



EXTENDED ABSTRACT



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



Design Innovation Academic Show 2025



Organized by



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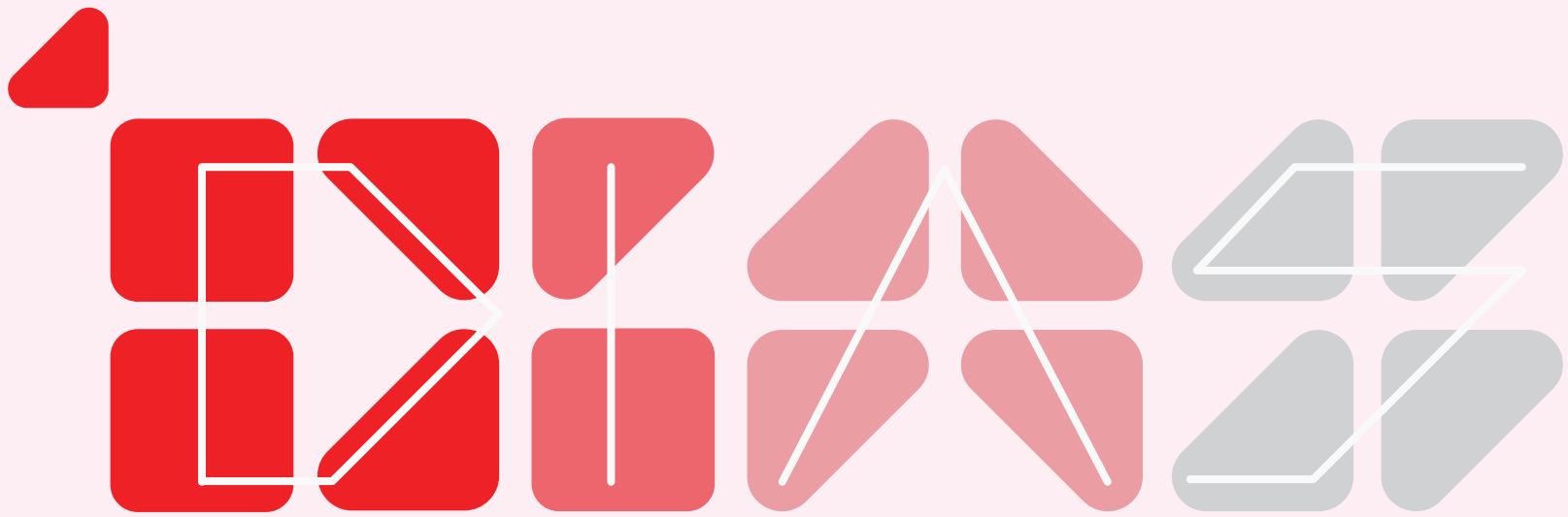
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***EXTENDED
ABSTRACT***

***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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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
(Diploma)***





STUDY ON DEVELOPING A COMPACT AND SUSTAINABLE URBAN CONCRETE MIXER TRUCK WITH PERODUA COLLABORATION (TRUXEL-X PRIME)

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ABSTRACT

Truxel-X Prime is a compact, electric concrete mixer truck developed with PERODUA, designed to improve concrete transport in busy urban areas. Traditional mixer trucks are often too large, hard to maneuver, and depend on fossil fuels, making them inefficient in city environments. Truxel-X Prime addresses these issues with a smaller, cleaner, and smarter design. It runs on a battery-electric drivetrain and features roof-mounted solar panels to power the mixer drum, allowing for quieter and eco-friendly operation. The modular mixer unit can be detached using a built-in crane, and includes an extendable discharge pipe for precise concrete placement, improving flexibility and reducing downtime at construction sites. The truck's design blends PERODUA's local identity with a modern look. It uses bold yellow, grey, and black tones for high visibility. The interior cabin is styled in cool grey with black finishes, yellow highlights, and blue ambient lighting. A digital control panel allows the operator to manage the mixer functions easily. Truxel-X Prime offers a future-ready transport solution for medium-scale contractors, urban developers, and municipal projects, combining performance, efficiency, and sustainability in one smart package.

KEYWORDS: Truxel-X Prime, Electric Mixer Truck, Modular Design, Urban Construction, Sustainable Transport

INTRODUCTION

The growing pace of urban development in Malaysia has led to an increasing demand for efficient, compact, and environmentally conscious construction vehicles. However, traditional concrete mixer trucks are often bulky, fuel-reliant, and unsuitable

for operation within dense urban environments. Their size limits manoeuvrability in tight construction zones, and their dependence on diesel power contributes to noise pollution, high emissions, and operational costs. These limitations highlight a clear need for an updated solution that meets modern construction demands both functionally and sustainably. The **Truxel-X Prime** project was initiated to respond to these challenges by reimagining the conventional concrete mixer truck into a more compact, intelligent, and eco-conscious transport system. Developed in collaboration with **PERODUA**, the concept reflects a forward-thinking approach to urban construction logistics, blending localized design language with clean energy technology and modular functionality.



Figure 1.1 The picture mood board for the inspiration & picture of final design of the transport (Truxel-X Prime)

Early design explorations focused on bold, streamlined vehicle forms inspired by industrial strength and mobility. The aim was to produce a mixer truck that not only performs efficiently in constrained urban areas but also reflects a modern visual identity. Throughout the development process, the focus remained on practicality, efficiency, and future-readiness, ensuring that Truxel-X Prime meets the needs of medium-scale contractors, municipal infrastructure teams, and urban construction sites. By integrating a battery-electric drivetrain, solar-powered mixing system, and detachable mixer unit equipped with a discharge pipe, Truxel-X Prime stands as a next-generation solution that prioritises operator convenience, sustainability, and on-site flexibility. The design represents a meaningful shift in how concrete can be delivered in rapidly evolving city environments.

MATERIALS AND METHODS

The concept stage began with hand-drawn ideation sketches to explore proportions, mixer module placements, and unique design features like the built-in crane and solar panel layout. Several visual directions were explored before selecting a bold and practical form aligned with PERODUA's design language. This form emphasised both a powerful stance and fluid integration between the cab, mixer drum, and energy systems.



Figure 1.3 The picture of idea development and design development sketches

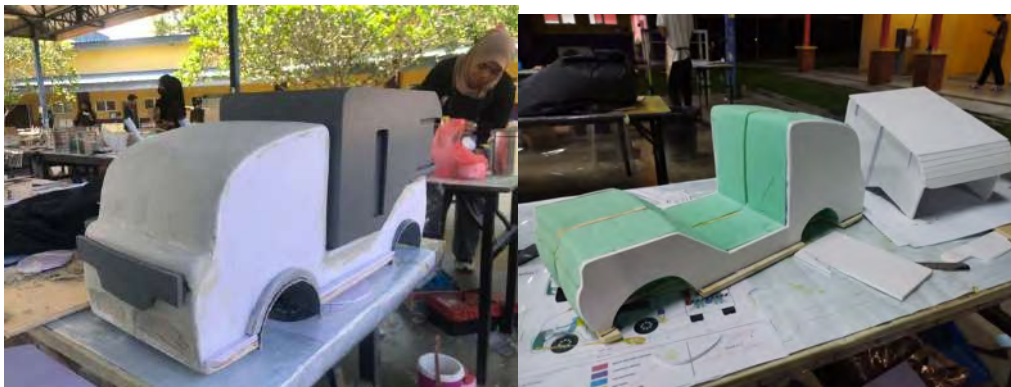


Figure 1.4 The picture of making model using pvc board and green foam and after applying putty & duco

To visualise the final form, a scaled-down physical prototype was built using PVC board and green foam due to its ease of shaping, strength, and accessibility. The structure was refined using automotive-grade putty for surface smoothing and coated with Duco spray paint, achieving a clean, professional finish that accurately reflected the proposed surface treatment and color scheme (yellow, grey, and black).



RESULTS AND DISCUSSION/FINDINGS

The final design of Truxel-X Prime reflects a strong response to the initial challenges identified in traditional mixer truck systems. From limited manoeuvrability to heavy fuel consumption and outdated operational workflows, the project focused on resolving these concerns through a more compact, sustainable, and functionally advanced transport solution. One of the key breakthroughs was the integration of a modular mixer unit that can be detached and placed on the ground using the truck's own crane system. This not only makes the truck more versatile on-site but also allows the vehicle to leave the mixer at a location while moving on to the next delivery, improving time efficiency and resource management for contractors. The addition of an extendable discharge pipe further supports this modular setup, enabling direct concrete flow placement at targeted points on the construction site, reducing spillage, cleanup, and manual handling. In terms of environmental innovation, the truck's battery-electric drivetrain and roof-mounted solar panel system mark a shift away from diesel dependency. The solar energy supports auxiliary systems such as the mixer drum operation, contributing to overall energy efficiency while minimising noise and carbon emissions, which is beneficial in urban zones with strict environmental controls.

CONCLUSION & RECOMMENDATION

Truxel-X Prime is a compact, electric concrete mixer truck designed to solve real problems in today's urban construction sites. Its small size, solar-powered mixer drum, and detachable modular unit make it more efficient, flexible, and environmentally friendly compared to traditional trucks. Looking ahead, this concept has great potential. Building a full-size prototype will help test how the modular mixer and solar systems perform on real construction sites. Getting feedback from contractors and drivers will also help improve the design further. Truxel-X Prime is not just about a modern look; it's about creating a smart, user-friendly vehicle that fits how construction work is changing today. We recommend continuing development by testing the design in real conditions, exploring lightweight materials, and working closely with users to make sure the truck stays practical, affordable, and future-ready.



Figure 1.6 The picture of Environment (Truxel-X Prime)

REFERENCES

Baldwin, C. Y., & Clark, K. B. (2000). *Design rules: The power of modularity*. MIT Press.

Department of Environment Malaysia. (2020). *Cleaner fuels for cleaner air: National policies for low-emission vehicles*.

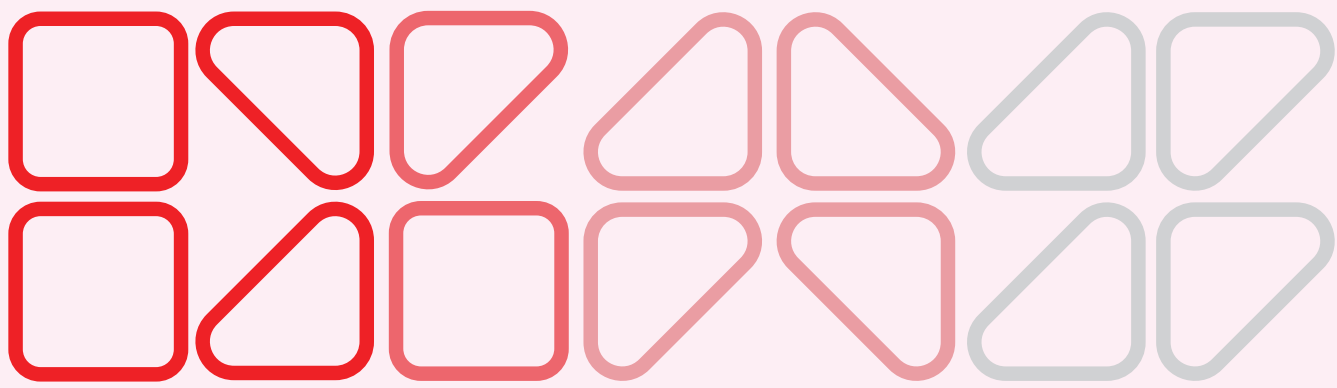
International Energy Agency. (2021). *Global EV outlook 2021: Accelerating ambitions despite the pandemic*. <https://www.iea.org/reports/global-ev-outlook-2021>

Lloyd's Register. (2018). *Sustainable shipping: How the maritime industry is preparing for a low-carbon future*. <https://www.lr.org/en/insights/articles/sustainable-shipping-low-carbon-future>

PERODUA. (2023). *Corporate design guidelines*.

Ulrich, K. T., & Eppinger, S. D. (2015). *Product design and development* (6th ed.). McGraw-Hill Education.

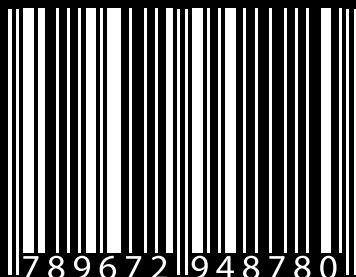
UN Environment Programme. (2019). *Electric mobility: Taking stock of electric vehicle development in the Global South*. <https://www.unep.org/resources/report/electric-mobility-taking-stock-electric-vehicle-development-global-south>



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