



# EXTENDED ABSTRACT



**InViCCAD 2025**  
1<sup>ST</sup> INTERNATIONAL VIRTUAL COMPETITION OF CREATIVE  
ARTS & INNOVATIVE DESIGN IN TEACHING & LEARNING



# Design Innovation Academic Show 2025



Organized by



Fakulti  
Seni Lukis & Seni Reka  
Cawangan Kedah



اوسها تقوى موليا

Collaboration with



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**EXTENDED  
ABSTRACT**

**Design  
Innovation  
Academic  
Show 2025**





DIAS 2025 (Design Innovation Academic Show) is all about "Transcending the Boundaries of Creativity: Innovation in Art & Design for 21st Century Education." This vibrant program shines a spotlight on how creativity and innovation are reshaping modern education.

It consists of three key components. First up is the Mindareka Design Show, an exhibition that showcases students' final year projects and creative designs, giving them a chance to connect with industry professionals and the wider community. Next, we have the Northern Innovation Academic Tour (NIAT), which takes participants on an academic adventure to select institutions and innovation centers in the northern region, aimed at promoting knowledge sharing and building strong academic and professional networks.

Finally, there's the 1st International Virtual Competition of Creative Arts & Innovative Design in Teaching & Learning (InViCCAID), a global competition that recognizes outstanding practices in teaching and learning by blending art, technology, and innovative design. But DIAS 2025 is more than just a talent showcase; it's a powerful platform for empowering both students and educators, while also strengthening collaborations between universities, creative industries, and global communities. With its inclusive and interdisciplinary approach, this initiative strives to spark relevant, competitive, and impactful ideas and innovations that truly benefit society and push the future of education forward.



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**D**esign  
*Innovation*  
**A**cademic  
**S**how 2025



**Prof. Dr. Roshima Haji Said**  
Acting Rector  
UiTM Kedah Branch

# Rector's Message

I am delighted to extend my heartfelt congratulations to the College of Creative Arts, UiTM Kedah Branch, for bringing MINDAREKA 2024 - Unleashing Your Visual Creativity to fruition. The triumphs of past MINDAREKA editions undoubtedly fueled the organization of this year's event, making MINDAREKA 2024 a reality.

MINDAREKA 2024 - Unleashing Your Visual Creativity stands as a testament to the dedication of students at the College of Creative Arts, UiTM Kedah Branch, providing them with a platform to showcase their final art projects. Beyond serving as a space for the exploration of fresh, innovative, and entrepreneurial concepts, this exhibition is poised to connect aspiring talents with potential clients and employers.

I extend my sincere gratitude to all participants whose enthusiasm and support have contributed to the success of MINDAREKA 2024 - Unleashing Your Visual Creativity. Their unwavering belief and commitment have truly brought this event to life, marking it as a resounding triumph!





# Head of Faculty Message

It is an honour to introduce DIAS 2025 – Design Innovation Academic Show, held under the theme “Transcending the Boundaries of Creativity: Innovation in Art & Design for 21st-Century Education.” This significant event reflects the faculty’s ongoing commitment to fostering a culture of innovation, critical thinking, and creative exploration among our students and academic community. As we navigate the complexities of the 21st century, it becomes increasingly clear that education must go beyond traditional boundaries to embrace multidisciplinary approaches that are both relevant and future-forward.

The three core components of DIAS 2025, Mindareka Design Show, Northern Innovation Academic Tour (NIAT), and the 1st International Virtual Competition of Creative Arts & Innovative Design in Teaching & Learning (InViCCAID) which is serve as vital platforms to highlight the convergence of design, technology, and pedagogy. These initiatives not only empower our students to showcase their talents and ideas, but also create opportunities for engagement with industry leaders, academic peers, and global collaborators. The Mindareka Design Show celebrates student creativity and innovation through compelling final year projects. NIAT fosters knowledge sharing and institutional partnerships through academic visits and exchanges, while InViCCAID offers international recognition for excellence in integrating art and design into teaching and learning.

I would like to express my deepest appreciation to the organising committee, faculty members, students, and strategic partners who have worked tirelessly to bring this programme to life. Your dedication and collaborative spirit have made DIAS 2025 a reality and a reflection of our shared vision for transformative education. It is my hope that this platform will continue to inspire meaningful dialogue, cultivate groundbreaking ideas, and spark a new wave of innovation that enriches both education and society.



**Mohamat Najib Mat Noor**  
Head of Faculty  
Faculty of Arts & Design  
UiTM Kedah Branch





**Industrial  
Design  
(Bachelor)**





## BUDDYROLL | SMART STROLLER

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### ABSTRACT

Buddyroll is a smart stroller designed especially for children with Muscular Dystrophy (MD), a condition that slowly weakens their muscles and affects their ability to move around independently. Many children with MD, especially those with Duchenne MD, often lose the ability to walk and perform daily activities on their own. Current mobility tools like wheelchairs or regular strollers don't offer the smart features or comfort these children really need and that's where Buddyroll comes in. One of the main focuses of this design is the seat, which is built for maximum comfort and long-term use. The seat uses soft, breathable materials that are gentle on the body, combined with an adjustable metal frame that helps support the child's posture and reduce pressure on weak muscles. Since many children with MD sit for long hours, this part of the design is important for their comfort and well-being. The stroller's metal structure makes it strong and stable, but also flexible enough to support smart features like health tracking and movement assistance. This helps caregivers monitor the child's condition in real time while giving the child a sense of freedom and independence. Overall, Buddyroll aims to make everyday life a bit easier for children with MD and their families. It's more than just a stroller it's a thoughtful tool that brings comfort, safety, and a bit more confidence to kids who need it most.

**Keywords:** Smart, Comfort, Durable, Mobility, Supportive,

## INTRODUCTION

Living with Muscular Dystrophy (MD) is not easy, especially for young children. As their muscles weaken over time, simple tasks like walking or sitting comfortably can become a daily struggle. Many families rely on strollers or wheelchairs, but most of these devices are basic and don't truly meet the needs of children with MD whether it's in terms of comfort, independence, or emotional support. That's where Buddyroll comes in. Buddyroll is a smart stroller designed with care and empathy, focusing on what really matters for these children and their caregivers. The design combines a strong metal frame for durability and safety, with a comfortable and supportive seat that allows children to sit for longer periods without feeling tired or strained. The goal is to give them not just mobility, but also a sense of ease and dignity in their everyday lives. From an Industrial Design perspective, this project explores how thoughtful design can make a real difference. It involves understanding user needs, working with suitable materials, and designing for comfort, safety, and smart functionality. Buddyroll shows that design is more than just how something looks it's about how it works, feels, and fits into people's lives, especially those who need extra care and attention.

## DESIGN AND DEVELOPMENT



Figure 1.1 The picture of final body structure

The development of BuddyRoll focused on creating a modern, functional, and comfortable stroller with a unique visual identity. The design combines a clean metal frame with soft, cushioned seating to ensure both stability and user comfort. The structure is supported by four large wheels, which not only enhance balance and movement but also give the stroller a bold, classic look. Special attention was given to the ergonomic design of the seat, with padded head and body support to ensure the baby's safety during use. The curved armrest and rear handle offer better grip and control for the parent, while the lower storage tray provides space for baby essentials. The design reflects a blend of contemporary style and practical needs, making BuddyRoll not just a mode of transport for babies, but also a visually appealing, parent-friendly product. Throughout the development process, usability, comfort, and aesthetics were prioritized to create a stroller that fits seamlessly into modern lifestyles.

## RESULTS AND DISCUSSION/FINDINGS

The goal of this research was to dive into the real-life hurdles that parents and caregivers of children with Muscular Dystrophy (MD) face when using current mobility aids. To gather insights, the study utilized a structured questionnaire that focused on the functionality, comfort, and accessibility of these aids. The results lay the groundwork for creating the BuddyRoll smart stroller a mobility solution that's lightweight, user-friendly, and specifically designed to meet the unique needs of children with MD.

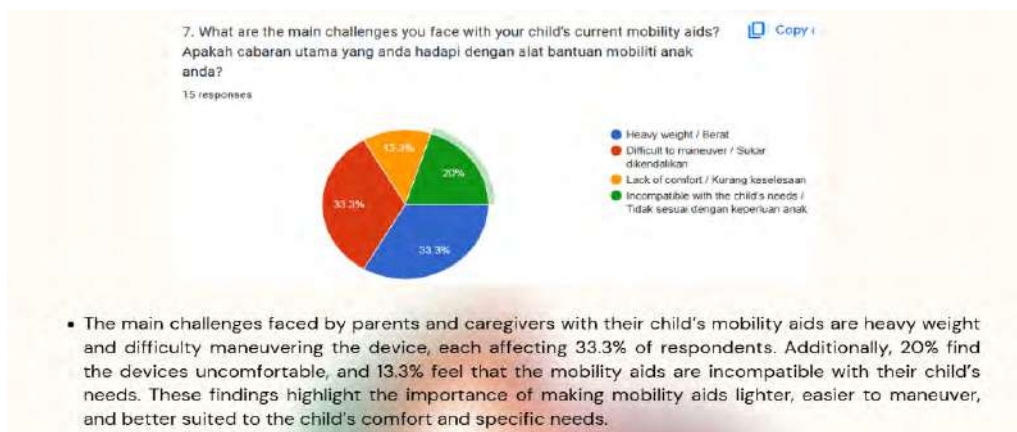


Figure 1.2 Asking respondents what the main challenges are you face with your child's current mobility aids.



One important question posed to participants asked them to pinpoint the main challenges they encounter with their child's current mobility aids. The findings reveal that the most frequently mentioned issues are the heavy weight and the difficulty in handling or controlling these aids, each noted by 33.3% of respondents. These challenges can often make daily routines more stressful for caregivers and restrict the child's freedom of movement. Additionally, 20% of participants expressed discomfort with the current designs, while 13.3% felt that the aids didn't meet their child's specific needs. Looking at the demographic data, a significant majority of respondents (96.1%) are in the 10–30 age range, with 53.8% aged 10–20 and 42.3% aged 21–30. This indicates that younger individuals, particularly students, young parents, or early-career caregivers, are actively engaged in discussions about inclusive mobility solutions. Only 3.8% of respondents were from the 41–60 age group, suggesting that older adults are less involved. These insights underscore the necessity for mobility aids like BuddyRoll that prioritize being lightweight, easy to control, comfortable for the child, and adaptable to individual needs.

## **CONCLUSION & RECOMMENDATION**

In conclusion, Buddyroll is a smart stroller designed to help children with Muscular Dystrophy move around more easily and comfortably. It uses a strong metal frame to keep the stroller stable and safe, and the seat is made to be soft and supportive for long sitting hours. This design doesn't just focus on movement, but also on giving comfort and support to both the child and the caregiver. It also includes smart features that help monitor the child's health, which can give peace of mind to parents. To improve Buddyroll in the future, it's recommended to test the stroller with real users to see how well it works in daily life. The materials can also be improved by using lighter metals to make it easier to push and carry. Adding adjustable parts like cushions, headrests, or leg rests can make the seat more comfortable for each child. Working with doctors or therapists can also help improve the health tracking features. Lastly, giving options for colors or decorations can make the stroller feel more personal and fun for the child. These suggestions can help make Buddyroll even better and more helpful for families who need it.



Figure 1.3 The picture of Environment (BuddyRoll)

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