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E-PROCEEDING

EXTENDED ABSTRACT

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Welcome Message

RECTOR, UITM KEDAH BRANCH

Assalamualaikum warahmatullahi wabarakatuh,

First and foremost, I would like to extend my deepest appreciation to the organising committee of i-SPIKE 2025 for their steadfast dedication and commitment in making this prestigious event a reality. My heartfelt congratulations to the committee for their tireless efforts in ensuring that i-SPIKE continues to grow as a meaningful and impactful platform for academics, researchers, students, and industry players worldwide.

The theme for this year, “Empowering Minds: Bridging Innovation, Knowledge and Education for a Sustainable Future,” is both timely and significant. It reflects our shared responsibility to not only embrace creativity and technological advancement, but also to ensure that innovation directly contributes to sustainable development, equitable education, and the well-being of future generations.

i-SPIKE 2025 provides a dynamic platform for showcasing innovations that address real-world challenges while opening new avenues for collaboration, engagement, and inclusivity. By bridging knowledge, innovation, and education, this symposium strengthens our collective capacity to design solutions that empower communities and inspire positive change.

I am truly impressed by the diversity and calibre of participants in this year’s event. The projects and ideas presented highlight the extraordinary creativity and determination of our innovators. I am confident that the insights and solutions shared here will pave the way for continuous advancement in teaching, learning, and innovation.

It is my sincere hope that you will find i-SPIKE 2025 an enriching experience, one that sparks new ideas, builds lasting collaborations, and strengthens our shared vision for a sustainable future. To all participants, I wish you every success, and to the winners, my warmest congratulations.

Once again, I thank the organising committee, partners, and contributors for their invaluable support. May i-SPIKE 2025 continue to inspire and empower minds for many years to come.

Professor Dr. Roshima Haji Said
Acting Rector
Universiti Teknologi MARA (UiTM) Kedah Branch

Welcome Message (i-SPIKE 2025 CHAIR)

It is my great pleasure to welcome you to the 4th International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2025 (i-SPIKE 2025). This year's theme, "Empowering Minds: Bridging Innovation, Knowledge, and Education for a Sustainable Future," reflects our collective commitment to advancing innovation and fostering meaningful collaboration across academia, industry, and communities.

i-SPIKE 2025 provides a platform for scholars, researchers, students, and practitioners from diverse fields to showcase their ideas, share knowledge, and inspire new solutions to global challenges. We extend our sincere appreciation to all participants and contributors whose efforts and dedication have made this symposium possible.

We hope that this e-proceedings serves not only as a record of the innovations presented but also as a valuable resource that continues to inspire long after the event.

Thank you.

Dr Junaida Ismail
Chair

4th International Exhibition & Symposium on Productivity, Innovation,
Knowledge, and Education 2025 (i-SPIKE 2025)

PREFACE

The 4th International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education (i-SPIKE 2025) marks yet another milestone in our ongoing commitment to fostering innovation, creativity, and collaboration across disciplines. Guided by this year's theme, "Empowering Minds: Bridging Innovation, Knowledge and Education for a Sustainable Future," the event provides a dynamic platform for students, educators, researchers, and professionals to share their ideas, showcase their innovations, and engage in meaningful knowledge exchange.

This year, we are pleased to report that i-SPIKE 2025 received approximately 50 initial submissions, with more than 35 projects successfully advancing to final presentation and exhibition. These projects reflect a rich diversity of innovation, ranging from educational technologies, digital applications, and gamified learning tools to sustainable materials, cultural heritage preservation, and community-focused solutions. Collectively, they embody the spirit of bridging innovation and education to address pressing societal and global challenges.

We sincerely thank all participants, reviewers, and committee members for their invaluable contributions in making i-SPIKE 2025 a success. It is our hope that this e-proceedings will not only serve as a record of the ideas and innovations presented, but also as an inspiration for future collaborations and advancements in the pursuit of sustainable knowledge and innovation.

Assoc. Prof. Dr. Azlyn Ahmad Zawawi
Editor-in-Chief, i-SPIKE 2025 Proceedings

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CATEGORY 2
SS (ACADEMIC)

RABIES VACCINATION IN SARAWAK: VAXPAW

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ABSTRACT

The Sarawak government has taken various initiatives to control rabies since its outbreak in 2017. Among others, these initiatives include mandatory rabies vaccination, anti-rabies mass vaccination campaigns, mandatory vaccination for cats, exploring new vaccines, and increased enforcement. However, the public response to rabies vaccination has been slow. The Department of Veterinary Services (DVSS) has faced various challenges and resistance, such as the low response of the public to mass vaccination campaigns, opposition from animal rights groups, and uncooperative pet owners. The pet owners confront numerous constraints, such as time, isolated geographical locations, and access to vaccination services. Thus, a more effective approach is required to reduce these challenges. VaxPaw, a mobile application with a rewards system, was created to increase public participation in anti-rabies vaccination compliance.

Keywords: rabies vaccination, public awareness, veterinary services, pet owners, animal rights

INTRODUCTION

The Sarawak government has taken various initiatives to control rabies since its outbreak in 2017. Among others, these initiatives include mandatory rabies vaccination, anti-rabies mass vaccination campaigns, mandatory vaccination for cats, exploring new vaccines, and increased enforcement. In Sarawak, all pet owners must vaccinate their dogs, including cats. All dogs must be vaccinated against rabies once a year, including puppies aged 3 months and above. Any person who fails to vaccinate an animal in compliance with an Anti-Rabies Order shall be liable to a fine not exceeding RM2,500 (Veterinary Public Health Ordinance, 1999). Pet owners can schedule an appointment for their dogs at any government veterinary office during the office hours or during mass vaccination events. The public can also choose to vaccinate their dogs at private clinics, where the cost of vaccination is charged between RM50 and RM100.

The public response to rabies vaccination campaigns has increased but has been slow. The Department of Veterinary Services (DVSS) has faced various challenges and resistance, such as low response of the public to mass vaccination campaigns, opposition from animal rights groups, and uncooperative pet owners. The pet owners confront numerous constraints, such as time, isolated geographical location, and access to vaccination services. Thus, a user-friendly mobile application with a rewards system is required to increase public participation in the anti-rabies vaccination compliance.

The objectives of this project are to: (a) increase the number of rabies vaccinations by pet owners using VaxPaw, (b) increase rabies awareness among communities, and (c) promote a safe living environment. This project is important as rabies control is important for creating a harmonious and healthy community and improving productivity. This project is also in line with the Sustainable Development Goal (SDG) 3: good health and well-being and SDG 11: sustainable cities and communities (UN, 2025).

LITERATURE REVIEW

Rabies is fatal and has become a global public health concern. The World Health Organization (WHO) aims to achieve the global target of zero dog-mediated human rabies deaths by 2030 (FAO et al., 2018), and zero rabies by 2025 in the state of Sarawak, Malaysia (Goh, 2021). Thus, information and communication technology (ICT) is a very powerful tool to attract public participation in controlling and managing rabies. ICT can bridge critical gaps in awareness, surveillance, and healthcare delivery (Ting et al., 2025). Various approaches of ICT are used, especially in developing countries, to educate the public about rabies risks, prevention, and after bites or scratches. For instance, the use of web-based and mobile tools and television in Thailand as one of the communication channels (Thanapongtharm et al., 2025; Worrawattanatam et al., 2025), infographics via social media in Malaysia (Ting et al., 2025), and animal surveillance in China (Zha et al., 2025).

METHODOLOGY

The name of the product is VaxPaw, as illustrated in Figure 1. VaxPaw is a mobile application created for pet owners in Sarawak to arrange yearly rabies vaccinations with government clinics for their pets. VaxPaw aims to increase rabies vaccination rates in Sarawak. Many pet owners do not vaccinate their pets due to various factors such as time constraints, isolated locations, and a low level of awareness. VaxPaw is designed to reward pet owners so that they are motivated to schedule appointments with veterinary departments or clinics for rabies vaccination.



Figure 1. Rabies Vaccination App: VaxPaw

The VaxPaw application is targeted at three primary markets, mainly: (a) primary users: elderly (60+), persons with disabilities (OKU), pregnant women, caregivers, and family, and (b) secondary users: general public/pet owners, and (c) strategic users: government health departments, and private veterinary clinics.

The VaxPaw is a user-friendly application that allows pet owners to access from anywhere and anytime to schedule an appointment. The pet owners can view the scheduled appointments and trace the record of appointments over the years. The details of the VaxPaw screen flows are documented in Figure 2.

Home Page	New User	Booking Details
Rewards	Upload a Photo	Check Accumulated Points



Figure 2. Selected VaxPaw Screen Flows

The pet owners register an account with information about their pets. The pet owners schedule a rabies vaccination appointment by keying in booking details. Pet owners can view their pets' appointment schedules. After the vaccination, pet owners shall upload the photo of vaccination of their pet's vaccination into any social media such as Facebook, YouTube, TikTok, Instagram, and others. Each rabies vaccination will be rewarded with 10 points. The pet owners will be rewarded by complying with the mandatory rabies vaccination based on the points accumulated, which include (a) 10 points: 10% discount on pet food/beverage at selected stores, (b) 20 points: 10% discount on assessment tax, and (c) 30 points: 20% off dog spa at selected stores.

RESULTS AND DISCUSSION

The VaxPaw application is expected to motivate pet owners to vaccinate their pets and thus reduce rabies in Sarawak. The characteristics, development, and maintenance of VaxPaw are documented in four aspects, as follows:

- (1) Novelty and uniqueness: (a) mobile application with a rewards system using accumulated points, (b) user-friendly, and (c) accessible 24/7.
- (2) Benefits to mankind and sustainability: (a) reach larger populations, (b) efficient use of resources, and (c) enhance education and awareness.
- (3) Potential of commercialisation: (a) corporate social responsibility (CSR) sponsorship: partnering with pet food brands, veterinary pharmaceutical companies, and municipal councils; and (b) targeted market or users: pet owners and stakeholders in Sarawak.
- (4) Operation: (a) regulatory: approval, endorsement, validation and partnership with the Department of Veterinary Services Sarawak (DVSS); (b) content: accuracy and compliance, and compliance with the Personal Data Protection Act 2010; and (c) milestones (six months): Pilot test in selected districts, launching and promotion of the application via government and social media.

CONCLUSION

VaxPaw is a mobile application created for pet owners in Sarawak to arrange yearly rabies vaccinations at government clinics for their pets. Pet owners are rewarded for complying with the mandatory rabies vaccination through a points system. With corporate social responsibility sponsorship, VaxPaw has strong commercial potential and is expected to increase rabies vaccination rates in Sarawak.

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