Phās′ā Melayu: A Mobile Language Learning Application for Thai Students

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ABSTRACT

The rapid advancement of global technology has transformed educational practices, shifting from computer-assisted to mobile-assisted language learning (MALL). Mobile learning (M-learning) provides students with flexible access to information, free from temporal and spatial constraints, thereby fostering a more conducive and autonomous learning environment. This study focuses on the development of the PHĀS′Ā MELAYU mobile application to support Thai students in learning Malay as a foreign language in Malaysia. The application was designed according to the ADDIE instructional design model, ensuring a systematic process of analysis, design, development, implementation, and evaluation. It was developed using Articulate Storyline software, which integrates with the Android Application Package (APK) format to guarantee compatibility with Android systems. The findings indicate that the application successfully meets the language learning needs of Thai students, serving as both a reference and a practice tool. The study highlights the potential of PHĀS′Ā MELAYU as a practical M-learning resource for foreign language education in multilingual contexts.

Keywords: mobile learning (m-learning), instructional design, Malay as a foreign language, ADDIE model, Thai students

INTRODUCTION

The integration of technology into education has continuously shaped how knowledge is delivered and acquired. Over the past decades, teaching and learning practices have shifted from Computer-Assisted Language Learning (CALL) to Mobile-Assisted Language Learning (MALL). This shift reflects the increasing ubiquity of mobile devices, which provide learners with portable, user-friendly platforms to access content at any time and from anywhere (Sen, 2021). Within the field of language education, mobile learning (M-learning) has been recognised as a powerful approach to enhance learner autonomy, promote motivation, and foster engagement through interactive and innovative methods (Mohsen et. al, 2025; Kasemsap, 2017). In multilingual contexts such as Malaysia, where multiple languages are used for communication and instruction, mobile learning offers additional opportunities to support foreign language learners.

The integration of mobile technology into language education has revolutionised how learners access and engage with new languages, particularly in multilingual contexts like Malaysia. M-learning offers flexibility, autonomy, and innovative pedagogical approaches, making it especially valuable for foreign language learners such as Thai students studying Malay. Research consistently demonstrates that mobile applications can enhance language acquisition, motivation, and engagement, provided they are designed with sound instructional models like ADDIE and tailored to user needs (Samsudin et al., 2021; Zakaria & Nawi, 2020; Muslimin et al., 2017; Prasetyo et al., 2020; Muliyana et al., 2024). Studies highlight the importance of user-centred design, interactive features, and contextually relevant content for practical language learning applications (Zakaria et al., 2020; Falode et al., 2022; Muliyana et al., 2024). The PHĀS′Ā MELAYU application, developed using the ADDIE model and Articulate Storyline, aligns with these best practices and addresses a significant gap in resources for non-native Malay learners, particularly Thai students.

In Malaysia, Malay language courses are mandatory for international students enrolled in private universities. This requirement is linked to the restructuring of compulsory courses by the Ministry of Higher Education, which has emphasised General Studies modules (*Mata Pelajaran Umum)* covering history, culture and society of Malaysia. As part of this curricular structure, international students are required to take Malay Language Communication 1 at the diploma level and Malay Language Communication 2 at the degree level. While these courses are crucial for equipping foreign students with basic communication skills, the time allocated for learning within the classroom is limited. Consequently, many students struggle to achieve communicative competence in Malay due to restricted exposure and limited access to supplementary learning resources.

The problem is particularly evident among Thai students in Malaysia, who learn Malay as a foreign language under tight time constraints. Foreign students frequently report that their Malay language learning is confined to formal classroom settings, which limits their exposure to the language in real-life contexts. This lack of immersion and practice opportunities is a significant barrier to language acquisition and communicative competence (Ngadiron et al., 2020; Shawai et al., 2022). Butterworth (2004) has argued that education often prioritises teaching methods rather than the actual learning processes. This observation resonates in the context of Malay language learning, where foreign students face challenges due to insufficient reference materials, limited practice opportunities, and a lack of interactive resources. These gaps hinder their ability to communicate effectively with local speakers, thereby reducing the overall impact of their educational experience in Malaysia.

Addressing this gap requires the integration of mobile learning platforms that can extend learning beyond the classroom and align with Malaysia's vision of advancing education through information and communication technology (ICT). Malaysia's education policy, as outlined in the Malaysia Education Blueprint and related initiatives, emphasises the integration of ICT and digital platforms to enhance education quality and accessibility. Research highlights that mobile learning aligns with these national goals by fostering flexible, student-centred learning and supporting the country's push toward digital transformation in higher education. The absence of effective digital platforms risks slowing national efforts to promote education quality and undermining broader policy goals (Che Mustaffa & Sailin, 2022). A well-designed mobile learning application supports Malaysia's educational goals by providing international students with flexible, interactive, and practical opportunities that extend beyond traditional classrooms.

In response to these challenges, this study introduces the PHĀS′Ā MELAYU mobile learning application, developed specifically to support Thai students in learning Malay as a foreign language. The application was designed using the ADDIE instructional design model, ensuring a systematic process of analysis, design, development, implementation, and evaluation. Built on the Articulate Storyline platform and delivered in Android Application Package (APK) format, PHĀS′Ā MELAYU offers flexible and accessible learning opportunities that address students' limited exposure time and restricted resources. Therefore, this study aims to design and evaluate the PHĀS′Ā MELAYU mobile learning application as an innovative solution to support Thai students in learning Malay as a foreign language. The following section reviews key literature on m-learning, the use of instructional design models such as ADDIE, and the previous studies on learning Malay as a foreign language.

LITERATURE REVIEW

Mobile learning applications for Malay language acquisition among foreign students in Malaysia have demonstrated positive impacts on motivation, engagement, and language skills, particularly when grounded in systematic instructional design models, such as ADDIE, and evaluated for usability within the local context. The integration of m-learning applications into Malay language education for foreign students in Malaysia has gained momentum in recent years, driven by the need for flexible, accessible, and practical tools to support foreign learners. Studies consistently highlight the potential of mobile applications to enhance language performance and learners' motivation, especially for non-native speakers who often face limited opportunities for practice outside the classroom (Sung et al., 2020; Mortazavi et al., 2021). By leveraging the flexibility and accessibility of mobile technologies, these applications provide interactive and self-paced learning experiences that extend learning beyond formal classroom settings. However, Osman and Abdul Rabu (2022) note that the availability of high-quality and interactive Malay language applications tailored to the needs of foreign learners remains limited, with most existing resources designed primarily for local or elementary-level students.

The development of such applications often adopts established instructional design models, with ADDIE being one of the most widely used frameworks to ensure pedagogical rigour and responsiveness to learner needs (Mohamad Haris & Ariffin, 2021). Research in the Malaysian context emphasises the value of usability studies, which highlight the importance of user-centred design and iterative development processes. For example, Abdul Razak & Senan (2022) developed an augmented reality (AR)-based Malay sign language application and instructional modules that successfully applied the ADDIE model, resulting in improved learning outcomes and strong usability ratings. Similarly, studies demonstrate that well-designed applications contribute to positive learning experiences and high levels of user satisfaction. However, challenges remain in tailoring content and features to address the specific needs of international learners (Hwang & Fu, 2018).

The ADDIE model, comprising five phases, namely analysis, design, development, implementation and evaluation, has played a central role in guiding the systematic creation of language learning applications. Originally developed as an instructional systems design framework by the U.S. military in the 1970s, the model has since evolved and been widely adopted by scholars and practitioners across educational contexts (Branch, 2009). It is a structured approach that enables developers to align pedagogical objectives with technological features, ensuring that learning materials are both engaging and educationally sound. Numerous studies confirm that the systematic application of the ADDIE model in language learning application development enhances learner engagement, satisfaction, and acquisition of target language skills (Abdul Razak & Senan, 2022).

Kurt (2018) states that each phase of the ADDIE process is iterative and subject to revision, creating a streamlined and flexible development pathway that allows for continuous refinement. In the analysis phase, learner needs, cultural factors, and contextual challenges are identified, which are essential considerations in foreign language education. The design and development stages then focus on creating interactive, multimedia-rich tasks that facilitate practice, feedback, and retention, while revisions ensure alignment with learning objectives. The implementation phase emphasises usability and accessibility, integrating applications seamlessly into learners' routines, while the evaluation phase provides opportunities for systematic review, user feedback, and continuous improvement (see Figure 1).

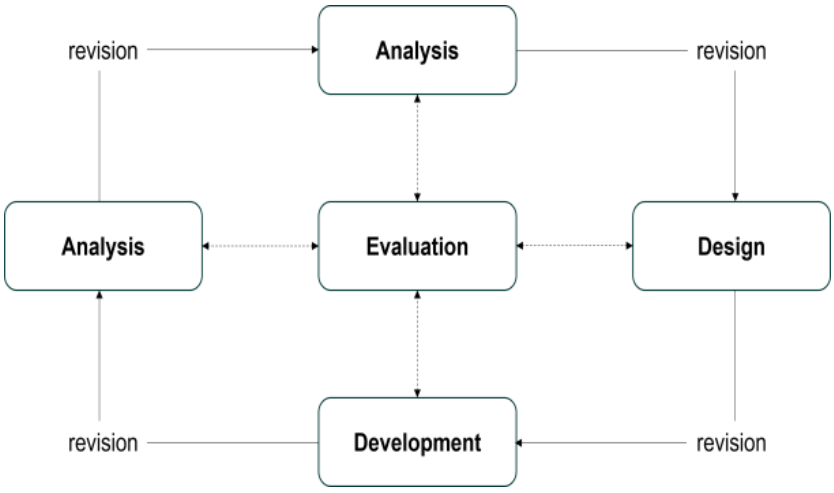

Figure 1 ADDIE model (Kurt, 2017)

While the ADDIE model provides a structured framework for ensuring pedagogical rigour, the long-term effectiveness of mobile learning applications ultimately depends on their usability, which determines how learners interact with and experience the technology in authentic contexts. Usability has been identified as a critical factor influencing the success of m-learning applications, as it directly shapes learner satisfaction, engagement, and sustained use. In the Malaysian context, studies have employed diverse evaluation methods, including the System Usability Scale (SUS), think-aloud protocols, and user experience surveys, to assess layout, design, functionality, and overall user satisfaction. Findings consistently show that well-designed applications are easy to navigate, foster positive learning experiences, and enhance learner engagement (Omar et. al, 2021). For example, the KTBM AR application achieved a 94% acceptability rating on the SUS, while *RakanBM* received high ratings for learning outcomes, effectiveness, and user satisfaction (Suwadi et.al, 2021; Abdul Razak & Senan, 2022). Despite these encouraging results, challenges remain in creating more visually appealing

interfaces, ensuring comprehensive content coverage, and incorporating features that specifically address the needs of foreign students learning Malay, especially for Thai students.

METHODOLOGY

This study employed the ADDIE instructional design model, comprising analysis, design, development, implementation, and evaluation, as the guiding framework for creating the PHĀS′Ā MELAYU mobile learning application. The ADDIE model was selected for its systematic approach to aligning pedagogical objectives with technological features while allowing for iterative revisions at each stage. In the design and development phases, rich multimedia and interactive content were incorporated, including images, audio, animations, and quizzes, to create an engaging and learner-centred experience. The learning objectives and topics included in this m-learning application are adapted from the first unit of "*Bertutur dengan Fasih: Speak Malay Fluently"* (Ardi, 2009). The outline of the learning module of the PHĀS′Ā MELAYU application is shown in Figure 2. This emphasis on interactivity was significant for supporting the communicative and practice-oriented needs of Thai students learning Malay as a foreign language. The implementation and evaluation stages provided opportunities to test usability, accessibility, and learner satisfaction, ensuring that the application was both practical and user-friendly.

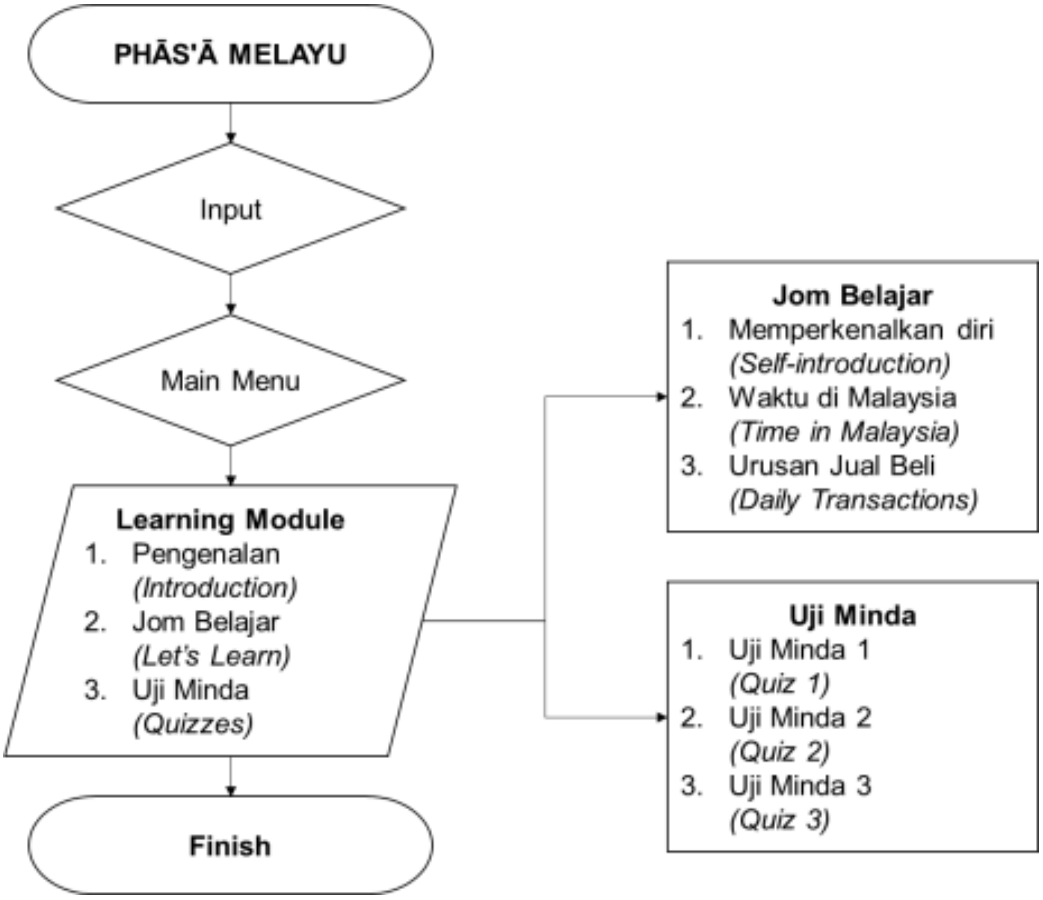

Figure 2 Flowchart of PHĀS′Ā MELAYU application

The development of the PHĀS′Ā MELAYU application was further informed by three complementary learning theories: foreign language acquisition theory, behaviourism, and cognitivism learning theory. Foreign language acquisition theory emphasises meaningful exposure, practice, and contextual use of the target language, which guided the integration of authentic Malay dialogues and scenarios (Broad, 2020). Behaviourist principles, such as reinforcement and repetition, were embedded through drills, quizzes, and instant feedback to encourage mastery (Muhammad & Ashadi, 2019). Devaki (2021) mentioned that cognitive theory contributed to the structuring of content and tasks, ensuring that learners could process, store, and retrieve new knowledge effectively. Together, these theories supported the design of an application that promotes active engagement, skill reinforcement, and gradual progression in Malay language learning.

The project utilised a range of digital tools to support content creation and technical development. Articulate Storyline 3 (see Figure 3) served as the primary platform for building the interactive learning modules, enabling the integration of multimedia elements such as audio narration, animations, and branching scenarios. Adobe Photoshop was employed for graphic editing, while InShot and WaveEditor were used for video and audio processing to ensure clarity and quality. Finally, APK Builder was used to package the application into the Android Application Package (APK) format, ensuring compatibility with Android devices and allowing seamless installation by learners. The combination of these tools provided a robust and versatile workflow for developing a professional and interactive learning application.

Figure 3 Example of interactive content development using Articulate Storyline 3

Pilot testing of the application was conducted with a group of 19 Thai students studying Malay in Malaysia to evaluate usability and learner satisfaction. A post-study usability questionnaire was administered, based on the Post-Study System Usability Questionnaire (PSSUQ) developed by Sauro and Lewis (2012). The instrument employed a five-point Likert scale to capture participants' perceptions of layout, design, functionality, and ease of use. This summative evaluation provided critical insights into user experience, enabling the identification of strengths and areas for improvement. The findings from this pilot study formed the basis for the application's iterative refinement and validated its potential as an effective mobile learning tool for foreign language acquisition.

FINDINGS AND DISCUSSION

This section presents the findings of the study based on its two research objectives. The first objective focuses on the development of the PHĀS′Ā MELAYU mobile learning application as the product, while the second objective examines its usability through feedback gathered from 19 Thai students. The findings are organised according to these objectives to provide a clear overview of both the development process and the effectiveness of the application in supporting Malay language learning.

Development of PHĀS′Ā MELAYU Mobile Application

The PHĀS′Ā MELAYU mobile learning application was successfully developed as an interactive learning tool to support Thai students in acquiring Malay as a foreign language. The design followed the ADDIE model and emphasised multimedia integration to create an engaging and user-friendly interface. The main menu (see Figure 4) presents three core modules: *Pengenalan* (Introduction), *Jom Belajar* (Let's Learn), and *Uji Minda* (Quiz), which together provide a structured pathway for language learning. The design features vibrant illustrations with

a character wearing the traditional Malay costume *(baju kurung)*, reflecting authentic cultural identity, while simple navigation buttons ensure accessibility for novice learners and sustain motivation through visually appealing content.

Figure 4 Main menu of PHĀS′Ā MELAYU

The learning module *Jom Belajar* incorporates character-based dialogues to introduce learners to basic conversational Malay. For example, one of the introductory activities (see Figure 5) allows learners to interact with animated characters exchanging greetings and self-introductions, with the option for students to input their own names. This personalisation promotes learner engagement while reinforcing essential communicative expressions such as greetings and self-identification. The use of visual prompts, text bubbles, and voice narration reflects the integration of multimodal input, consistent with principles of foreign language acquisition and m-learning design.

Figure 5 Example of interactive learning content in PHĀS′Ā MELAYU application

The application also incorporates assessment features through the *Uji Minda* (Quiz) module (see Figure 6), which provides interactive quizzes to evaluate learner understanding. The quizzes are presented in a multiple-choice format, enabling immediate feedback and reinforcing key language functions such as greetings, expressions of thanks, and basic conversational routines. These evaluation activities not only measure comprehension but also serve as formative learning tools, encouraging learners to revisit and strengthen content areas where errors occur.

By combining structured learning modules with interactive exercises, PHĀS′Ā MELAYU demonstrates how mobile applications can extend classroom-based learning into more flexible, self-directed contexts.

Figure 6 Example of a quiz in the PHĀS′Ā MELAYU application

Having established the development features and instructional design of the PHĀS′Ā MELAYU application, the following section presents findings on its usability, based on feedback collected from 19 Thai students

Usability Evaluation of PHĀS′Ā MELAYU Mobile Application

The usability of the PHĀS′Ā MELAYU mobile application was evaluated using a post-study questionnaire adapted from the *Post-Study System Usability Questionnaire (PSSUQ)* (Sauro & Lewis, 2012). Nineteen Thai students responded using a five-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" *(5)*. The first section of evaluation (Questions 1-6) focused on multimedia display aspects, including interface design, text clarity, character design, audio quality, colour schemes, and video/animation functionality. Meanwhile, the second section (Questions 7-11) focused on the students' perceptions of the usability of the mobile application. Overall, the findings indicate that most respondents provided positive feedback, suggesting that the application achieved a high level of usability and learner acceptance.

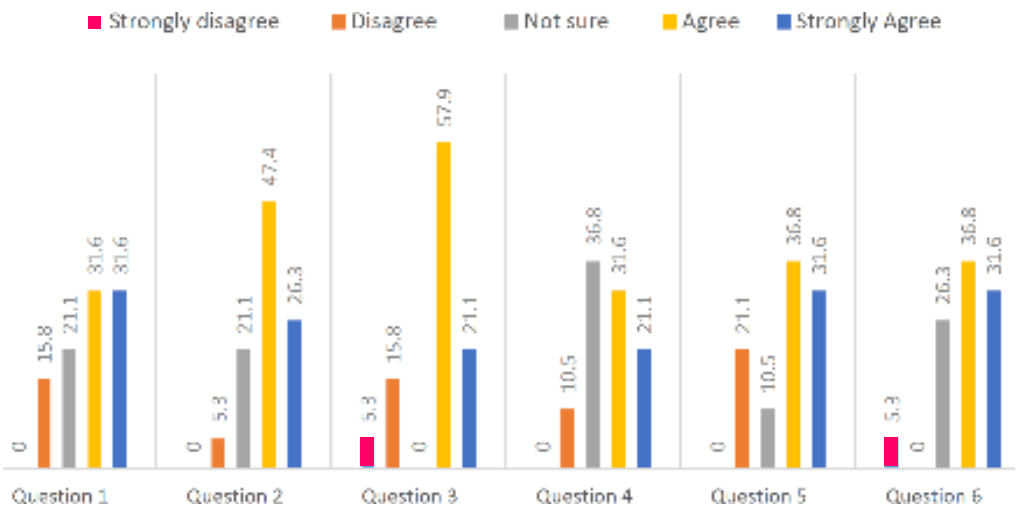

Figure 7 Usability feedback on the multimedia aspect of PHĀS′Ā MELAYU mobile application

For Question 1, concerning the attractiveness of the interface design, equal percentages of respondents (31.6% each; six students) agreed and strongly agreed, indicating that the interface successfully captured attention. Only three students (15.8%) disagreed, showing a relatively small group of less satisfied users. In Question 2, which addressed the clarity of text size and colour, nearly half of the respondents (47.4%; nine students) agreed that the text was clear, while only one respondent (5.3%) disagreed, further affirming the effectiveness of the visual design.

The evaluation of character design in Question 3 also received favourable responses, with 57.9% (eleven students) agreeing that the characters were appealing, and an additional 21.1% (four students) strongly agreeing. This reflects the success of integrating culturally relevant characters into the application. For Question 4, regarding audio clarity, 31.6% (six students) agreed, and 21.1% (four students) strongly agreed. However, two respondents (10.5%) disagreed, suggesting that minor improvements are needed in audio consistency.

Questions 5 and 6 examined colour schemes, graphics, and video/animation performance. In Question 5, 36.8% (seven students) agreed that the colours and graphics were engaging, and 31.6% (six students) strongly agreed, reinforcing the visual strength of the application. Finally, in Question 6, concerning video and animation quality, 36.8% (seven students) agreed and 31.6% (six students) strongly agreed that the features worked smoothly, with only one respondent (5.3%) strongly disagreeing. These results highlight that the multimedia components were well-received overall, though minor refinements remain necessary to optimise user experience.

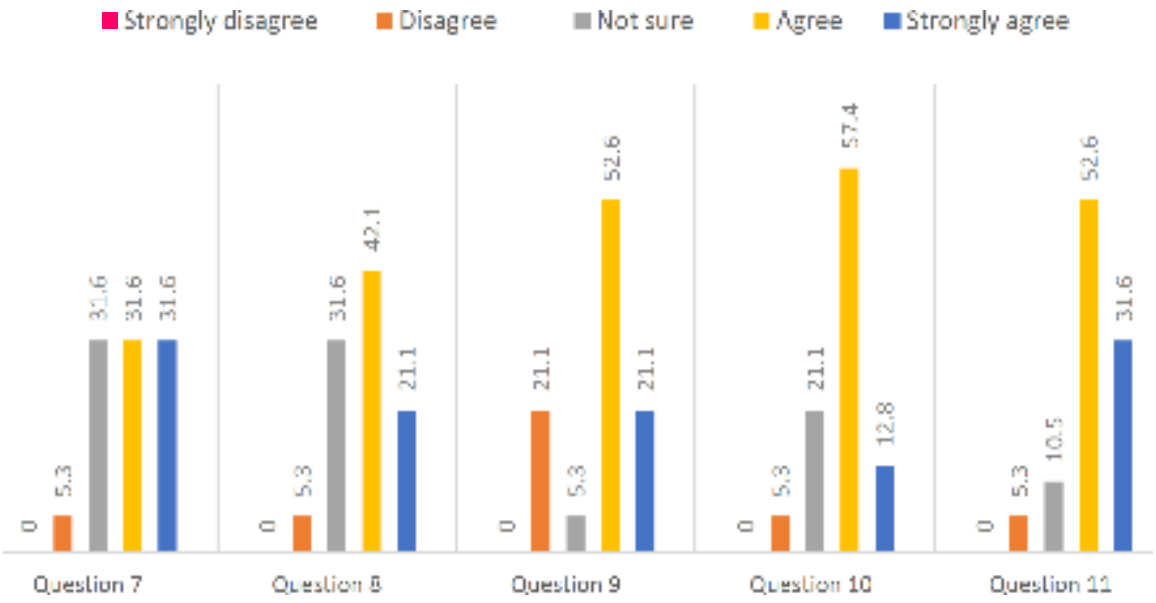

Figure 8 Usability feedback on the students' perception of PHĀS′Ā MELAYU mobile application

The second part of the usability evaluation focused on students' perceptions of the PHĀS′Ā MELAYU application in terms of engagement, learning outcomes, and satisfaction. The results presented in Figure X demonstrate that overall responses were positive, although there were variations across different aspects of perception.

For Question 7, which assessed whether students felt bored when using the application, responses were evenly distributed among 'Not sure', 'Agree', and 'Strongly Agree' (31.6% each; six respondents per category). Only one student (5.3%) selected Disagree. These mixed responses suggest that while the application was generally engaging, some students remained neutral or uncertain about its long-term novelty effect. In Question 8, addressing whether the application improved knowledge of Malay, the majority responded positively, with 42.1% (eight students) agreeing and 21.1% (four students) strongly agreeing. This indicates that the app effectively contributed to enhancing students' understanding of Malay.

Further, Question 9 examined whether students preferred learning through the app compared to classroom-based instruction. Over half of the respondents (52.6%; ten students) agreed, while 21.1% (four students) strongly agreed, showing strong acceptance of mobile learning as a complementary or alternative learning mode. Question 10 assessed students' comprehension of the content, with 57.4% (eleven students) agreeing and 12.8% (three students) strongly agreeing, suggesting that the instructional design was successful in facilitating understanding. Finally, Question 11 evaluated overall satisfaction. A majority of 52.6% (ten students) agreed and 31.6% (six students) strongly agreed that they were satisfied with the application, while only one student (5.3%) disagreed.

The findings (see Figure 7 and 8) indicate that the PHĀS′Ā MELAYU application achieved high levels of usability and learner satisfaction, reflecting the effectiveness of m-learning in supporting foreign language acquisition. The positive responses from Thai students, particularly in areas of comprehension, engagement, and satisfaction, were due to the application providing comprehensible input enriched with multimedia support and cultural context. The results also align with behaviourism principles, where repetitive drills and feedback encouraged reinforcement, and cognitive theory, where structured content facilitated knowledge processing and retention. Furthermore, the systematic application of the ADDIE model ensured that the design process incorporated analysis of learner needs, development of interactive tasks, and iterative evaluation, which collectively contributed to the app's usability and effectiveness. These outcomes underscore the potential of integrating mobile learning (M-learning) with instructional design frameworks and learning theories to develop innovative, culturally relevant tools for foreign language learners.

CONCLUSION

This study demonstrates that the PHĀS′Ā MELAYU mobile learning application effectively supports Thai students in acquiring Malay as a foreign language through an engaging, interactive, and culturally grounded platform. Guided by the ADDIE instructional design model, the application integrated multimedia elements, user-centred design, and iterative evaluation, resulting in high usability ratings and positive learner perceptions. The findings confirm the potential of m-learning to complement traditional classroom instruction by offering flexible, accessible, and motivating language learning experiences. The significance of this study lies in its dual contribution: pedagogically, it enriches Malay language education by providing foreign students with an innovative and practical learning resource, while technologically, it illustrates how the ADDIE model can bridge theory and practice in mobile-assisted language learning. In conclusion, PHĀS′Ā MELAYU supports Thai students' language acquisition and highlights the potential of mobile technology in providing resources for learning Malay as a foreign language. Future research is recommended to expand testing with larger and more diverse groups of learners, while refining content and features to enhance engagement and learning outcomes further.

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