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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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

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 (Diploma)

SERVMATE : SIMPLIFYING COMMUNAL DINING FOR MADAD DINING HALL USERS

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ABSTRACT

The ServMate dining tray is a product developed to address specific dining challenges observed at the MADAD open dining area in Kedah, which accommodates large crowds during communal events. Through direct site observation and user behaviour analysis, common problems such as difficulty carrying multiple food items, unstable cup placement, and inefficient storage were identified. ServMate responds to these needs with a compact, lightweight, and fully 3D-printed design featuring side handles for improved grip, an integrated cup holder indent to reduce spillage, and a stackable form for space-saving storage. The tray is made from antibacterial PLA composite, a material that is biodegradable, anti-mould, antibacterial, odour-resistant, and food-safe. Filleted edges further enhance cleaning efficiency. The final design aims to improve the dining experience for MADAD users by simplifying food transportation and optimising tray management in high-traffic dining scenarios.

Keywords: Dining Tray, Food Portioning, Healthy Eating, Food Utensils, Trays

Communal dining events are central to the activities held at the MADAD open dining area in Kedah, where meals are served to large crowds during religious, social, and community events. This high-traffic dining setting creates unique logistical and operational challenges, particularly in managing the serving tools provided to attendees.Multiple site visits and direct user observation identified several recurring issues. These include the difficulty of carrying multiple food items on standard plates, the instability of cups leading to frequent spills, and the absence of an efficient storage solution for trays when not in use. Furthermore, MADAD incurs significant recurring costs from the constant need to purchase disposable items such as plastic cups, plates, and cutlery, which are used to accommodate the crowd quickly but result in high waste generation and financial inefficiency.

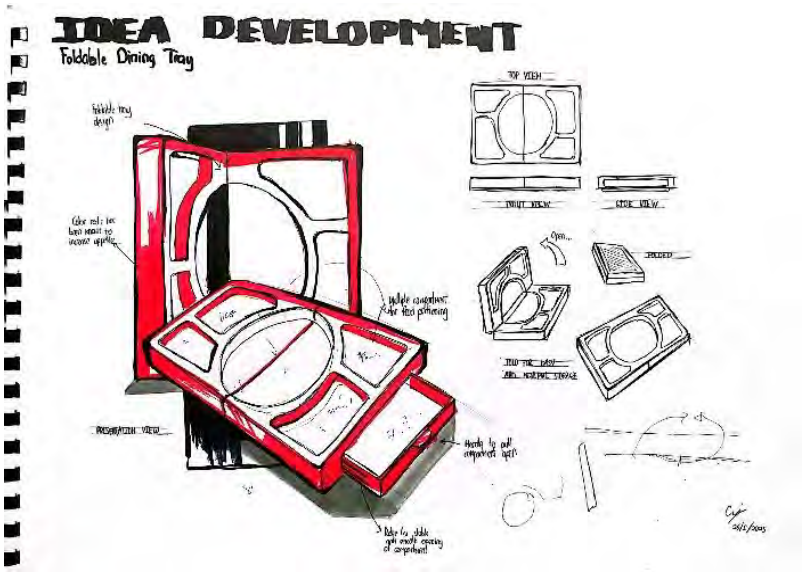

Figure 1.1 One of the early sketches of the dining tray

There is also the matter of hygiene and maintenance in a semi-outdoor dining space where equipment is exposed to moisture and environmental elements, causing mould growth, bacterial contamination, and unpleasant odours with repeated use.

In response, this project introduces ServMate, a thoughtfully designed dining tray tailored for MADAD dining hall users. ServMate addresses the observed issues by incorporating a compact, ergonomic form with side handles for better grip, a cup holder indent for drink stability, and a stackable design for space-saving storage. The tray is produced using an antibacterial PLA composite, a biodegradable material that is anti-mould, antibacterial, and odour-resistant, ensuring durability and hygiene. By reducing reliance on disposable items and enhancing usability, ServMate offers a cost-effective and sustainable solution to simplify communal dining at MADAD.

MATERIALS AND METHODS

Figure 1.2 The picture of final body structure

The ServMate dining tray is produced using an antibacterial PLA composite, a biodegradable and food-safe material enhanced with anti-mould, antibacterial, and odour-resistant properties. This material was chosen for its durability and hygiene, especially suited for MADAD's semi-outdoor dining area where trays are exposed to moisture and frequent handling. The tray is designed with filleted internal edges to prevent dirt accumulation and enable easier cleaning after each use.

ServMate's design integrates features that directly address the challenges observed at MADAD. Side handles on both sides provide a secure, comfortable grip for carrying multiple items. A cup holder indent adds stability for drinks, reducing the risk of spills. The tray's form is also stackable, allowing for organised, space-saving storage when not in use. Its dimensions are refined from standard hospital trays to offer adequate carrying capacity without being bulky or heavy.

In practice, ServMate trays are placed at a designated pickup area where users can easily take one before collecting their meals. Trays are cleaned and restacked at a

designated drop-off location after dining. This simple flow streamlines the user experience while reducing MADAD's dependency on high monthly costs spent on disposable cups and plates, ultimately lowering waste and operational costs. With the right combination of material, thoughtful features, and an efficient usage system, ServMate offers a practical solution tailored for communal dining needs at MADAD.

RESULTS AND DISCUSSION/FINDINGS

The objective of this project was to examine the need for a compact, durable, and hygienic dining tray solution specifically for the MADAD open dining area in Kedah, which serves large crowds during communal events. This research was conducted through direct site observations, user behaviour analyses, and interviews with MADAD staff and volunteers regarding the handling of food service equipment. The insights gathered informed the design of ServMate, a lightweight, stackable tray that improves food-carrying convenience while addressing hygiene and storage concerns.

The research also aimed to validate the design's effectiveness in meeting the functional and operational needs of MADAD dining hall users and staff. Factors such as ease of carrying, beverage stability, stackability for space-saving storage, and ease of cleaning were analysed based on observations and feedback from potential users.

The final ServMate design incorporates features that directly respond to these findings, including side handles for improved grip, a cup holder indent to reduce spills, and a stackable structure for efficient storage. The use of antibacterial PLA composite ensures the trays remain hygienic over repeated use, resisting mould, bacteria, and odours, which is crucial in a semi-outdoor setting like MADAD.

Gathered data showed that an interviewee believed that a dedicated tray system like ServMate can enhance convenience during communal dining and reduce reliance on disposables. This supports the potential for cost savings, improved dining flow, and better hygiene standards within the MADAD operations.

CONCLUSION & RECOMMENDATION

The development of ServMate responds directly to the challenges observed within the MADAD open dining area, where communal dining for large crowds often results in operational inefficiencies, user inconvenience, and recurring costs from disposable tableware. By introducing a compact, lightweight, and hygienic tray, this project offers a practical solution to improve how food and drinks are carried, minimising spills, and reducing the need for multiple trips during meal collection. The integration of features such as side handles, a cup holder indent, stackability, and the use of antibacterial PLA composite material ensures that the product is functional, easy to clean, and suitable for repeated use in a semi-outdoor setting. It is recommended that ServMate be trialled in real dining events at MADAD to gather further user feedback and observe its performance under actual conditions.

This will help validate the design's usability, durability, and overall contribution to reducing disposable waste and operational costs. Additionally, future iterations of the tray could explore alternative materials for enhanced durability or the inclusion of colour-coding systems to assist with tray organisation and food serving processes. If mass-produced, ServMate is proposed to be manufactured in a range of neutral and calming colours, such as slate blue and dark forest green, to better align with MADAD's overall aesthetic and create a more cohesive and pleasant dining environment. Implementing ServMate not only offers a solution tailored to MADAD's specific needs but also presents a scalable concept that could benefit other large-scale communal dining settings facing similar challenges.

Figure 1.3 The picture of Environment (ServMate)

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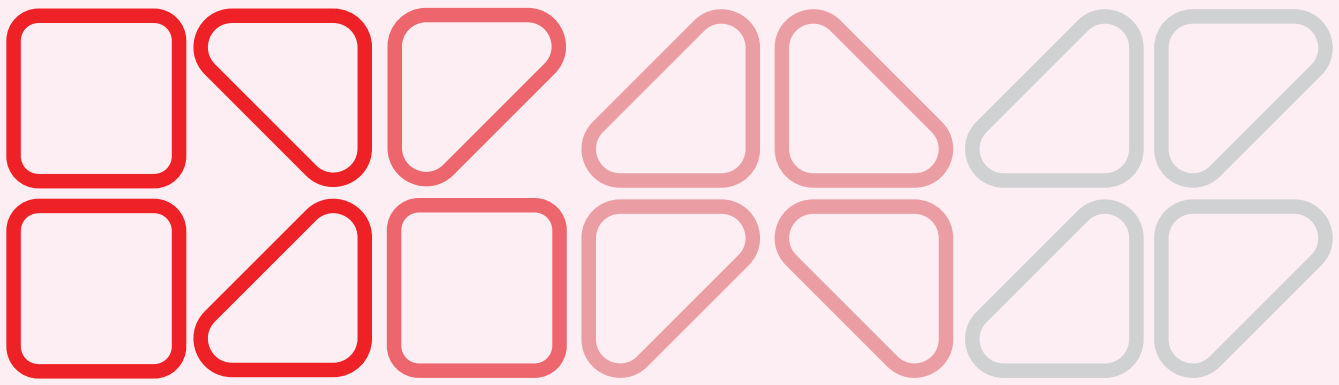

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