

DEVELOPMENT OF EFLORACYNTOK FOR THE CONSERVATION AND RESEARCH OF HERBAL PLANTS AT UNIVERSITI UTARA MALAYSIA

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ABSTRACT

Herbal plants are treasured for their aesthetic and medicinal benefits, yet public awareness and engagement with these resources remain limited. Currently, herbal plant information is managed manually using Microsoft Excel, presenting challenges in data organization and accessibility. To address this, Universiti Utara Malaysia (UUM) developed eFloraCyntok, a Digital Botanical Repository designed to improve data storage and management while conserving and studying UUM's herbal plant garden. Built through systematic stages of requirements analysis, database structuring, and interface design, eFloraCyntok offers a user-friendly, scalable resource that bridges the gap between UUM's physical garden and a broader audience. The platform provides accessible, detailed information on various plants—including botanical descriptions, medicinal uses, and ecological data—alongside high-resolution images. An advanced search function enhances usability, making navigation and information retrieval straightforward. Usability testing of the platform yielded positive feedback on effectiveness and engagement but revealed issues in efficiency, error tolerance, and ease of learning, indicating a need for enhancements in speed, intuitive design, and user guidance. Through these improvements, eFloraCyntok aims to foster a deeper connection to UUM's herbal resources, benefiting both conservation efforts and public health initiatives.

Keywords: Herbal plants, Digital repository, Botanical conservation, Knowledge dissemination, Academic engagement.

INTRODUCTION

Herbal plants offer both aesthetic and medicinal benefits, yet their value remains largely underrecognized. To address this, Universiti Utara Malaysia (UUM) developed eFloraCyntok, a Digital Botanical Repository aimed at improving data management and making information about these plants accessible to a wider audience, bridging the gap between UUM's herbal garden and digital users.

The repository provides detailed plant profiles with botanical descriptions, medicinal uses, and ecological information, along with high-resolution images to support learning and exploration. An advanced search function makes navigation and information retrieval straightforward. The development process included stages such as requirement analysis, database design, and interface design to ensure a user-friendly and scalable platform (Geetha et al., 2016; Verma & Kumar, 2018).

By making information on herbal plants easily accessible, eFloraCyntok encourages knowledge sharing and academic engagement (Mohd-Nawi et al., 2023). It supports conservation efforts, research, and educational initiatives, drawing interest from UUM's academic community and beyond. This platform demonstrates how technology can aid in

botanical conservation, supporting environmental sustainability and public health (Hisanie-Muhamad et al., 2021; Mohanlal & Krishnaswami, 2017).

OBJECTIVES

This study aims to develop a Digital Botanical Repository called eFloraCyntok to conserve and promote Universiti Utara Malaysia's herbal plant garden. The repository offers comprehensive data management and accessible information on botanical collection, featuring detailed plant profiles with botanical descriptions, medicinal properties, and ecological data. Additionally, the platform seeks to boost user engagement through an advanced search function, supporting conservation efforts, facilitating academic research, and fostering educational initiatives around herbal plants.

METHODOLOGY

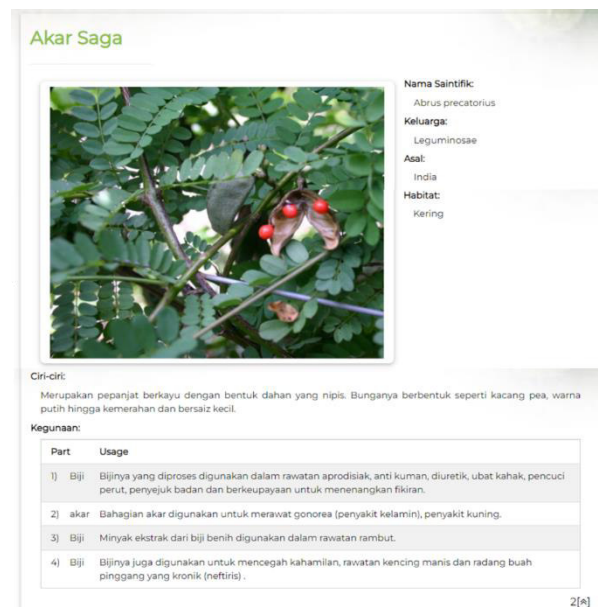
The development of the eFloraCyntok involved several key steps. First, a requirement analysis was conducted to identify the needs of potential users and the specific features that the repository should include (Che-Mohd-Sakri and Ishak, 2024). Next, the database was designed to efficiently store extensive botanical information and high-resolution images. Following this, the interface was designed to be user-friendly and scalable, ensuring users could interact with the repository seamlessly. Finally, the database was integrated with the interface, and the advanced search function was implemented to ensure effective operation and easy navigation. Usability testing was conducted based on the Website Analysis and Measurement Inventory (WAMMI) to evaluate the user experience and ensure the repository met high standards of usability. Figure 1 shows an example of the repository interfaces.



(a) Search facility



(b) Search results



(c) Herbal plant information

Figure 1. Example of the eFloraCyntok interfaces

RESULTS AND DISCUSSION

Usability testing of eFloraCyntok revealed a mix of user experiences across five metrics: Effectiveness, Efficiency, Engagement, Error tolerance, and Ease of learning. Users generally found the website effective, rating it 3.78, as it presented information in a way that made content search easy and organized. However, some users expressed confusion over the

availability of certain content, indicating that more clarity on content location and accessibility could improve user confidence and satisfaction in using the site.

Engagement received the highest score, with users giving it a 3.94, showing strong interest in the website’s content and visual appeal. Users reported that the layout and visuals of eFloraCyntok effectively drew their attention and maintained their interest. Despite this, some users noted frustrations with usability and time spent navigating, suggesting that while the design was appealing, it could benefit from adjustments to make interactions more intuitive and reduce time inefficiencies. This feedback points to the need for refinements in design that would balance visual engagement with ease of navigation.

Error tolerance and Ease of learning were areas that received lower scores, highlighting specific usability challenges. Error tolerance scored 3.56, reflecting difficulties some users faced with maintaining their navigation flow and remembering their location within the site, which affected their ability to interact smoothly. Ease of learning received the lowest rating at 3.43, with users indicating that additional introductory explanations and guidance could enhance their overall experience. Although most users found the site initially accessible and the content easy to understand, suggestions for clearer onboarding elements and user support indicate areas where eFloraCyntok could improve to foster a more seamless learning curve and better support new users.

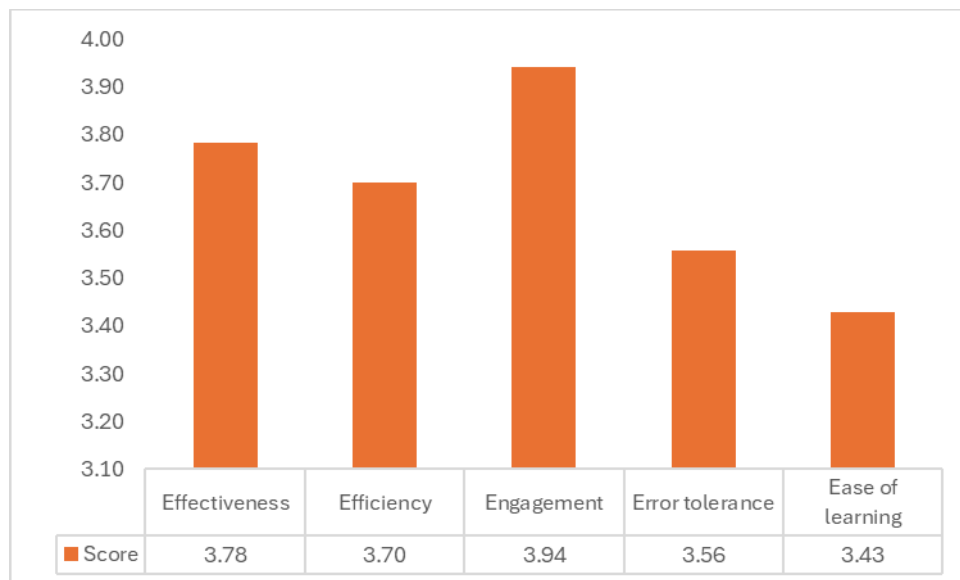


Figure 2. Average Score

CONCLUSION

The development of eFloraCyntok marks a major step forward in the conservation and study of herbal plants. With its detailed plant profiles and advanced search function, the repository enhances accessibility and user engagement, effectively bridging the gap between the physical garden and digital users. Usability testing, however, highlighted areas needing improvement. While users find the website generally effective and engaging, issues with efficiency, error tolerance, and ease of learning impact the overall experience. Addressing these concerns is crucial for enhancing usability and increasing user satisfaction, ultimately supporting conservation efforts, academic research, and educational initiatives.

To further enrich eFloraCyntok, several enhancements could be considered. Interactive educational tools, such as virtual tours and augmented reality features, would provide a more immersive learning experience, helping users connect with the content in new ways. Expanding the repository to allow user-generated content, like personal stories and experiences with herbal plants, could diversify

the content while fostering a sense of community. Adding multilingual support would increase accessibility, encouraging a broader, global audience to explore and appreciate the botanical garden.

Continued collaboration with other botanical institutions could bring additional resources and information to eFloraCyntok, making it a more comprehensive reference. Regular updates based on user feedback will ensure the platform remains responsive to user needs and technological advances. By focusing on these improvements, eFloraCyntok can continue evolving as a valuable resource for conservation, research, and education, furthering environmental sustainability and promoting public health.

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