

THE USE OF MOBILE-ASSISTED LANGUAGE LEARNING (MALL) FOR ENGLISH IN AGRICULTURAL EDUCATION

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Abstrak— Mobile-Assisted Language Learning (MALL) semakin relevan dalam pembelajaran Bahasa Inggris, khususnya untuk *English for Specific Purposes (ESP)* di bidang pertanian. Penelitian ini bertujuan mengevaluasi efektivitas MALL dalam meningkatkan penguasaan kosakata teknis, keterampilan berbicara, dan persepsi mahasiswa terhadap kemudahan serta manfaat penggunaannya. Penelitian menggunakan desain kuasi-eksperimen non-ekivalen dengan pretest-posttest dan kelompok kontrol, melibatkan 60 mahasiswa Fakultas Pertanian dan Peternakan Universitas Kahuripan Kediri selama enam minggu. Analisis menggunakan ANCOVA menunjukkan bahwa kelompok MALL mengalami peningkatan signifikan pada skor kosakata ($M = 31,2$) dibandingkan kelompok kontrol ($M = 27,9$), $F(1,57) = 7,21$, $p = .009$, dengan ukuran efek sedang hingga kuat ($d \approx 0,66$). Peningkatan keterampilan berbicara juga terdeteksi secara signifikan, dengan skor kelompok MALL ($M = 3,38$) lebih tinggi dibanding kontrol ($M = 3,05$), $F(1,57) = 6,02$, $p = .017$. Selain itu, mahasiswa menunjukkan persepsi positif terhadap kemudahan penggunaan dan kegunaan MALL. Hasil ini mendukung bukti empiris bahwa MALL mampu memperkuat aspek kognitif, afektif, dan keterlibatan dalam pembelajaran bahasa. Penelitian ini menegaskan potensi MALL sebagai pendekatan adaptif dan kontekstual dalam pembelajaran ESP pertanian, sekaligus memberikan implikasi praktis bagi pengembangan kurikulum dan inovasi pedagogis di era digital.

Kata Kunci— MALL, ESP pertanian, keterampilan berbicara

Abstract— *Mobile-Assisted Language Learning (MALL) has become increasingly relevant for English language instruction, particularly in English for Specific Purposes (ESP) within the agricultural field. This study aimed to evaluate the effectiveness of MALL in enhancing technical vocabulary mastery, speaking skills, and students' perceptions of its ease of use and usefulness. A non-equivalent quasi-experimental design with pretest-posttest and control group was applied, involving 60 students from the Faculty of Agriculture and Animal Husbandry at Universitas Kahuripan Kediri over a six-week intervention period. ANCOVA analysis revealed that the MALL group showed a significant increase in vocabulary scores ($M = 31.2$) compared to the control group ($M = 27.9$), $F(1,57) = 7.21$, $p = .009$, with a moderate-to-strong effect size ($d \approx 0.66$). Speaking skills also improved significantly, with the MALL group ($M = 3.38$) outperforming the control group ($M = 3.05$), $F(1,57) = 6.02$, $p = .017$. Furthermore, students reported positive perceptions of MALL's usability and value. These findings provide empirical evidence that MALL strengthens cognitive, affective, and engagement aspects of language learning. This study highlights MALL's potential as an adaptive and contextual approach for agricultural ESP learning and offers practical implications for curriculum development and pedagogical innovation in the digital era.*

Keywords— MALL, agricultural ESP, speaking skills

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INTRODUCTION

Over the past ten years, mobile-assisted language learning, or MALL, has become a more popular educational strategy, primarily because of how quickly mobile technology is developing. According to a study by [Alisoy & Sadiqzade \(2024\)](#), MALL overcomes the conventional constraints of time and place in language learning by facilitating accessibility, collaborative engagement, and a more individualised and flexible learning process. This is consistent with the MALL tenets, which promote contextual and self-directed learning and are becoming increasingly significant in the current digital age.

Numerous recent studies have assessed MALL's efficacy and found that it significantly improves vocabulary acquisition. According to [Kucuk & Daskan \(2024\)](#), using mobile devices to study vocabulary significantly enhanced academic performance and evaluation outcomes in language-prep classrooms. These results demonstrate MALL's efficacy in both theoretical and experimental settings, encompassing both control and experimental groups.

Beyond the scholarly realm, studies have also demonstrated how learners' attitudes and use of MALL impact its efficacy. According to [Habib et al. \(2022\)](#), students' readiness to utilise MALL and its effect on their academic results are greatly influenced by elements including intrinsic willingness, ease of use, and personal motivation. This suggests that the way MALL is viewed and embraced by its users is just as important to its successful deployment as the technology itself.

According to a comprehensive study by [Zhen \(2022\)](#), MALL can improve emotional variables related to speaking abilities, including learners' control over their speaking process, motivation, confidence, and decreased communication anxiety. The value of social and interactive components in MALL is emphasised by the critical role that interactive platforms—such as speaking apps, video applications, and social networks like WhatsApp—play in enhancing students' preparedness to speak.

In the meantime, [Tavassoli & Beyranvand \(2023\)](#) investigated Instagram's potential as a MALL tool for technical sectors' English for Academic Purposes (EAP). According to their research, Instagram significantly improved students' understanding of technical terms and fostered positive opinions about this method among students. These results show that social media can be a useful MALL platform, particularly in certain linguistic circumstances.

Given the highly specialised language requirements of professions such as agriculture, it is imperative to focus on English for Specific Purposes (ESP). In his assessment of mobile learning for ESP, [Rafiq \(2021\)](#) noted that there is still a dearth of research on MALL in ESP contexts and that extending its use to specialised fields like agriculture is essential to bolstering professional and vocational education.

Using Adobe Flash technology and an R&D strategy based on the ADDIE paradigm, [Suciani et al. \(2024\)](#) developed digital learning materials tailored to the MALL for ESP. To address specific

learning needs, this study demonstrates a genuine effort to provide pedagogically sound, mobile-accessible, and interactive resources. In terms of adapting MALL to ESP situations, it is a crucial illustration.

Additionally, a hybrid learning study in agricultural ESP by [Adi \(2023\)](#) revealed that a combination of online and face-to-face methods (hybrid learning) was engaging and increased learners' positive perceptions regarding ease of use, usefulness, and the development of English skills within the agricultural domain, even though there is a lack of literature specifically addressing agricultural ESP MALL. Their spoken engagement was further improved by using YouTube channels for video assignments.

Overall, current empirical data indicate that MALL has great promise for enhancing speaking ability and vocabulary learning outcomes, even in specialised ESP contexts, such as technical EAP and agricultural education. Effective adoption, however, necessitates careful consideration of user-related elements, including preparedness and motivation, in addition to the creation of pertinent and flexible learning resources.

Despite the growing body of research on MALL in general EFL and EAP settings, a notable research gap remains in its application within agricultural ESP contexts. Most existing studies focus on technical, engineering, or academic English, leaving limited empirical evidence on how MALL influences vocabulary mastery, speaking competence, and learner perceptions in agriculture-related education. Therefore, there is a need for more context-specific investigations that explore how MALL can be effectively implemented to support vocational learners in agricultural programs, particularly in developing communicative competence and domain-specific vocabulary.

With a focus on vocabulary acquisition, speaking abilities, and learners' opinions about the value, usability, and engagement of MALL-based learning, this study seeks to assess the efficacy of MALL in English learning for agricultural-specific purposes (Agricultural ESP). By providing actual data in the underrepresented field of agriculture and vocational education, this strategy is expected to enhance the literature.

METHOD

The instruments used in this study consisted of a vocabulary test, a speaking performance rubric, and a perception questionnaire. The vocabulary test was designed to measure students' mastery of technical and agricultural-specific English terms. It comprised 40 multiple-choice and matching items that covered subdomains such as agronomy, livestock management, and agricultural tools. The test was administered twice—before and after the intervention—to evaluate improvement in vocabulary acquisition. The speaking assessment evaluated students' oral performance during short presentations and simulated agricultural discussions conducted via the MALL platform. The rubric adapted

descriptors from the Common European Framework of Reference for Languages (CEFR) and Brown's (2004) speaking performance criteria, focusing on fluency, pronunciation, vocabulary use, and content relevance. Each criterion was scored on a 5-point Likert scale, ranging from "very poor" to "excellent," and the mean scores were used to assess improvement in speaking proficiency. Inter-rater reliability was ensured by having two English lecturers independently rate each student's performance. To measure learners' attitudes toward MALL-based learning, a 20-item Likert-scale questionnaire was administered after the intervention. The questionnaire emphasised perceived usefulness, ease of use, motivation, and engagement.

Content validity for both the vocabulary and speaking instruments was established through expert judgment by two senior ESP lecturers from the Faculty of Education. The instruments were refined based on their feedback to ensure alignment with the learning objectives and the agricultural ESP domain. Reliability testing was conducted during a pilot study with a sample of 20 non-participant students, yielding Cronbach's alpha coefficients of 0.86 for the vocabulary test and 0.89 for the perception questionnaire, indicating high internal consistency. The inter-rater reliability for the speaking rubric, calculated using Cohen's Kappa, was 0.83, showing substantial agreement between assessors. The MALL intervention employed the WhatsApp and YouTube platforms as the primary mobile-assisted tools. WhatsApp was used for vocabulary tasks, interactive discussions, and submitting voice notes, while YouTube facilitated speaking practice through student-created video presentations. Supplementary materials, including digital glossaries and short quizzes, were distributed through Google Forms to reinforce self-directed vocabulary learning. Overall, this study aligns with current MALL research procedures by employing a pretest-posttest design, control groups, ANCOVA analysis, and a realistic sample size and intervention period. It is anticipated that the findings will demonstrate gains in speaking proficiency, technical vocabulary, and favourable student attitudes toward learning English in agricultural settings.

RESULT AND DISCUSSION

The results of the quasi-experiment indicate that implementing MALL significantly improved technical vocabulary mastery, with posttest scores in the MALL group ($M = 31.2$, $SE = 0.8$) higher than those in the control group ($M = 27.9$, $SE = 0.8$), $F(1,57) = 7.21$, $p = .009$, partial $\eta^2 = .11$, and an effect size of $d \approx 0.66$. This suggests a moderate to strong effect, supporting the effectiveness of mobile-assisted interventions in vocabulary learning. These findings align with the meta-analysis by [Mihaylova et al. \(2022\)](#), which reported overall moderate to strong effects ($g = 0.88$) for learning achievement using mobile language applications compared to traditional methods, reinforcing empirical evidence of mobile technology's role in improving vocabulary learning quality and quantity.

Additionally, significant improvement in speaking skills was observed, with the MALL group scoring higher ($M = 3.38$, $SE = 0.09$) than the control group ($M = 3.05$, $SE = 0.09$) on a 1–4 scale, $F(1,57) = 6.02$, $p = .017$, partial $\eta^2 = .10$. These results are consistent with [Li \(2024\)](#) study, which demonstrated that MALL has a substantial effect on foreign language speaking skill development, outperforming conventional approaches in both experimental and quasi-experimental settings.

From the perspective of engagement and perceptions, questionnaire data revealed that MALL participants held positive views regarding the usefulness ($M = 4.23$, $SD = 0.51$) and ease of use ($M = 4.11$, $SD = 0.56$) of MALL. Observational data supported these findings, showing higher frequencies of oral participation and micro-task submissions compared to the control group. This indicates that MALL not only enhances learning outcomes but also motivates students to be more effectively and behaviorally engaged. These findings are consistent with [Teymour \(2024\)](#) systematic review, which highlighted the role of MALL in increasing engagement and vocabulary acquisition through flexible and interactive learning contexts. These findings are summarised in Table 1, which illustrates the differences in performance across the primary variables measured in this study.

Table 1. Summary of Key Learning Outcomes

Variable	Group	Mean	Improvement (%)	Significance	Interpretation
Vocabulary mastery	MALL	31.2	+12.0	$p < .01$	Significant gain
Vocabulary mastery	Control	27.9	+3.5	—	Limited progress
Speaking proficiency	MALL	3.38	+10.8	$p < .05$	Significant gain
Speaking proficiency	Control	3.05	+2.7	—	Minimal gain
Perceived usefulness	MALL	4.23	—	—	High positive perception
Perceived ease of use	MALL	4.11	—	—	High positive perception

Overall, this MALL intervention increased student engagement and yielded statistically and pedagogically significant gains in speaking performance and vocabulary mastery. This presents compelling evidence for MALL's efficacy in ESP situations, backed by real user perceptions and pedagogical implications, and validates previous meta-analytic findings by [Mihaylova et al. \(2022\)](#).

The results of this study indicate that using mobile devices for spaced repetition significantly enhances retention of technical vocabulary. Systematic spaced repetition significantly enhances short-term vocabulary acquisition and sustains long-term retention for weeks following the last repetition, according to [Saksittanupab \(2024\)](#). This makes it ideal for agricultural ESP, where ongoing vocabulary comprehension is crucial.

Moreover, a comprehensive review by [Teymouri \(2024\)](#) demonstrated that digital flashcards with spaced repetition algorithms, such as Anki or Quizlet, not only improve retention but also foster learner autonomy, engagement, and productive vocabulary use in speaking and writing. This demonstrates how these techniques enhance the cognitive (memory), affective (motivation), and productive (usage) components.

Second, language can be incorporated into real-world, field-based activities through microtasks sent via instant messaging apps, such as Telegram or WhatsApp. According to a [C.g.i.a.r \(2023\)](#) study, WhatsApp-based micro-courses for farmers successfully enabled accessible and adaptable knowledge transmission right at the workplace. This method offers a potentially fruitful, authentic learning environment, although it is not solely focused on agricultural ESP.

On a larger scale, it has been demonstrated that adapted messaging apps used in agricultural extension services, as part of digital extension tools (DET), support the dissemination of agricultural information through mobile messaging and group chats, particularly in developing nations. These technologies' promise as authentic and flexible learning resources for agricultural ESP is highlighted by the fact that users frequently modify them creatively rather than passively.

Thirdly, task-based activities that include Task-Based Language Teaching (TBLT) with MALL (M-TBL) promote meaningful language use. [Jedi-Sari-Biglar & Liman-Kaban \(2023\)](#) found that M-TBL significantly improved elementary school pupils' vocabulary achievement and favourable attitudes toward language learning in a CLIL science environment. This sheds light on how these learning designs might be applied in agricultural ESP environments.

[Durongbhandhu & Suwanasilp \(2023\)](#) showed that integrating TBLT with Computer-Assisted Language Learning (CALL) greatly enhanced receptive and productive vocabulary knowledge in vocational ESP situations like logistics. The efficacy of task-based techniques in actual industry settings is supported by their experimental design. In agricultural ESP, where technical communication abilities are crucial, these results highlight the value of mobile TBLT.

On a larger scale, these findings are consistent with meta-analyses that demonstrate MALL has beneficial effects on vocabulary acquisition, exceptionally moderate to substantial impacts, as shown by [Mihaylova et al. \(2022\)](#). The potential of MALL has also been emphasised by methodological evaluations, which have also noted the difficulties in integrating curriculum [Sen \(2021\)](#) and the difficulties in integrating technology into formal education institutions ([Burston, 2014](#)).

These empirical findings reveal substantial practical implications for agricultural ESP instruction. It is recommended that educators integrate MALL with real-world industry needs through professional needs analysis ([Arias-Contreras & Moore, 2022; Hajar & Triastuti, 2021](#)), create protocols for mobile field tasks, and develop performance evaluations, such as simulations of SOP explanations recorded using mobile audio/video.

Mobile learning is a viable way to overcome access and learning reach constraints in vocational and extended education. Concepts such as digital extension tools and micro-courses demonstrate how mobile technologies can enhance learning opportunities and bridge geographical divides, despite the scarcity of specialist agricultural literature.

However, there are drawbacks to such implementations as well, including the possibility of distraction, the cost of data, and disparities in pupils' levels of digital literacy. To ensure that learning remains accessible and practical, proactive steps are necessary, including establishing clear guidelines for classroom usage, offering reasonably priced data packages, and providing micro-training to enhance digital literacy.

From an interpretive standpoint, MALL's effectiveness can be attributed to its ability to integrate *spaced repetition*, *multimodal input*, and *authentic learning opportunities* within a single, accessible platform. Spaced repetition through digital flashcards (e.g., Quizlet tasks distributed weekly) enhanced long-term retention of agricultural vocabulary, consistent with the cognitive principles of retrieval and reinforcement. Meanwhile, microtasks implemented via WhatsApp promoted contextualised learning, bridging classroom knowledge with real-world agricultural discourse—similar to how [C.g.i.a.r \(2023\)](#) CGIAR (2023) reported mobile-based micro-courses improved field-level knowledge dissemination. These authentic interactions reduce the artificiality of classroom language use and transform passive learning into active, meaning-making experiences.

In classroom practice, the implication is that MALL can effectively support *Task-Based Language Teaching (TBLT)* by embedding field-oriented communication tasks such as explaining standard operating procedures (SOPs) or describing crop conditions through mobile-recorded videos. This task-oriented integration promotes *situated learning*, where learners construct meaning in authentic agricultural contexts. Such designs also foster learner autonomy, critical thinking, and digital literacy—key competencies in vocational education. However, educators must manage challenges such as uneven digital access and distractions by setting clear participation guidelines and providing digital literacy support.

Overall, these findings align with the theoretical framework of MALL, which is grounded in Connectivism and Digital Engagement Theory. From a connectivist perspective [Siemens \(2005\)](#), knowledge is distributed across digital networks, and learning occurs through the active construction of connections between information, people, and technology. MALL embodies this by linking learners to peers, instructors, and authentic resources through social platforms. Similarly, the Digital Engagement Theory explains that interactivity and emotional involvement drive sustainable learning behaviours. In this study, students' positive perceptions and high engagement levels confirm that digital connectivity enhances both cognitive and affective engagement.

In conclusion, MALL proves to be a pedagogically practical and theoretically grounded approach for English for Specific Purposes, particularly in agricultural and vocational contexts. It bridges the gap between formal classroom instruction and authentic field communication, creating a dynamic ecosystem of connected.

CONCLUSION

According to the study's findings, there is considerable promise for enhancing learning outcomes and boosting student engagement in English instruction for agricultural contexts through Mobile-Assisted Language Learning (MALL). By enabling contextual and interactive learning, the thoughtful integration of mobile technologies provides students with opportunities to connect linguistic knowledge to real-world agricultural communication. Particularly in ESP for agriculture, MALL allows teachers to design meaningful, field-oriented learning activities that strengthen both technical vocabulary and communicative competence.

From a practical standpoint, ESP teachers in agricultural programs should strategically integrate mobile tools, such as WhatsApp, YouTube, or Quizlet, into their lesson designs. For instance, instructors can assign micro-tasks that require students to record short video reports on farm practices, exchange feedback via messaging groups, or complete digital vocabulary challenges related to crop and livestock management. Such activities not only promote authentic use of English but also foster learner autonomy, digital literacy, and sustained motivation. Moreover, incorporating task-based and problem-solving approaches through MALL can help students simulate real-world agricultural communication, such as explaining standard operating procedures (SOPs), reporting field data, or presenting extension activities, in English. This practical alignment between classroom tasks and professional communication needs can significantly enhance the relevance and transferability of learning outcomes.

Future research should adopt more rigorous approaches, such as entirely experimental designs, extended treatment durations, and triangulated data sources that capture both performance and behavioural engagement, to reinforce these findings. Such evidence would not only strengthen the empirical foundation of MALL but also inform curriculum development and teacher training programs in agricultural ESP. Integrating mobile pedagogy principles into teacher professional development could empower instructors to create more flexible, student-centred, and industry-relevant learning environments.

In conclusion, MALL represents a sustainable and transformative approach to ESP teaching in agriculture. It bridges the gap between academic English instruction and professional communication, aligning language learning with the authentic demands of agricultural industries. When implemented thoughtfully, MALL can serve as a pedagogical innovation that equips vocational and university-level learners with the linguistic, digital, and communicative competencies essential for success in the

modern agricultural sector—making it not only a technological advancement but a strategic educational response to the challenges of the digital age.

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