

THE IMPACT OF MOBILE ASSISTED LANGUAGE LEARNING (MALL) USING SMARTPHONE'S APPLICATION ON ENGINEERING STUDENTS' ENGLISH LEARNING: A DESIGN-BASED STUDY

Juvrianto Chrissunday Jakob^{1✉}, Meiti Leatemia²

¹ Jurusan Teknik Sipil, Politeknik Negeri Ambon, Ambon, Indonesia

² Jurusan Teknik Mesin, Politeknik Negeri Ambon, Ambon, Indonesia

✉e-mail: juvrianto.jakob@polnam.ac.id

Abstract

Mobile Assisted Language Learning (MALL) is a method for enhancing language teaching methods autonomously, utilizing language learning apps conveniently and flexibly. Engaging and interactive learning methods, such as animation, images, and audio, can effectively communicate knowledge and enhance memory retention by being easily comprehensible and stimulating human senses. Innovative solutions are required to address the challenges of limited access, flexibility, and pedagogical assistance in Remote learning of engineering students. This study utilizes the Design Based Research (DBR) technique which offered by Dede (2005) to create Mobile Technology, a mobile application tailored for vocabulary acquisition. The development process consists of cycles of design, execution, and evaluation, emphasizing the requirements and environment of the learners. The implementation of VocUp Mobile Technology that is used in the teaching and learning process was successful and proven its efficiency in enhancing vocabulary proficiency. This is proven by the achievements of engineering students in their daily assignments before and after using this application. This program facilitates interactive and adaptable learning by incorporating elements that respond to user requirements and learning circumstances. Mobile technology has enhanced vocabulary acquisition by offering a more adaptable and convenient approach, addressing common obstacles in distance education. This facilitates the adoption of advanced and student-focused learning methods. This Mobile Technology provides a practical and efficient answer for vocabulary acquisition issues in a university setting, particularly in Distance Education. This program enhances language skills and promotes the creation of flexible and all-encompassing learning methods through its responsive and educational approach. Notes to consider for revision on this Abstract: Clearer articulation of the problems addressed (vocabulary-related?), more details of the methodology, including the research participants, procedures, data analysis, consistent uses of terms (e.g., mobile technology, mobile application, VocUp, Distance Education, RLP, etc.), evidence that support summarized findings.

Keywords: Engineering students, English course, Mobile Assisted Language Learning

Introduction

Rapid advances in Information Technology are currently having a major impact on the education sector. In Indonesia, education continues to follow developments with the times to improve its quality. English is an international language used in almost all sectors of global life such as global communication, science, technology, business and culture (Solihin, 2021). Therefore, the ability to speak English is a very valuable skill in increasing individual competitiveness in the current period of globalization. One of the subjects that students must study is English, students are also expected to

have good English language skills. However, many students have difficulty expressing their ideas in English, with the main problem being their limited vocabulary (Yudhiantara & Saehu, 2017). This causes obstacles in communicating in English.

Smartphone usage has become so widespread in our everyday routines that numerous individuals assert they are unable to function without them. Initially perceived as a wireless communication tool only for making calls without being physically connected, modern smartphones have evolved into

sophisticated devices with a diverse array of features. Mobile application systems (apps) in language learning have transformed smartphones into portable language laboratories, enabling users to learn and practise languages wherever and whenever they like. Mobile applications offer diverse learning modalities, including video, audio, pictures, and text, allowing students to select the most suitable technique based on their learning preferences. This allows pupils with varying learning preferences to have freedom. Flexibility in learning is crucial in Remote Learning Process, since it enables students with limited time and resources to study at any place and time. Remote Learning Process frequently leads to students being isolated from their friends, professors, and institutional physical resources like libraries due to spatial and temporal separation. Significant help is required for both learning and language use.

Facilitating vocabulary acquisition is essential in Indonesia, as most Indonesian students' primary language is not English, yet they are required to demonstrate fluency in English for academic purposes. Many of these students struggle to complete the academic requirements of college due to their primary measure of academic achievement being English language proficiency. Academic performance, according to Arigusman, Purnawarman & Suherdi (2018), is strongly linked to reading skills, particularly the vocabulary one has. Second language speakers find it challenging to comprehend instruction in a language that is not their mother tongue or first language. Research on vocabulary comprehension indicates that native English speakers typically possess a vocabulary ranging from 20,000 to 70,000 words, while individuals learning English as a second or foreign language are familiar with significantly fewer words. Research indicates that expanding

one's vocabulary has a beneficial impact on scholastic achievement. Hence, according to Hidayat et al. (2022), it is crucial to develop efficient tactics to enhance the vocabulary of college students facing challenges related to spatial, temporal, and pedagogical distance in Remote Learning Process.

To meet the vocabulary learning needs of Remote Learning Process, exploration is being conducted on mobile application systems as the best solution for delivering vocabulary learning materials. This research was conducted at higher education level, specifically at Ambon State Polytechnic, taking first semester students from the Civil Engineering Department as samples. Mobile learning technology is very suitable for Remote Learning Process because to its flexibility, accessibility, and support for various interactive activities (Morgana & Kukulska-Hulme, 2021). Concept is to use the potential of mobile technology that aligns with the lifestyle of students, by providing a portable programme accessible to them anytime and anywhere. Thus, the aim of this research is to design and implement a mobile application aimed at enhancing vocabulary teaching and learning (Sholah, 2020).

Historically, vocabulary teaching has often been neglected in language learning curricula. The main focus is usually placed on learning reading and grammar, with the assumption that vocabulary will be acquired incidentally through the process. However, this approach has been criticized for not providing a strong foundation for effective and efficient vocabulary acquisition. Research has shown two contrasting approaches to vocabulary teaching. Some argue that vocabulary can be acquired accidentally through reading or listening activities. Meanwhile, other approaches support explicit and targeted vocabulary teaching,

where words and their use are taught directly and systematically (Suhendar & Syakir, 2022). Further research has proposed a multi-component framework for vocabulary teaching, emphasizing the importance of understanding word forms, their meanings, and their use in various contexts. This approach advocates more structured and in-depth vocabulary learning, but this research is often limited to conventional learning settings and may not fully account for the unique challenges of Remote Learning Process. Three primary elements merge to form a comprehensive framework in vocabulary development. The first principle emphasises the need of explicit instruction and acquisition of vocabulary, emphasising thoughtful word choice and delivery to learners, along with the practical application and integration of vocabulary rather than just providing a word list. The second principle highlights the significance of frequent exposure and practice with words, urging mobile apps to offer functions that support this repetition, assisting in thorough comprehension and memory of language (Darman & Lapu, 2022). The third principle supports incorporating testing into the learning process for distant students to verify their understanding through controlled tasks, confirming learning and promoting successful vocabulary growth. Assessments should be incorporated within the proposed application to allow distant students to showcase their comprehension of new vocabulary (Nuraeni et al., 2020).

Mobile applications are used to enhance communication among students, professors, and peers. Interaction is vital in education, particularly in vocabulary instruction, as students are required to apply new vocabulary in practical

situations, such as engaging with content, technology, educators, and peers.

Mobile phones, increasingly serving as more than just communication devices, are utilised as educational tools to assist Remote Learning Process (PJJ) students in learning English vocabulary. The idea is to leverage the benefits of mobile technology, which students are already acquainted with, to enhance their vocabulary comprehension.

Previous research that raised the topic of MALL almost all came to the conclusion that the impact of using MALL was significantly effective on the listening abilities of foreign language learners and there were almost no studies with contradictory results. Researchers consider that further analysis of this phenomenon is necessary, considering that studies on the topic of MALL are still very limited. This study aims to examine the opportunities and challenges of implementing MALL in teaching listening skills to foreign language learners in the classroom. It is hoped that this research will provide an opportunity for other researchers, teachers and curriculum developers to follow the latest trends regarding the use of MALL in the classroom.

Research Method

The study utilised the Research-Based Design (DBR) method (Dede, 2005) to create and assess efficient vocabulary acquisition strategies in the Remote Learning Process (PJJ) setting, following a 4-stage process. The initial phase includes an extensive examination of literature and research of the Remote Learning Process environment. This process aims to pinpoint particular difficulties including technological access, learning preferences, and language hurdles through surveys and conversations with students and instructors. An initial solution was

created in the second step by combining established vocabulary teaching methods with mobile technology, followed by initial testing to collect feedback. The third stage involves implementing and evaluating the solution in a genuine Remote Learning Process setting. Qualitative and quantitative data are used to measure the impact of the application on vocabulary learning. The form of qualitative data is the results of interviews and the results of quantitative data are the results of analytical calculations which are described in numerical form. Repeated iterations are made for changes depending on the evaluation results. The last phase includes thorough reflection and creation of design principles, using discoveries to enhance the execution of existing solutions and offer guidance for the creation of similar solutions in the future. This is done by sharing knowledge through publications and presentations to enhance the education and learning technology community.

Results and Discussion

Mobile assisted learning has revolutionised teaching and learning in Remote Learning Process (PJJ) by utilising device portability, various in-device characteristics, and multimedia functionality such as voice, text, and graphic-audio-visual capabilities. Mobile devices are not only convenient to use, but also more cost-effective than computers and laptops. Additionally, their charging expenses are reduced, making them a viable option for students in regions with restricted access to energy. The fundamental characteristics that make MALL more beneficial than traditional learning delivery methods are its accessibility, availability, and flexibility.

Planning

During the planning process of creating a mobile application to enhance vocabulary learning, the initial step is to establish the

information that will be taught. Research highlights the significance of establishing a language learning setting prior to assessing the impact of mobile technology, with the learner taking precedence over the technology. Therefore, it is crucial to maintain alignment between pedagogy and technology. Mobile application development was conducted in this context to enhance vocabulary acquisition. To enhance competency and increase the likelihood of success, it was determined that vocabulary instruction would encompass form, meaning, and usage in a multi-component approach (Shah et al, 2015).

Additionally, content should adhere to the concepts of explicit vocabulary instruction, frequent exposure, and assessment methods. Short courses called "Word Capsules" were developed based on the research of. The Word Capsule contains the word of the day, word parts, a definition, three sentences demonstrating the word's usage in real circumstances, and three tasks for testing and application.

Coding

In the coding phase, after the planning stage, attention is focused on three main parts, namely User Interface development, Activity creation, and Activity Life Cycle creation. Develop application packaging, appearance and layout. The layouts will be because they show different parts of the vocabulary and essentials. Other features such as background color, font color, and special characters, including bold and italics, are also implemented.

The activities in this application form part of the application and are divided into four activities. The Daily Word Activity has subcategories that reflect the word itself, word types, and definitions. The next activity, Examples, lists three sentences that reflect how the word might

be used in real life. The third activity is Practice, a list of three questions that gives users the opportunity to test their understanding of the vocabulary and provides further opportunities for vocabulary use. Each exercise has its own question, three answer choices, one correct answer, and a check button. The last activity contains Previous Words, a list of words that have been covered in the previous few days so that users can go back and review them.

Enhanced vocabulary material

The Word Capsule was developed by carefully selecting words from two versions of the Vocabulary Level Test. The 10,000-word level in both versions of the test was selected because individuals who have acquired proficiency in the 10,000 most common words in English possess broad vocabularies and may be equipped to handle the demands of university studies in English. Word Capsules were developed to provide concise vocabulary instruction. The principle of the term Capsule is shown with the term "Engineering" The article specifies that the verb means the creation, experimentation, and construction of machinery, buildings, and procedures utilising mathematics and science. The term "engineering" is also used to refer to Engaging in this subject can result in a fulfilling profession. Engineering is a field focused on addressing problems.

Testing the application

Once the programme is visually and functionally polished, it is forwarded to an external entity for testing. Feedback is appreciated on technical factors like usability and content elements such as typing, options, and sample responses. The comments are utilised to modify the

application through a sequence of tests and modifications.

Review of VocUp Application

The app was named VocUp as a clever play on the terms "improve vocabulary," creating a resemblance to "vocabulary app." Subsequently, a VocUp symbol was designed to enhance the app's visibility on mobile devices. Once the application is downloaded and launched, users may simply click on the VocUp link to reach Daily Words. If permitted by the user, the app will send a notification in the morning when a new word is available. This tool aims to encourage busy Remote Learning Process students to allocate time for studying. The software was created as a standalone tool to promote self-directed learning.

Assessment of Application

The mobile vocabulary application VocUp was assessed based on its technological design and its effectiveness in supporting vocabulary learning as an intervention. Vocabulary growth is the primary objective of VocUp, and the effectiveness of the delivery tool is essential for achieving the goals. As stated in reference, quality in mobile learning systems should prioritise product quality and user experience. The mobile learning environment challenges include user roles and profiles, mobility, interface design, media types, communication assistance, and the removal of technological mistakes. Device elements such as usability and social technology are crucial factors in quality difficulties.

When assessing the technology components of VocUp, a quality model created by. This model was selected for its ability to combine multiple existing quality models and include new advancements in mobile technology. The

model offers developers specific tasks to get the required quality level.

Conclusion

This paper emphasizes the importance of considering both technological and pedagogical elements in mobile app interventions for vocabulary teaching and learning. It stresses the necessity for interventions to take into account the teaching and learning context, not only the students targeted by the intervention. This research indicates the importance of incorporating interventions in the implementation of mobile learning to prevent future exclusion of students from its advantages. The study's vocabulary development intervention was created using the contextual principles of Remote Learning Process (PJJ), which prioritize student-centered attention, flexibility, and accessibility. Efforts are focused on developing technologically reliable and pedagogically sound interventions that have a meaningful impact on student well-being. When establishing mobile applications for students, it is important to avoid making assumptions about their backgrounds. It is better to provide options rather than interventions that cover all areas. Effective mobile applications in Remote Learning Process consider contextual factors, offer opportunities for self-directed learning, and/or facilitate interaction. Interventions should be adaptable and easily accessible to promote a student-centered approach. The report suggests conducting future research to thoroughly examine how VocUp adjusts and overcomes contextual difficulties, including as spatial, temporal, and pedagogical shifts, commonly encountered by distance students. This can enhance the usefulness and relevancy of the app. Based on the explanation above, it can be said that the use of MALL in the English language learning process for Engineering Students is quite effective. As can be seen above, the respondents did the exercise happily

and without pressure. This can be seen from the results obtained. Thus, the use of MALL can improve students' language skills effectively (Butarbutar et al., 2021; Setiyanti et al., 2022; Gael & Elmiana, 2021). For this reason, using MALL can be an alternative to learning foreign languages, especially English. Moreover, for Engineering Students, those who do not have basic English, it is easier to learn. In the future, English teachers are encouraged to use this method for teaching foreign languages outside the classroom.

References

- Arigusman, A., Purnawarman, P., & Suherdi, D. (2018). EFL students' use of technology in English lesson in the digital era. *Indonesian Journal of Curriculum and Educational Technology Studies*, 6(2), 77-86.
- Butarbutar, R., Arafah, B., Marlina Raja Leba, S., Kaharuddin, K., F Sauhenda, A., & Monika, S. (2021). Using mobile-assisted language to encourage EFL learning among Indonesian learners of English. *Linguistica Antverpiensia*.
- Darman, D., & Lapu, L. (2022). Pelatihan Penggunaan Aplikasi Mobile Pembelajaran Bahasa Inggris Android Untuk Meningkatkan Kemahiran Bahasa Inggris Siswa Di SMP Negeri 11 Mimika. *Tongkonan: Jurnal Pengabdian Masyarakat*, 1(2), 86-91.
<https://doi.org/10.47178/tongkonan.v1i2.1760>
- Dede, C. (2005). Why design-based research is both important and difficult. *Educational Technology*, 45(1), 5-8.
- Gael, K. E., & Elmiana, D. S. (2021). Mobile-Assisted Language Learning (MALL) in English language acquisition: a critical literature review. *Journal of English Language*

- Teaching Innovations and Materials (Jeltim)*, 3(2), 76-86.
- Hidayat, D. N., Lee, J. Y., Mason, J., & Khaerudin, T. (2022). Digital technology supporting English learning among Indonesian university students. *Research and Practice in Technology Enhanced Learning*, 17(1), 1-15.
- Morgana, V., & Kukulska-Hulme, A. (Eds.). (2021). *Mobile assisted language learning across educational contexts*. Routledge.
- Nuraeni, C., Carolina, I., Supriyatna, A., Widiati, W., & Bahri, S. (2020, November). Mobile-Assisted Language Learning (MALL): Students' perception and problems towards mobile learning in English language. In *Journal of Physics: Conference Series* (Vol. 1641, No. 1, p. 012027). IOP Publishing.
- Setiyanti, A., Basit, A., & Suharsiwi, S. (2022). Observation and improvement to undergraduate student activities in English skill using mobile-assisted language learning. *English Language in Focus (ELIF)*, 4(2), 137-148.
- Shah, J. K., Ensminger, D. C., & Thier, K. (2015). The Time for Design-Based Research is Right and Right Now. *Mid-Western Educational Researcher*, 27(2).
- Sholah, H. M. (2020). Teaching and learning English using google classroom for Indonesian students. *Jurnal Pusaka*, 8(1), 1-12. <https://doi.org/10.35897/ps.v8i1.375>
- Solihin, S. (2021). Using mobile assisted language learning (MALL) to teach English in Indonesian context: Opportunities and challenges. *VELES (Voices of English Language Education Society)*, 5(2), 95-106. <https://doi.org/10.29408/veles.v5i2.3150>
- Suhendar, B., & Syakir, S. (2022). Penggunaan Aplikasi Smartphone Untuk Pengajaran Kosakata Bahasa Inggris Bagi Anak Usia Sekolah Dasar, Klender Jakarta Timur. *Community Engagement and Emergence Journal (CEEJ)*, 3(3), 242-245. <http://dx.doi.org/10.24127/jlpp.v6i1.1679>
- Yudhiantara, R. A., & Saehu, A. (2017). Mobile-assisted language learning (MALL) in Indonesian Islamic higher education. *IJELTAL (Indonesian Journal of English Language Teaching and Applied Linguistics)*, 2(1), 21-31. <http://dx.doi.org/10.21093/ijeltal.v2i1.52>