E-BOOK OF EXTENDED ABSTRACT

THE 14TH INTERNATIONAL INVENTION, INNOVATION & DESIGN COMPETITION 2025

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THE SKY REMEMBERS: WAU CENDERAWASIH BOT AWAKENS THE SPIRIT OF PAHANG

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ABSTRACT

The Wau Cenderawasih, a traditional Malaysian kite from Pahang, has fallen into obscurity despite its rich cultural and historical significance. In response, the CenderaWauBot—a rule-based conversational AI system—was developed to digitally preserve and promote this vanishing tradition. The chatbot delivers interactive storytelling, educational content, and cultural insight through dual-gender personas tailored to user demographics. Integrated into social media and web platforms, CenderaWauBot provides real-time engagement, quizzes, and visual prompts to spark curiosity and appreciation for Wau Cenderawasih. The system also supports artisans by sharing authentic crafting processes and historical narratives, aiming to reignite pride in Pahang's intangible heritage. This innovation bridges culture and technology, ensuring that the skies of Pahang never forget.

Keywords: Conversational AI, Cultural Preservation, Wau Cenderawasih, Chatbot, Heritage Technology

1. INTRODUCTION

Malaysia's traditional arts, especially kite-making, have long enriched the nation's cultural landscape. Yet, lesser known *waus* such as the Wau Cenderawasih from Pekan, Pahang, are facing extinction due to rapid modernisation, lack of documentation, and generational disconnect. Unlike the iconic Wau Bulan, the Wau Cenderawasih has faded from public knowledge, despite its royal heritage—once flown by young princes of the Pahang palace and used as territorial markers by Malay sultans to signify sovereign land ownership.

Historically, *wau*-making was not just an art, but a form of sustainable creativity and engineering. Men who worked in vast paddy fields would build *wau* during the waiting period between planting and harvest. These kites were crafted from local, eco-friendly materials such as *nibong*, bamboo, and crepe paper—each chosen based on local availability and environmental wisdom. Beyond artistry, crafting a *wau* required practical mathematical skills to ensure balance and aerodynamics, making it a brilliant confluence of STEM and culture long before the terms existed.

Notably, Wau Cenderawasih is unique for having gendered forms—a male version (Cenderawasih) and a female counterpart (Pungguk)—possibly inspired by the duality found in bird species. Its vibrant colors reflect the birds of paradise that soar across Malaysian skies, and its distinctive hum in the wind carries echoes of forgotten folklore.

Despite advancements in AI and digital preservation, Malay cultural elements are at risk of being misattributed to neighboring countries like Indonesia, especially when documentation is scarce. As Kasinathan et al. (2024) stated, "Using chatbots to teach lost culture in Malaysia will be setting a trend globally, as such ideas have yet to be deeply explored."

This project answers that call by introducing CenderaWauBot, a rule-based chatbot powered by AI, dedicated to preserving the legacy of Wau Cenderawasih. By digitising oral stories, technical knowledge, and cultural expressions, this chatbot acts as a modern-day storyteller, ensuring the skies—and the stories they once held—are never forgotten.

2. METHODOLOGY

The Wau Cenderawasih chatbot is a rule-based conversational system deployed on a Wix website and integrated into social media platforms to maximise accessibility and cultural outreach. Designed with engaging graphics and vibrant visuals, the chatbot aims to reignite interest in traditional kite-flying, particularly the Wau Cenderawasih, by reintroducing it to younger generations through digital interaction. It uses keyword detection to provide responses from a predefined knowledge base and features a user-friendly main menu. Users can explore various sections, including History and Facts, Materials Used, Custom Question responses, and a 10-question quiz. JavaScript functions are embedded to enhance personalisation and interactivity.

The chatbot offers multiple engagement paths designed to enrich user interaction, including historical facts, quiz games, custom Q&A, and culturally themed greetings that adapt based on the user's gender and age. Core functionalities include keyword-triggered responses that tailor answers to user inputs, as well as gender-based avatar presentations with dynamic visual elements such as football emojis for male users. Additionally, the chatbot delivers age-personalised greetings and culturally relevant prompts to enhance relatability. Interactive quizzes are further supported by visual feedback mechanisms like confetti bursts and emoji logic. Due to the limitations of this extended abstract format, several other advanced interactive features and design elements are not detailed here but are integral to the full chatbot experience.

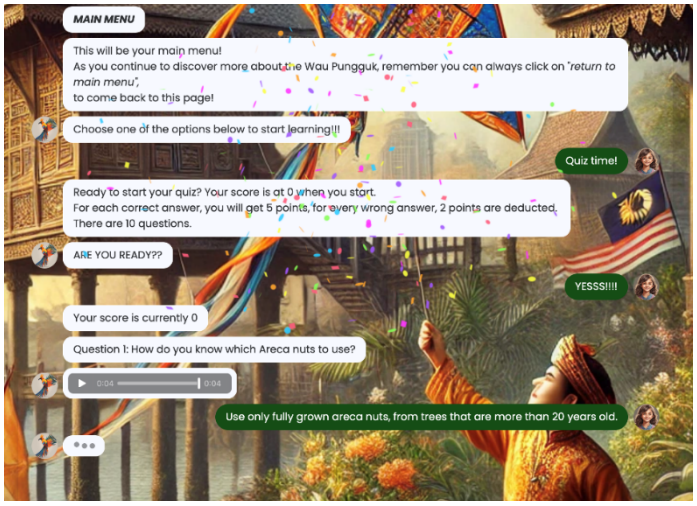

Figure 1 Shows the interface of the bot

Followed by Figure 2 shows some of the important features of the *cenderabot*. CenderaWauBot" incorporates gender-based customisation to create a more personalised and relatable experience. Based on user input, the chatbot dynamically adjusts its visual and conversational tone. For instance, when a user selects a male gender, a football emoji appears along with a male-themed greeting and avatar styling. This feature was implemented using JavaScript pop-up logic and enhances engagement by tailoring the chatbot's responses to suit the user's identity. Such personalisation adds an emotional connection between the user and the bot, making the interaction feel culturally relevant, inclusive, and enjoyable across various demographics and learning levels.

Figure 2 Shows the male football and shows the flower interactive for the users to feel special

3. FINDINGS

A User Acceptance Testing (UAT) was conducted with 34 participants across various age groups to assess the effectiveness, appeal, and educational value of CenderaWauBot. During the final development phase, participants interacted with the chatbot and completed a Google Form survey containing five Likert-scale questions. The survey measured perceptions of usability, avatar design, cultural relevance, and engagement. Results showed that over 94% of participants agreed or strongly agreed that the chatbot was intuitive, informative, and enjoyable. The personalised avatar feature, CenderaWings, was especially well-received, enhancing user engagement through age and gender-specific responses. Additionally, the quizzes and time-based greetings contributed to a sense of interactivity and personalisation. This user feedback validated the design decisions and confirmed that CenderaWauBot successfully met its goal of delivering a culturally rich and educational digital experience. The UAT also demonstrated the potential for integrating such tools into broader educational or tourism platforms to preserve intangible heritage in engaging ways.

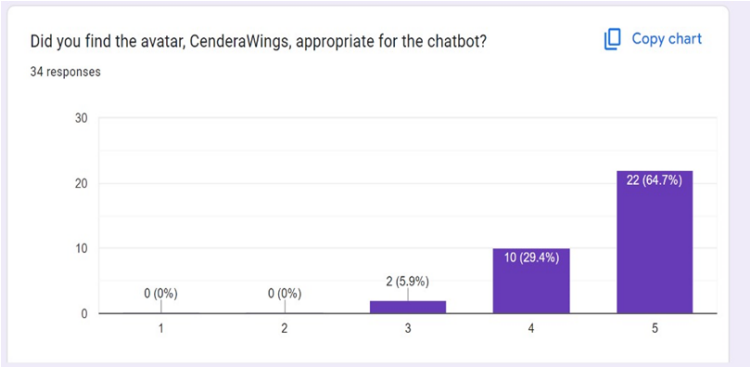

Figure 3 User Satisfaction Level with CenderaWauBot Features

This question assessed the suitability of the "CenderaWings" avatar as the chatbot's visual guide. A significant majority of respondents—29.4% agreed and 64.7% strongly agreed—felt that the avatar was appropriate for presenting Wau Pungguk content. Only 5.9% were neutral, and none disagreed. The avatar's colorful, majestic design ties in with traditional Malaysian kite aesthetics, enhancing user

engagement and cultural relevance. As a visual entry point to the chatbot, "CenderaWings" successfully embodies the spirit of Wau Cenderawasih. Future improvements may include adding interactive animations and responses to create an even more immersive and personalised user experience.

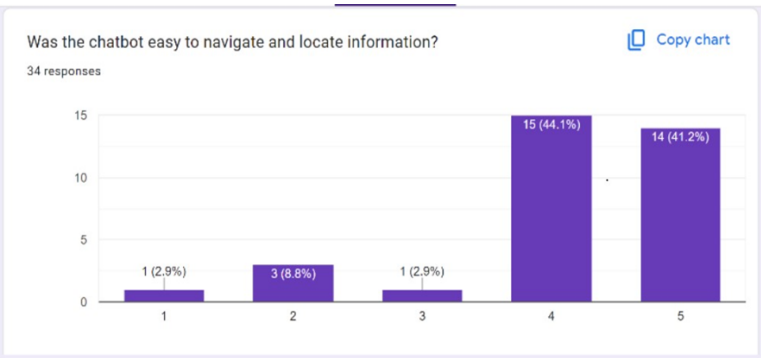

Figure 4 User Engagement Preference: Quiz, History, or Visuals

This question evaluated how easily users could navigate "CenderaWauBot" to find relevant cultural information. Responses were largely positive, with 44.1% agreeing and 41.2% strongly agreeing that the chatbot's navigation was intuitive and accessible. Only 8.8% remained neutral, and 2.9% found the experience slightly challenging. These results highlight that the chatbot's layout and question flows were generally effective in guiding users through information about Wau Cenderawasih. To improve further, the chatbot could benefit from more visual cues, tooltips, or conversational hints to assist first-time users. These refinements can increase accessibility and ensure a consistently smooth user experience across demographics.

4. CONCLUSION

The CenderaWauBot represents a powerful convergence of tradition and technology. By transforming a nearly forgotten kite into a vibrant digital experience, it fosters cultural curiosity and heritage pride. This chatbot is not just a tool but a living archive, ensuring that Pahang's skies continue to carry stories, even in the digital age. Future developments include multilingual support, integration into school curricula, and collaboration with tourism boards. Ultimately, CenderaWauBot proves that conversational AI can be a meaningful agent for cultural conservation and educational outreach.

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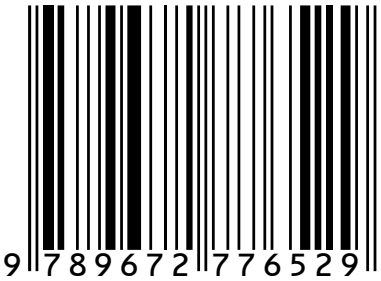

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