



THE EFFECTIVENESS OF MOBILE-ASSISTED LANGUAGE LEARNING (MALL) IN VOCABULARY DEVELOPMENT AMONG EFL LEARNERS

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Abstract: In an era dominated by digital technologies, Mobile-Assisted Language Learning (MALL) has become a cornerstone for enhancing vocabulary development in English as a Foreign Language (EFL) contexts. This article provides an in-depth synthesis of empirical research, including meta-analyses and localized studies, to evaluate MALL's impact on vocabulary retention, depth, and practical application. By integrating cognitive theories such as the spacing effect and dual-coding, it examines key affordances like gamification, adaptive personalization, and multimedia engagement, while critically assessing moderators including learner age, digital access, and intervention duration. Particular emphasis is placed on EFL environments in developing regions, such as Uzbekistan, where MALL addresses pedagogical gaps through hybrid models that combine mobile tools with traditional instruction. The analysis reveals consistent moderate-to-large effect sizes in vocabulary gains, advocating for MALL's broader adoption to promote autonomous, context-rich learning. Challenges like digital inequities are discussed, alongside recommendations for culturally adapted implementations to maximize efficacy in global EFL settings.

Keywords: Mobile-Assisted Language Learning (MALL), Vocabulary Acquisition, EFL Pedagogy, Digital Affordances, Spaced Repetition Systems, Adaptive Algorithms, Communicative Competence, Uzbekistan EFL Education, Learner Autonomy

INTRODUCTION

The proliferation of mobile devices has fundamentally reshaped educational landscapes, particularly in language learning, where vocabulary serves as the foundational element for comprehension, expression, and overall proficiency. In EFL contexts, where learners often face limited exposure to authentic English, traditional methods such as textbook-based drills and classroom recitations frequently result in superficial retention and high attrition rates. Mobile-Assisted Language Learning (MALL) mitigates these issues by offering anytime-anywhere access to interactive resources, transforming passive learning into dynamic, personalized experiences. Defined as the use of handheld devices like smartphones and tablets for language acquisition, MALL leverages apps, augmented reality, and social features to facilitate incidental and deliberate vocabulary building.

Empirical foundations for MALL draw from cognitive psychology, including Hermann Ebbinghaus's spacing effect, which posits that information retention improves with distributed repetitions, and Allan Paivio's dual-coding theory, emphasizing the synergy of



verbal and visual processing for memory enhancement. Recent meta-analyses highlight MALL's superiority, with effect sizes often exceeding 0.80 in vocabulary-focused interventions. In non-native environments like Uzbekistan, where EFL instruction contends with large class sizes, resource scarcity, and motivational challenges, MALL emerges as a democratizing force. Local studies underscore its role in integrating technology into curricula, such as through apps adapted for Uzbek learners, bridging formal education with informal digital practices. This introduction sets the framework for exploring MALL's theoretical underpinnings, empirical evidence, challenges, and implications, ultimately arguing for its strategic integration to foster resilient, globally competent EFL learners. MALL's theoretical scaffolding is multifaceted, rooted in cognitive, behavioral, and sociocultural paradigms. Cognitively, it aligns with the spacing effect, where algorithms in apps like Duolingo or Memrise schedule reviews at optimal intervals to combat forgetting curves, leading to up to 50% better long-term recall compared to massed practice. Dual-coding enhances this by multimodal inputs text paired with images, audio, and videos reducing cognitive overload as per Sweller's load theory and promoting deeper semantic connections. Behaviorally, gamification elements such as badges, leaderboards, and points systems tap into operant conditioning, boosting engagement and intrinsic motivation. Socioculturally, inspired by Vygotsky's zone of proximal development, MALL facilitates scaffolded interactions via chatbots, peer forums, and social media integrations, enabling learners to negotiate meaning in authentic contexts. Key affordances include ubiquity for micro-learning (short, focused sessions), personalization through AI-driven adaptations, and context-awareness via GPS-enabled vocabulary in real-world scenarios, such as labeling objects in augmented reality apps. In Uzbekistan, these features address local needs, with studies showing MALL's integration in classrooms enhances cultural relevance by incorporating Uzbek-English bilingual prompts. A robust body of evidence supports MALL's efficacy. A meta-analysis of 65 quasi-experimental studies from 2010-2024 reported a large overall effect size of 1.28 for vocabulary acquisition in EFL settings, with interventions over 10 weeks yielding sustained gains in both breadth (number of words) and depth (nuances, collocations). Subgroup analyses reveal age-related variations: adolescents and adults benefit more ($g > 1.0$) due to self-regulation skills, while younger learners show moderate effects ($g \approx 0.60$), often requiring teacher mediation. Another synthesis of 23 studies found a pooled Hedges' g of 0.88, with no significant publication bias (Egger's test $p > 0.05$), confirming reliability across foci like form-meaning links and idiomatic expressions. Intervention duration moderates outcomes; semester-long programs achieve $g \approx 0.99$, while brief ones risk decay ($g \approx 0.20$ in delayed tests). Longitudinal designs, including corpus analyses, demonstrate increased lexical diversity in productive outputs, with type-token ratios rising 15-20% post-MALL exposure. In Uzbekistan, MALL addresses EFL challenges like limited native speaker interaction and exam-centric curricula. A study on adaptive MALL for undergraduate



vocabulary reported significant gains, attributing success to mobile tools' flexibility in resource-poor settings. Hybrid approaches, blending apps with classroom guidance, yield effect sizes up to 1.43, as seen in Tishk Language Preparatory School adaptations applicable to Uzbek universities. Cultural adaptations, such as apps incorporating Uzbek folklore for vocabulary contextualization, enhance relevance and motivation, reducing dropout rates in adult TESOL programs. Despite strengths, MALL encounters barriers: digital literacy gaps, device access inequities, and high study heterogeneity ($I^2 = 79\%$) undermine generalizability. In Uzbekistan, rural-urban divides exacerbate this, with only 60% smartphone penetration in remote areas. Screen fatigue and superficial engagement from over-gamification necessitate balanced designs, with optimal sessions at 15-20 minutes. Mitigation includes teacher training for hybrid models and policy support for subsidized devices, ensuring equitable outcomes. Socioculturally, MALL fosters communicative competence by exposing learners to diverse registers through user-generated content, aligning with global EFL goals. In Uzbekistan, it promotes learner autonomy, transforming passive recipients into active constructors of knowledge. Practically, integration into curricula requires stakeholder collaboration, with pilot programs showing 30% vocabulary proficiency boosts.

In summation, Mobile-Assisted Language Learning (MALL) unequivocally positions itself as a robust, evidence-based catalyst for advancing vocabulary development within English as a Foreign Language (EFL) contexts, consistently outperforming conventional pedagogical approaches through its inherently adaptive, interactive, and ubiquitous characteristics that cater to diverse learner needs. The comprehensive synthesis of empirical data, ranging from large-scale meta-analyses to localized case studies, reveals not only moderate-to-large effect sizes in vocabulary retention and application but also highlights MALL's capacity to bridge critical gaps in traditional education, such as limited exposure to authentic language and motivational deficits, thereby fostering deeper semantic understanding and communicative competence essential for real-world interactions. While persistent challenges, including digital inequities, methodological inconsistencies in research designs, and potential issues like screen fatigue or over-reliance on superficial gamification, must be acknowledged and addressed through targeted strategies such as equitable device distribution, teacher professional development, and rigorous randomized controlled trials the overwhelming body of evidence, further enriched by Uzbek-specific insights that demonstrate successful hybrid implementations in resource-constrained environments, strongly advocates for MALL's widespread and systematic adoption across global EFL curricula. Looking ahead, future research imperatives should prioritize the exploration of advanced AI integrations, culturally tailored app developments that incorporate local linguistic and contextual elements, and longitudinal evaluations to assess long-term impacts on productive skills like writing and speaking, ultimately ensuring that MALL evolves as a transformative educational tool. By doing so, educators and policymakers can empower EFL learners with the lexical proficiency



and digital literacy required to navigate and thrive in an increasingly interconnected, multilingual world, where language serves not merely as a skill but as a gateway to opportunities in education, career, and cross-cultural exchange.

References

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