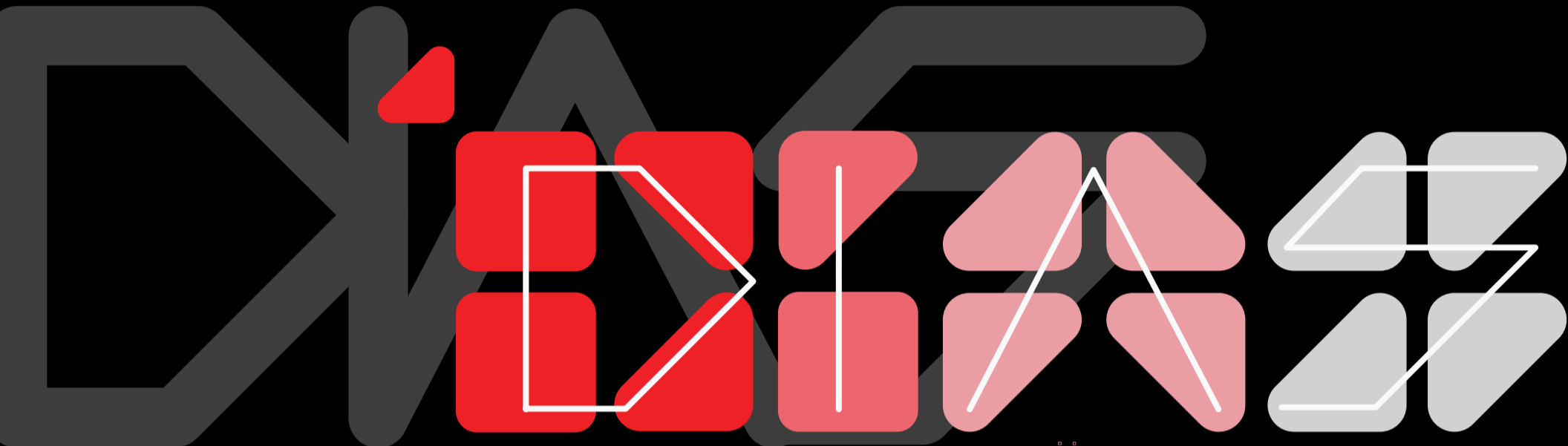




EXTENDED ABSTRACT



InViCCAD 2025
1ST 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



#perubahanluarbiasa
#ADpilihanpertama



**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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Design
Innovation
Academic
Show 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)**





MERBOOK | FOOD CAPSULE

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ABSTRACT

Sustainable transportation has become an essential focus for universities seeking to reduce environmental impact while enhancing mobility and accessibility. At UiTM Kedah, transportation challenges such as heavy reliance on private vehicles, limited bus services, and congestion have created an urgent need for innovative and eco-friendly solutions. To address these issues, this study introduces MERBOOK, a hybrid transportation concept that combines electric shuttle buses, microvans, and a centralized smart mobility application to create an efficient and user-friendly campus transport system. The design of MERBOOK emphasizes the use of eco-conscious materials, including lightweight aluminum and recycled composites, while incorporating renewable energy elements such as solar-powered bus stops. The design language follows a Minimalist Futurism approach, focusing on geometric simplicity, modular functionality, and modern aesthetics to enhance the user experience and ensure seamless integration into the existing campus environment. The research applied online questionnaires, literature reviews, and design benchmarking to evaluate user needs and current transport gaps. Findings revealed strong support for electric transport options and digital booking platforms with real-time updates. By merging sustainable mobility solutions with smart technology, MERBOOK aims to reduce emissions, improve service reliability, and enhance commuting convenience for students, staff, and visitors. This project not only addresses the immediate mobility challenges at UiTM Kedah but also contributes to a greener and more innovative transportation ecosystem that aligns with global sustainability efforts.



Keywords: Electric microbus, Sustainable transport, Smart mobility, Campus commuting, Mobility-as-a-Service

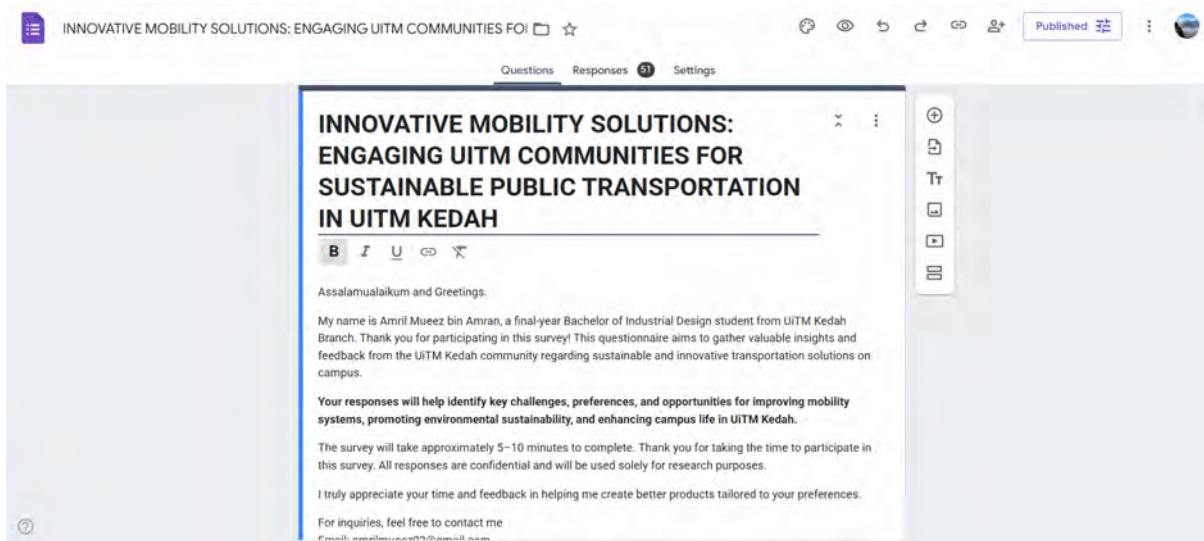
INTRODUCTION

Sustainable transportation is increasingly vital in reducing environmental impact and improving accessibility within campus environments. UiTM Kedah, like many universities, faces challenges such as heavy reliance on private vehicles, traffic congestion, and inefficient public transport systems. These issues align with global research emphasizing the need for innovative and eco-friendly mobility solutions (Toledano et al., 2025). Electric buses, particularly microbuses, have gained recognition for their ability to reduce carbon emissions and provide reliable transport while supporting campus sustainability goals (Kuo et al., 2023).

The MERBOOK project addresses these concerns by designing a fully electric microbus concept tailored to the needs of the UiTM Kedah community. Previous studies have highlighted how integrating sustainable vehicles with digital platforms, such as Mobility-as-a-Service (MaaS), can enhance user satisfaction and optimize route planning (Coppola et al., 2024). Additionally, proximity and access to well-planned public transportation play a significant role in improving commuting patterns among university students (Crotti et al., 2022).

By applying industrial design methodologies, MERBOOK combines user-centric design principles with eco-conscious materials and smart technologies to create a forward-thinking transport system. Research on sustainable campus transport also emphasizes that community engagement is crucial to the success of such initiatives, ensuring that solutions meet real user needs (Misiran et al., 2021). MERBOOK reflects these insights, positioning itself as a modern, efficient, and sustainable alternative to existing mobility challenges at UiTM Kedah. Moreover, the project aligns directly with Sustainable Development Goals (SDG 9: Industry, Innovation, and Infrastructure; SDG 11: Sustainable Cities and Communities; and SDG 13: Climate Action), reinforcing its relevance to global sustainability objectives (United Nations, 2015a; 2015b; 2015c).

METHODS



This project employed a mixed-method approach, combining qualitative and quantitative techniques to explore sustainable transportation solutions for UiTM Kedah. The first stage involved an extensive literature review of previous studies on sustainable mobility, electric bus design, and Mobility-as-a-Service (MaaS) frameworks. This review provided the theoretical foundation and identified best practices for campus transportation systems. Primary data were collected through an online questionnaire distributed to the UiTM Kedah community, including students, staff, and visitors. The survey aimed to understand current transportation challenges, user preferences, and expectations for an improved mobility system. Additionally, a benchmarking process was conducted to evaluate existing electric microbus solutions and sustainable transport initiatives implemented at other universities. The design development phase applied industrial design methodologies, focusing on ideation, concept sketching, and 3D visualization to create MERBOOK, a user-friendly and eco-conscious electric microbus concept.

RESULTS AND DISCUSSION/FINDINGS

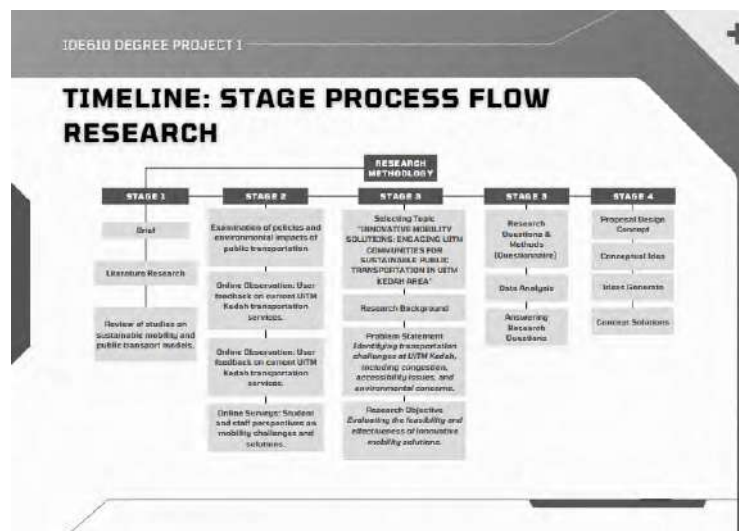
The findings from the online questionnaire revealed that a significant portion of the UiTM Kedah community expressed dissatisfaction with the existing transportation system due to issues such as irregular bus schedules, inadequate coverage, and heavy reliance on private vehicles. Over 70% of respondents indicated a preference for electric transportation systems, citing sustainability, reliability, and modern features as

key priorities. This aligns with previous studies, which highlight that students prefer eco-friendly and efficient mobility solutions when given the choice (Misiran et al., 2021).

The introduction of MERBOOK, a fully electric microbus, directly addresses these concerns by providing a low-emission, cost-effective, and user-friendly commuting solution. Incorporating a Mobility-as-a-Service (MaaS) approach through a centralized app for booking, payments, and live tracking was also strongly supported by users, reflecting findings from Coppola et al. (2024), who emphasize that MaaS improves accessibility and user experience.

The study further demonstrates that integrating electric microbuses can significantly reduce campus congestion and carbon footprints, in line with global trends in public transport innovation (Kuo et al., 2023; Toledano et al., 2025). By applying industrial design principles, the project successfully merged functionality with aesthetics, inspired by Minimalist Futurism, to create a transport concept that resonates with modern campus identity and sustainable goals.

PROCESS DESIGN AND DEVELOPMENT

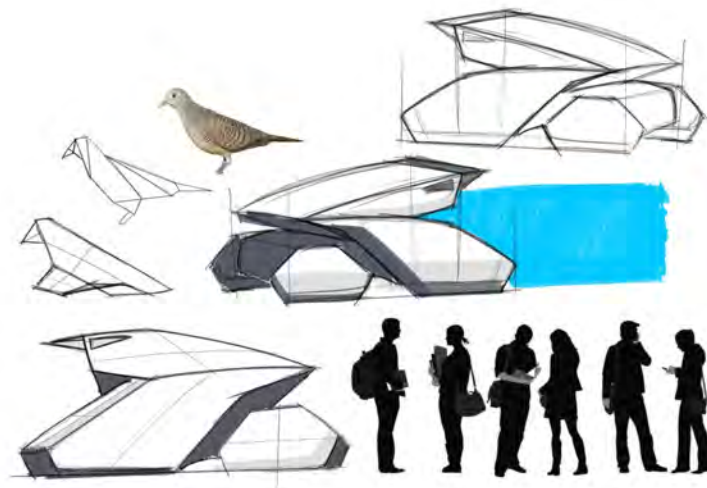


The design and development of MERBOOK followed a systematic and iterative approach rooted in industrial design methodologies. The process began with problem identification, where transportation challenges at UiTM Kedah were analyzed through online surveys, interviews, and literature reviews. Findings revealed significant gaps in existing campus transport, including limited-service coverage, over-reliance on private vehicles, and high carbon emissions. These insights established the foundation for the

project's design objectives, which focus on sustainability, accessibility, and user-centric solutions.

The conceptual phase involved brainstorming and generating multiple mobility solutions, including various electric bus configurations. Through comparative analysis and benchmarking against successful campus mobility projects, the electric microbus concept (MERBOOK) emerged as the optimal solution due to its compact size, energy efficiency, and adaptability to campus roads.

Next, the development phase incorporated Minimalist Futurism design principles, emphasizing clean geometric forms, lightweight materials (e.g., aluminum frames, recycled composite interiors), and eco-conscious finishes. Digital features such as real-time tracking and cashless payment systems were integrated into the concept to improve usability and service efficiency.



Prototyping and visualization steps involved creating digital 3D models, design mockups, and conceptual sketches to refine ergonomics, passenger comfort, and functional layout. The final MERBOOK design reflects both aesthetic appeal and practicality, aligning with SDG 9 (Innovation), SDG 11 (Sustainable Cities), and SDG 13 (Climate Action). This process ensured that the design not only addressed current mobility needs but also set a foundation for future improvements and scalability.



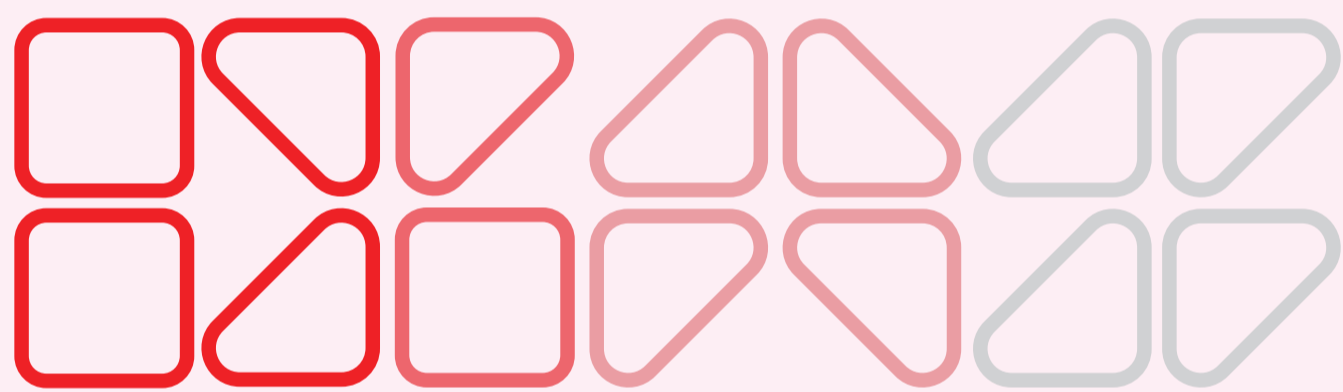
CONCLUSION & RECOMMENDATION

The MERBOOK project provides a sustainable and innovative solution to mobility challenges at UiTM Kedah. By introducing a fully electric microbus system, MERBOOK reduces reliance on private vehicles, minimizes carbon emissions, and improves accessibility for students, staff, and visitors. Its smart features such as real-time tracking, cashless payments, and digital booking—enhance the commuting experience while aligning with SDG 9, SDG 11, and SDG 13. The Minimalist Futurism-inspired design emphasizes efficiency, user comfort, and eco-friendly materials, ensuring both functional and aesthetic value.

Recommendations include pilot testing MERBOOK to evaluate performance and user feedback, developing smart bus stops with solar power and real-time displays, and actively engaging the UiTM community for continuous improvement. Expanding coverage and integrating renewable energy solutions such as solar charging stations are also suggested to strengthen environmental impact and scalability. MERBOOK sets the foundation for a future-ready, green campus mobility system.

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