UNIVERSITI TEKNOLOGI MARA

EXTENDED ABSTRACT

DKA 2025

InVICCAID 2025
1ST INTERNATIONAL VIRTUAL COMPETITION OF CREATIVE ARTS & INNOVATIVE DESIGN IN TEACHING & LEARNING

MONDARIKA

NIAT
NORTHERN INNOVATION ACADEMIC TOUR

Design Innovation Academic Show 2025

Organized by

Faculty of Art & Design
#perubahanluarbiasa
#ADpilihanpertama

UNIVERSITI TEKNOLOGI MARA
Fakulti Seni Lukis & Seni Reka
Cawangan Kedah

UiTM di hatiku

Collaboration with

PUSAT SAINS NEGARA WILAYAH UTARA

KEMENTERIAN SAINS, TEKNOLOGI DAN INOVASI
MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION

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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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

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

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.

Industrial Design (Bachelor)

BIBIWHEELS | PEDIATRIC WHEELCHAIR

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ABSTRACT

BibiWheels is an innovative wheelchair concept meticulously crafted for children aged 4 to 6 years old diagnosed with Spastic Diplegia at GMFCS Level III. The name itself, BibiWheels, draws its tender inspiration from the playful and protective nature of a duck, cleverly echoing the Indonesian slang 'bebek' – a baby-ish and endearing way to say duck. This unique identity is reflected in the product's distinctive, duck-inspired form, which transforms a medical device into a friendly, approachable companion, fostering acceptance and reducing intimidation for young users. Beyond its charming aesthetic, BibiWheels is engineered with a profound commitment to essential clinical functionality. The design provides exceptional stability, a critical foundation for children who utilize assistive devices for ambulation but require a secure, comfortable base for longer distances or periods of rest. breathable, and easily cleanable. BibiWheels stands as a holistic solution, visually appealing and highly functional, ultimately empowering children with Spastic Diplegia (GMFCS Level III) towards increased participation, independence, and a more joyful experience of mobility. It integrates an adaptable postural support with particular attention to managing spasticity and maintaining optimal alignment in the lower limbs, which are primarily affected by Spastic Diplegia. This includes precisely molded, cushioned seating with specialized leg positioning features, lateral trunk supports, and a supportive headrest, all meticulously designed to optimize alignment and comfort, thereby freeing the child's less-affected arms for active engagement in play and learning. The primary structure is forged from a durable yet lightweight composite, while all contact surfaces are covered in a cushioned,

Keywords: Children's Wheelchair, Cerebral Palsy, Innovative Pediatric Wheelchair, Duck-shaped Design, Playful Mobility, Comfort, Safety, Children with Spastic Diplegia.

INTRODUCTION

BibiWheels is an innovative wheelchair concept designed for children aged 4 to 6 years old with Spastic Diplegia at GMFCS Level III. Drawing inspiration from the playful and protective nature of a duck, echoing the Indonesian slang 'bebek', its distinctive form creates an engaging and comforting mobility aid. This design provides exceptional stability and integrated, modular components for comprehensive postural support, specifically tailored for lower limb alignment and managing spasticity. It features modular growth adjustment, ensuring the chair adapts to the child's rapidly changing physical needs. Constructed from durable, lightweight composite with cushioned and breathable contact surfaces.

MATERIALS AND METHODS

We build BibiWheels using a strong but light high-performance thermoplastic. This material is great because we can mold it into the smooth, curved shape of the duck, making the main part of the wheelchair. Inside, for extra strength and support where it's needed most (especially for the child's posture), we add a hidden frame made of lightweight aluminum metal. This frame is carefully put together, so it makes the chair strong without making it bulky. The wheels and the parts that connect them are made from tough steel. This steel is built to last and makes sure the wheels roll smoothly every day.

To get that unique, flowing duck shape, we use special processes like heating and molding the high-performance thermoplastic. This helps us create all the smooth curves and allows us to easily add the adjustable parts later. Once the main shape is done, we add the important comfort and support parts. These include soft, shaped cushions for the seat, back, and sides, made from special foams that feel good and spread pressure evenly. All these padded parts are covered in a tough, breathable fabric.

Figure 1.1 The picture of BibiWheels materials

RESULTS AND DISCUSSION/FINDINGS

The design of BibiWheels comes from the playful and protective nature of a duck. The name itself, "BibiWheels," playfully links to 'bebek,' an Indonesian word for duck. This makes the chair look friendly and comforting. Like a duck is stable, the chair feels safe and cozy. It gives children with Cerebral Palsy, especially those with Spastic Diplegia (GMFCS Level III), a comfortable and secure place to sit, helping them feel calm and at ease.

We studied how ducks look and move and also learned deeply about the needs of children with Spastic Diplegia at GMFCS Level III, especially how their legs move and what support they need. This research helped us create a wheelchair that is not just strong and nice to look at, but also very comfortable and truly supportive. It helps our young users feel secure, letting them play and move through their day more easily and confidently.

CONCLUSION & RECOMMENDATION

In conclusion, BibiWheels is a thoughtfully designed wheelchair for children aged 4 to 6 years old with Spastic Diplegia (GMFCS Level III). Its friendly duck shape, inspired by the Indonesian 'bebek', makes it invite, while its strong stability and adjustable support parts ensure comfort and correct posture. The chair's ability to grow with the child and its ease of use for caregivers make it a practical solution, ultimately aiming to help children gain more

independence and participate happily in their daily lives.

Figure 1.2 The picture of BibiWheels

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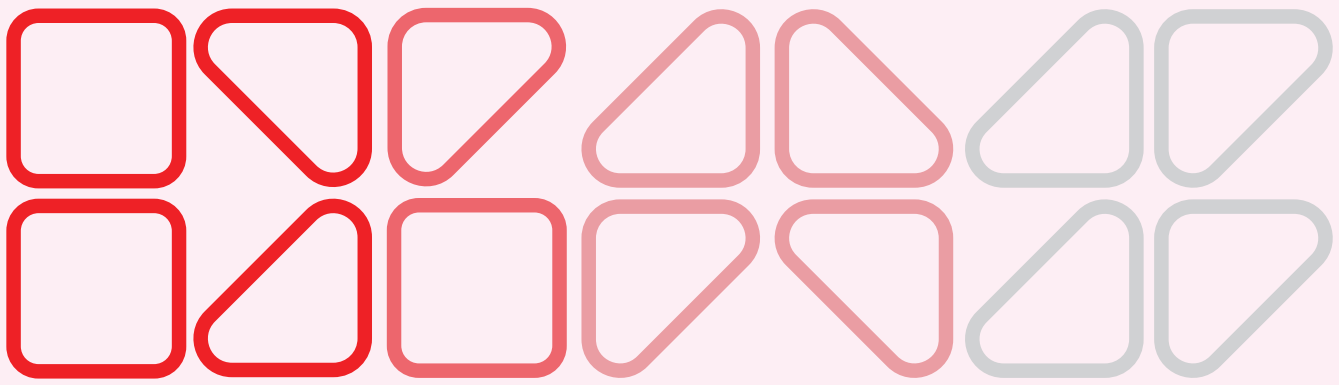

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