that using regular chairs while others remain seated on the floor is considered inconsistent with the visual equality implied in lesehan settings, where sitting at the same level signifies respect and togetherness. The frequent neglect of assistive products stems from a mismatch between functional utility and sociocultural acceptability, creating a tension that is especially pronounced in communal floor-sitting settings. This study responds to that gap by proposing the Foldable Floor Chair that provides lumbar support without elevating the user above floor level. The chair is constructed from a lightweight wooden frame with a canvas or rattan backrest and simple hinges

that allow it to fold flat for compact storage. The paper aims to document the cultural-ergonomic rationale for this design intervention, present its structural specifications, and evaluate it against the criteria of ergonomic adequacy, cultural appropriateness, and practical feasibility.

2. METHODOLOGY

This paper uses the Double Diamond framework approach, developed by the Design Council UK, which divides the design process into four sequential phases: Discover, Define, Develop, and Deliver (Wang et al., 2025). The Discover phase reviews previous literature to understand sitting patterns, physical complaints, and prevailing social dynamics. The Define phase analyzes the core user needs, namely lumbar support that does not change the sitting level and remains aligned with the visual value of equality in lesehan culture. The Develop phase includes the development of a foldable floor chair design concept using a human-centered design approach that considers ergonomics, materials, and cultural appropriateness. Ultimately, the Deliver stage produces three-dimensional images that depict the final product design, serving as a foundation for assessing factors like ergonomic suitability, practical viability, and cultural receptiveness.

3. FINDINGS

The results of the observation indicate the practice of eating on the floor plays a significant role in fostering social relationships within Indonesian society. Eating on the floor is not merely a way of dining but also serves as a symbol of togetherness in social settings such as *RT/RW* (Neighborhood and Community Associations) meetings, religious events like *pengajian*, *arisan* and other social activities. However, approximately 40% of the elderly participants appeared to have difficulty participating in this activity, leading them to sometimes stand or use regular chairs at the edge of the group. Elderly individuals often experience muscle and back pain, particularly when engaging in activities while sitting on the floor for extended periods (Setyawan, M. G. M., & Aktifah, N., 2024). This indirectly makes them appear separated from the group of *lesehan*. From the identification findings, three primary user needs were identified: (1) prioritizing a sense of togetherness by sitting at the same level ; (2) physical support for the lower back and joints during prolonged sitting on the floor; and (3) a design that facilitates transitioning from sitting to a standing position.

Based on these needs, a low foldable chair was designed, standing approximately 5–10 cm above the floor. The chair is made of solid teak wood which is a natural resource from Indonesia which is easy to find in any region like Java. This wood is strong, hard, termite resistant, and weather resistant. When utilized in furniture such as folding chairs, teak wood offers the advantages of high durability, stability, and a long life even though it is relatively heavier than other materials.

This foldable chair also features a backrest and a thin cushion on the seat with a simple and minimalist design. We use linen fabric as a cover cushion because linen is such an ideal fabric. It has good durability, soft, breathable, and linen has many variations in colour (Mariana Laktim et al, 2023).



Figure 1 Foldable Floor Chair 3D visualization



Figure 2 Foldable Floor Chair and user behavior

The chair height is adjusted to align with people sitting on the floor, thereby maintaining a sense of equality during *lesehan* activities. This chair can also be folded, making it easy to carry anywhere. Because the main purpose of this chair is flexible and convenient storage.

Surveys indicate that the most important aspect of *lesehan* is equality of seating positions, particularly the relative alignment of head and body heights among participants at the same level. This is because, *lesehan* is a cultural practice that embodies simplicity, equality, and rooted in a sense of togetherness (Sufyan, A., & Suciati, A., 2017). For this foldable chair, the use of local materials and culturally appropriate design is also considered important so that the product is well received and socially accepted. In addition to addressing back pain issues among the elderly, this foldable chair utilizes local resources and supports local craftsmanship. Thus, during production, this product becomes a source of income for them.

4. CONCLUSION

This study demonstrates that cultural preservation and design can go hand in hand. This foldable chair serves as a solution to help people with physical disabilities participate in *lesehan* gatherings without compromising the sense of togetherness. By maintaining an even seating position, this chair helps preserve the sense of equality and simplicity inherent in lesehan tradition. The use of traditional materials and design also ensures the product remains in harmony with existing culture and supports local potential.

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