

MELAKA
INTERNATIONAL
INTELLECTUAL EXPOSITION

MIIEX'24

12 JUNE '24

Dewan Taming Sari,
Universiti Teknologi MARA Caw. Melaka,
Kampus Alor Gajah, Melaka

*"Empowerment of Special
Needs through Invention
& Innovation"*

**EXTENDED
ABSTRACT**

MiiEX'2024

MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION 2024

**“EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND
INNOVATION”**

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UiTM Cawangan Melaka

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78000 Alor Gajah

Melaka Bandaraya Bersejarah

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MiiEX'2024

MELAKA INTERNATIONAL INTELLECTUAL EXPOSITION 2024

**“EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND
INNOVATION”**

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PUBLISHED BY:

UiTM Cawangan Melaka

KM26 Jalan Lendu,

78000 Alor Gajah

Melaka Bandaraya Bersejarah

Tel: +606-5582094 / 2190 / 2113

eISBN: 978-967-2846-81-9

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INNOVATION, INVENTION, AND DESIGN

FOREWORD BY THE RECTOR OF UiTM CAWANGAN MELAKA



Professor Ts. Dr. Mohd Rasdi bin Zaidi

Rector, Universiti Teknologi MARA (UiTM)

Cawangan Melaka

Welcome to the Melaka International Intellectual Exposition 2024 (MIIEX '24). It is an honour for me, on behalf of UiTM Cawangan Melaka, to thank all of you for joining MIIEX '24. We are proud to inform you that this is the 13th consecutive year that UiTM Cawangan Melaka is organizing this exposition. Since 2009, UiTM Cawangan Melaka has successfully hosted this innovation exposition. Not only have we succeeded in organizing the exposition, but we have also successfully embarked on commercialized products.

2024 is a special year where MIIEX 2024 emphasizes the development of special needs. As we know, special needs indicate a limitation in a person's ability to engage in and benefit from various aspects, such as daily activities and education. Hence, with the theme "Empowering Special Needs Through Invention and Innovation," it is a platform for industries, professionals, academicians, students, and communities to share their innovative ideas and products to increase accessibility for those with special needs.

The successful implementation of MIIEX '24 is our joint success. This event was supported by the Melaka state government through YB Datuk Fairul Nizam bin Roslan, the EXCO of Science, Technology, Innovation, and Digital Communication. I also want to express my

gratitude to Universitas Negeri Padang, Indonesia, Universitas Muhammadiyah, Makassar, Indonesia, the International Association of Economic and Businesses (IAEB), Universiti Sains Islam Malaysia, Ibnu Umami Maktum Research Center (UMMI), USIM, and The Southeast Asia Minister of Education Organization Regional Centre for Special Educational Needs (SEAMEO SEN) as our co-collaborators for MIIEX 2024.

The collaboration from various parties in MIIEX '24 is a platform that will improve cooperation and interweaving among industries, professionals, academicians, students, and communities in shaping their potential in developing innovation products. This exposition also serves as a platform to cultivate and uphold the nation's innovation culture by presenting new ideas and research by young people, especially from academia and universities. Indirectly, MIIEX '24 will encourage all inventors towards empowering Science, Technology, Engineering, and Mathematics (STEM), especially in primary and secondary schools.

The new digital landscape also inspires more innovation and new ideas that contribute to various activities, such as business and industries. As a university that encourages "Research and Innovation," we aim to foster more innovative products that benefit scholars, industries, and communities, addressing issues to improve our present and future life.

This exposition would never happen without dedication, teamwork, and commitment. A round of applause should be given to the committee teams, who are the backbone of this exposition. Their hard work, effort, and time made this exposition possible.

Finally, I would like to conclude this brief remark by thanking all the participants and stakeholders for joining the exposition. We hope that this collaboration never ends here.

Thank you.

FOREWORD BY THE DEPUTY RECTOR (RESEARCH & INDUSTRIAL LINKAGES)



Associate Professor. Dr. Nur Hayati binti Abd Rahman

Deputy Rector (Research & Industrial Linkages), Universiti Teknologi MARA (UiTM) Cawangan Melaka

With much passion and privilege, let me warmly welcome all of you to the Melaka International Innovation Exhibition (MIIEX), UiTM Cawangan Melaka's flagship event. I firmly believe that events such as these demonstrate the gradual evolution of this platform in terms of its significance and its governing principles within the sphere of learning and the broader scholarly society.

The theme for this year, "Empowering Special Needs Through Invention and Innovation," strongly connects to our mission of using research and technology to make a positive impact on the world we live in. Besides enforcing the message of diversity, this theme also reaffirms our focus on creating products to improve the lives of people with disabilities (PWDs). Such innovations are vital as only through focused constructive changes can society become more sensitive to the needs of all members.

MIIEX allows researchers, students, and industry professionals to come together, share their innovative research, and develop viable research partnerships. It has been great to see the enthusiasm of the participants and the efforts they put into their projects, which can offer various social and economic benefits. This is why one can state that MIIEX is a great

opportunity for creating connections between the academic environment and industry, facilitating the implementation of innovative and promising projects.

Finally, I would like to express my sincere appreciation to all the members and supporters of the organizing committee, all the participants, sponsors, and everyone involved in preparing this event. I want to express my gratitude for your commitment and involvement, as the success of MIIEX and the development of an active culture of innovation in our university and beyond is partly owed to your support.

Thank you

FOREWORD BY THE PROJECT DIRECTOR



Dr Zulkefli bin Muhamad Hanapiyah

Senior Lecturer

Assalamualaikum and Warmest Greetings,

It gives me a great pleasure, on behalf of the organizing committee, to welcome all participants and speakers to the Melaka International Intellectual Exposition 2024 (MIIEX '24) with the theme "Empowering Special Needs Through Invention and Innovation." We are honoured and pleased to welcome all participants to this biennial event.

MIIEX '24 is a platform that gathers experts from local and international industries, academia, scientists, researchers, and the community to contribute to the advancement of scientific and technological knowledge. This knowledge helps develop disruptive innovation products that improve daily activities for businesses and the community, especially those with special needs.

MIIEX '24 provides an atmosphere for inventors of all levels to gain new exposure and collaborate. Indirectly, this promotes a collaborative and innovative culture that focuses on cutting-edge technologies and new standards in technology and creativity.

MIIEX '24 is anticipated to serve as an arena for participants to acquire and disseminate revolutionary information on ideas and innovation. It is intended that the competition will expose the contestants' minds to the latest technologies and designs, aligning with the government's goal of encouraging innovation in Malaysia.

Finally, I want to compliment my fellow committee members on their amazing efforts, which were vital to the event's success. In addition, I want to thank our co-organizers, event sponsors, and participants. Optimistically, we hope that all new knowledge discovered, invented, or innovated will lead us toward future sustainability.

Thank you.

FOREWORD BY MELAKA STATE EXCO OF SCIENCE, TECHNOLOGY, INNOVATION AND DIGITAL COMMUNICATIONS



YB Datuk Fairul Nizam bin Roslan

Melaka State Exco of Science, Technology, Innovation and Digital Communications

Welcome to the Melaka International Intellectual Exposition 2024 (MIIEX '24). It is an honor for me, on behalf of UiTM Cawangan Melaka, to thank all of you for joining MIIEX '24. We are proud to inform you that this is the 13th consecutive year that UiTM Cawangan Melaka is organizing this exposition. Since 2009, UiTM Cawangan Melaka has successfully hosted this innovation exposition. Not only have we succeeded in organizing the exposition, but we have also successfully embarked on commercialized products.

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This exposition would never happen without dedication, teamwork, and commitment. A round of applause should be given to the committee teams, who are the backbone of this exposition. Their hard work, effort, and time made this exposition possible.

Finally, I would like to conclude this brief remark by thanking all the participants and stakeholders for joining the exposition. We hope that this collaboration never ends here.

Thank you.

MIIEX'24 ORGANISING COMMITTEE

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	MUHAMMAD FURQAN BIN AZHAR
	KHAIRUL AZHAR BIN LOCHMAN

ABOUT MIIEX'24

MIIEX'24 is an innovation competition annually organised by UiTM Melaka with the intention to bring together ideas and inspiration that could fit in for commercialization needs.

This event creates a platform for researchers to establish networking, partnership and opportunities to collaborate with industries.

OBJECTIVES

1. Encourage and instil passion towards inventing and innovating among UiTM Cawangan Melaka staff, students and academicians of local and international higher education institutions;
2. Highlight distinguished talents of skilful inventors and exhibit intellectual products, inventions and innovations among local and private tertiary institutions, government and private agencies, including international participants;
3. Become an effective Business Matching platform for participating research products, matching industries and partnering government agencies;
4. Recognise, inspire and promote invention and innovation products to be patented and commercialized;
5. Increase passion towards inventing and innovating through research and boost interests of government and non-government agencies to obtain consultancy services from a line up experts of higher education institutions and UiTM Cawangan Melaka.

THEME

‘EMPOWERMENT OF SPECIAL NEEDS THROUGH INVENTION AND INNOVATION’

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Improvising Fogging Machine Design Key Characteristic Through Fundamental Performances

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Abstract

This research delves into dengue prevention efforts in Shah Alam, Malaysia, focusing on community dynamics, awareness, engagement, communication, and stakeholder interactions. Using diverse methodologies, including interviews and data analysis, it reveals gaps in awareness and behaviors related to fogging and dengue prevention. It also examines the role of fogging equipment, considering sustainability and safety concerns. The study proposes a holistic approach emphasizing community-driven initiatives, innovative technologies, and sustainable practices to combat dengue fever effectively. Recommendations include enhancing community engagement, implementing safety protocols, and exploring eco-friendly pesticides.

Keywords: Dengue prevention, Community engagement, Fogging equipment, Environmental sustainability, Community-driven initiatives

1. INTRODUCTION

Diseases transmitted by Aedes mosquitoes, including Dengue, Zika, Chikungunya, and Yellow Fever, represent a significant and evolving global health challenge. The multifactorial nature of their emergence and spread encompasses various interconnected elements such as global trade, international travel, urbanization, water storage practices, and limited resources for intervention (Bharathi & Vinoth Kumar, 2022). These factors contribute to the persistent threat posed by Aedes-borne diseases worldwide, underscoring the importance of comprehensive and collaborative approaches to vector control and disease prevention.

In the context of Malaysia, Dengue fever stands out as a particularly pressing public health issue. The country has grappled with Dengue outbreaks for over a century, with the first reported cases dating back to 1902. Despite concerted efforts to combat the disease, Malaysia

continues to experience significant Dengue transmission, with outbreaks occurring sporadically and impacting various regions across the country (Selvarajoo et al., 2020). Of notable concern is the situation in Selangor, a region characterized by high population density and environmental factors conducive to mosquito breeding, making it a hotspot for Dengue transmission (Deebak et al., 2020).

Understanding the epidemiology and dynamics of Dengue transmission is pivotal for effective control measures. *Aedes* mosquitoes, particularly *Aedes aegypti*, play a central role in Dengue transmission, exhibiting a distinct preference for human hosts and thriving in anthropogenic environments (Powell and Tabachnick, 2013). This species' propensity for urban habitats and close association with human populations heightens the risk of Dengue virus transmission, necessitating targeted interventions to mitigate disease spread (World Health Organization, 2019).

Efforts to combat *Aedes*-borne diseases like Dengue necessitate a multifaceted approach involving vector control, community engagement, and evidence-based interventions, requiring collaboration between national authorities, NGOs, and local communities (World Health Organization, 2019). Tailored strategies informed by scientific evidence are crucial for addressing the complex challenges posed by these diseases. Despite numerous initiatives, including the introduction of fogging machines, aimed at preventing mosquito bites, there is a need to critically evaluate their ergonomic and human factors (World Health Organization, 2020). This study explores the human and ergonomic dimensions of fogging machines, aiming to identify areas for improvement in fostering an environment conducive to effective dengue prevention measures (Manogaran et al., 2020). The assessment reveals managerial deficiencies in strategic direction and operational frameworks, alongside practical shortcomings in the design and functionality of fogging machines, highlighting the need for enhancements to optimize their effectiveness in dengue prevention efforts.

2. OBJECTIVE

The research focuses on three primary objectives. Firstly, it aims to investigate index data within the COMBI team in the Petaling district regarding instruments associated with the fogging machine. This involves analyzing the effectiveness and efficiency of current tools utilized by the team. Secondly, the research seeks to identify any problems or shortcomings with the instruments provided by the Ministry of Health Malaysia for the COMBI team. This investigation aims to pinpoint areas for improvement in the existing equipment. Finally, the study aims to propose a concept for a new instrument related to the fogging machine that is user-friendly and accessible for the COMBI team. This objective aims to enhance the usability and effectiveness of fogging equipment in dengue prevention efforts.

3. NOVELTY & INVENTIVENESS

The research conducted in Malaysia aims to safeguard public health by intercepting and controlling the spread of the dengue virus, particularly in hotspot areas with elevated disease incidence rates (Sipin et al., 2021). Its significance lies in providing new knowledge and insights that have profound implications for stakeholders involved in dengue control efforts. Notably, the research has the potential to catalyze a paradigm shift in community attitudes and behaviors towards dengue prevention and control, empowering individuals to take proactive measures to safeguard their health (Sipin et al., 2021). Additionally, the proactive engagement of the government underscores its commitment to public welfare, with research insights aiding in the formulation of targeted interventions and policies to mitigate the impact of dengue (Sipin et al., 2021). The dissemination of research findings fosters transparency and accountability in public health, enhancing public trust in governmental institutions. Beyond academia, the research benefits governmental agencies and community-based organizations by informing the development of collaborative dengue prevention frameworks, integrating visual communication strategies to foster community engagement and empowerment (Sipin et al., 2021). Through participatory approaches, stakeholders can cultivate solidarity and cohesion, mobilizing communities to combat the threat of dengue fever effectively.

4. PRACTICALITY & USEFULNESS

Community Awareness and Engagement

The research highlights the necessity of enhancing community awareness and engagement to bolster dengue prevention efforts (Selvarajoo et al., 2020). Despite a general acknowledgment of dengue as a public health issue, there's a notable gap in awareness regarding specific preventive measures. Educational interventions tailored to diverse demographic groups are crucial for disseminating accurate information about mosquito breeding sites and the role of programs like COMBI in prevention (Selvarajoo et al., 2020). Implementing such interventions can empower communities to actively participate in prevention strategies, thereby enhancing the practicality and usefulness of dengue control initiatives.

Effectiveness of Communication Strategies

The study underscores the importance of tailoring communication strategies to address diverse demographic needs and preferences (Calabrese et al., 2019). While traditional media channels remain relevant, digital platforms offer new avenues for reaching younger demographics. However, content gaps and disparities in awareness levels necessitate comprehensive and accessible messaging (Calabrese et al., 2019). By leveraging innovative communication channels and addressing content deficiencies, public health authorities can enhance the practicality and usefulness of communication strategies in promoting dengue prevention behaviors.

Utilization of Fogging Equipment

The research sheds light on both the perceived efficacy and challenges associated with fogging equipment in mosquito control efforts (Mendiboure et al., 2019). While fogging machines are widely perceived as effective, concerns regarding occupational health risks, financial constraints, and environmental impact highlight practical limitations (Mendiboure et al., 2019). Addressing these challenges through stringent safety protocols, adequate training, and eco-friendly alternatives can enhance the practicality and usefulness of fogging equipment in dengue prevention initiatives.

5. CONCLUSION

In conclusion, this study sheds light on various facets of dengue prevention and control, offering valuable insights into community awareness, engagement, communication strategies, fogging equipment utilization, and their implications for public health interventions. The findings underscore the importance of targeted educational initiatives and community engagement efforts to enhance awareness of dengue prevention measures and foster active participation in mosquito control activities. Moreover, the study highlights the need for effective communication strategies that leverage digital platforms and interactive tools to disseminate accurate information and promote proactive behavior among community members.

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