

FROM CALL TO MALL: TRACING THE EVOLUTION OF MOBILE-BASED VOCABULARY INSTRUCTION IN ENGLISH LANGUAGE TEACHING

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Abstract

The use of technology in second language vocabulary instruction has moved through several distinct paradigms over the past six decades, from early computer-assisted drills to today's mobile applications capable of delivering personalized, spaced, and context-aware vocabulary practice. This review traces that trajectory, situating the historical phases of computer-assisted language learning (CALL) identified by Warschauer (1996) and reconceptualized by Bax (2003) alongside the emergence of mobile-assisted language learning (MALL) as a distinct field with its own theoretical concerns around mobility, personalization, and the blurring of formal and informal learning contexts (Kukulska-Hulme, 2009; Kukulska-Hulme & Shield, 2008). Particular attention is given to vocabulary instruction specifically, an area where the shift from desktop-based CALL to mobile-based MALL has been both theoretically significant and empirically mixed, given early findings that mobile platforms did not consistently outperform desktop computers for vocabulary tasks (Stockwell, 2007, 2010). The review concludes by identifying persistent gaps in the literature, including the need for more classroom-based, non-Western, and secondary-level research on mobile vocabulary instruction, and reflects on where the field appears to be heading as applications mature beyond simple digitized flashcards.

Keywords: CALL, MALL, vocabulary instruction, mobile-assisted language learning, English language teaching, literature review

1. Introduction

Technology has been part of language teaching for far longer than the recent surge of interest in mobile applications might suggest. Computer-assisted language learning (CALL) has a documented history stretching back to the 1960s, and mobile-assisted language learning (MALL) is best understood not as a wholly new field but as a continuation and reconfiguration of that longer trajectory, shaped by the particular affordances mobile devices bring — portability, personal ownership, and the collapse of the boundary between classroom and everyday life (Kukulska-Hulme & Shield, 2008). Understanding how vocabulary instruction specifically has moved through this history is useful for anyone designing or evaluating a mobile vocabulary application today, since many of the pedagogical assumptions built into current apps — repetition, self-pacing, immediate feedback — trace directly back to much earlier CALL paradigms, even as the delivery mechanism has changed radically.

This review has two aims. First, it traces the broad historical arc from behaviorist CALL through to contemporary MALL, drawing on the two most widely cited periodization schemes in the field (Warschauer, 1996; Bax, 2003). Second, it narrows that broad history specifically to vocabulary instruction, examining how each phase treated vocabulary learning differently and what the empirical record says about whether the shift to mobile devices has actually improved vocabulary outcomes, or simply changed the delivery format of largely similar pedagogical techniques.

The review draws on foundational CALL historiography (Warschauer, 1996; Bax, 2003), core MALL theory (Kukulska-Hulme & Shield, 2008; Kukulska-Hulme, 2009; Godwin-Jones, 2011), empirical studies specifically addressing mobile vocabulary learning (Stockwell, 2007, 2010), and the vocabulary acquisition literature that underlies pedagogical design decisions in this space (Nation, 2001; Schmitt, 2008).

2. The Three Phases of CALL: Warschauer's Historiography

Warschauer's (1996) influential account divides the history of CALL into three phases — behavioristic, communicative, and integrative — each tied to the dominant learning theory and available technology of its time.

Behavioristic CALL emerged in the 1960s and 1970s, built on the then-dominant behaviorist model of language learning as habit formation through repetition and reinforcement. In this phase, the computer functioned essentially as a tutor delivering repetitive drills, mechanical substitution exercises, and other structurally focused practice, closely mirroring the audiolingual methodology of the period. For vocabulary specifically, this meant drill-and-practice programs presenting words in isolation, with correctness judged by exact match rather than any deeper engagement with meaning or use.

Communicative CALL arose in the late 1970s and early 1980s as communicative language teaching displaced behaviorist and structural approaches more broadly. Rather than drilling discrete forms, communicative CALL software aimed to generate original language use, giving students opportunities to construct meaning rather than simply reproduce predetermined structures. Vocabulary instruction in this phase began to be embedded within more communicative tasks — games, simulations, and text reconstruction activities — rather than isolated word lists, though the underlying technology (still largely desktop or lab-based) placed real limits on how far this communicative ambition could be realized.

Integrative CALL, emerging in the late 1980s and 1990s and continuing to develop through the rise of multimedia and the internet, aimed to move technology away from occasional lab visits and toward continuous, embedded use within the normal language-learning process, drawing on multimedia and networked communication to expose learners to authentic materials, and using the web to source real texts tailored to individual interests, effectively distributing the burden of finding rich vocabulary input beyond the textbook. This phase is where vocabulary instruction began to more directly resemble what mobile applications would later scale up:

exposure to authentic, learner-relevant text as a vehicle for incidental as well as intentional vocabulary learning.

3. Bax's Reassessment: Restricted, Open, and Integrated CALL

Writing several years later, Bax (2003) offered a critical reassessment of this history, arguing that Warschauer's phases were ambiguous in their dating and criteria, and proposing an alternative three-stage model: Restricted CALL (roughly 1960s–1980s), Open CALL (1980s–2000s), and Integrated CALL (2000s onward). Bax's key theoretical contribution, however, was less the relabeling itself than the concept of normalisation — the idea that a technology has been successfully integrated into teaching practice only when it becomes invisible, unremarkable classroom furniture rather than a special event requiring separate justification, much as the humble whiteboard no longer draws comment. Bax argued that CALL, at the time he was writing, remained in the Open stage rather than having achieved normalisation, and that reaching that end state would require addressing not just technological access but teacher attitudes, institutional support, and curricular integration together, rather than assuming that the technology alone would drive change.

This normalisation framework has aged well as a diagnostic tool for evaluating MALL today. Mobile phones, unlike lab computers, arrived already normalised in learners' personal lives well before any deliberate pedagogical intervention — a learner does not need to be taught to use a smartphone the way earlier generations needed to be introduced to a computer lab. This inversion is arguably the single most important structural difference between CALL's historical trajectory and MALL's: MALL inherited a userbase for whom the device itself required no normalisation, even though the pedagogical practice of using that device for vocabulary study still very much does, as more recent teacher-perception research continues to suggest.

4. The Emergence of MALL as a Distinct Field

Mobile-assisted language learning is often treated as a subset of CALL, but Kukulska-Hulme and Shield (2008) argued that it deserves recognition as a distinct field of inquiry, precisely because mobility introduces theoretical concerns that

desktop-based CALL never had to address: portability, spontaneity of access, and the collapsing of boundaries between formal and informal learning contexts. Their review characterized MALL as learning mediated by personal, portable devices, occurring potentially anytime and anywhere, and noted that early mobile learning activities tended to be centrally designed by educators and technologists, whereas increasingly learners were shaping their own mobile learning practices around personal needs — a shift with direct implications for vocabulary instruction, since it suggested learners might select and pursue vocabulary goals independently of any assigned curriculum, given the tools to do so.

Kukulska-Hulme (2009) extended this line of thinking, arguing that an emphasis on mobility itself — not simply the miniaturization of existing computer-based activities — could produce genuinely new perspectives and practices in language teaching and learning, rather than merely porting old CALL exercises onto smaller screens. This is an important distinction for vocabulary instruction specifically: a mobile vocabulary app that simply digitizes a flashcard deck is doing something closer to behavioristic CALL delivered on a new device, whereas an app that leverages location, timing, or spaced micro-sessions throughout a learner's day is doing something CALL's earlier desktop-bound phases genuinely could not.

Godwin-Jones (2011) documented the practical explosion that followed the rise of app-store distribution, noting that the sheer proliferation of language-learning applications available to ordinary users, across a wide range of price points and pedagogical approaches, marked a qualitatively different landscape from the custom-built, often institutionally-controlled CALL software of previous decades. Where CALL vocabulary software had typically been developed and deployed by a teacher or institution, MALL vocabulary apps were now something learners might download and use entirely independently of any classroom relationship — a genuinely novel arrangement with implications for learner autonomy that later researchers (e.g., Lai, 2013; Reinders & White, 2016) would go on to examine in more theoretical depth.

5. Vocabulary Instruction Specifically: What Changed and What Didn't

Set against this broader historical arc, the empirical record on mobile vocabulary instruction specifically is more mixed than the general enthusiasm around MALL might suggest. Stockwell's (2007) early study of an intelligent mobile phone-based vocabulary tutor represents one of the more carefully controlled investigations in this space, and his subsequent platform-comparison study (Stockwell, 2010) found that learners generally took longer to complete vocabulary activities on mobile phones than on desktop computers and achieved somewhat lower scores on the mobile platform, with no consistent evidence that the mobile version outperformed the desktop equivalent for the same vocabulary content. Contrary to what a straightforward "newer technology is better" narrative would predict, Stockwell also found that when given a choice, the large majority of learners in his study opted for the desktop computer over their mobile phone for completing vocabulary activities, a finding at odds with assumptions that learners inherently prefer mobile delivery.

This complicates any tidy narrative in which mobile vocabulary instruction is a straightforward improvement on earlier CALL vocabulary drills. What appears to have actually changed, most substantively, is not necessarily instructional effectiveness per activity, but rather access, frequency, and integration into daily life: a mobile vocabulary app can deliver dozens of brief exposures across a learner's day in a way no lab-based CALL system ever could, which connects directly to vocabulary acquisition theory. Nation's (2001) account of vocabulary learning as a cumulative process built on repeated, varied exposure, and Schmitt's (2008) argument that vocabulary programs need to combine explicit instruction with maximized incidental exposure, both suggest that the volume and frequency advantages of mobile delivery may matter more for retention than any inherent superiority of the mobile interface itself for a single vocabulary task. In other words, the gains attributable to MALL for vocabulary may lie less in how mobile devices present a word and more in how often and how flexibly they can present it.

This reframes the CALL-to-MALL narrative for vocabulary instruction specifically: rather than a story of steadily improving pedagogical technique, it looks

more like a story of pedagogical techniques (drill-and-practice, spaced repetition, contextualized exposure) remaining fairly stable in their underlying logic, while the delivery infrastructure around them has been transformed to permit much higher-frequency, learner-controlled access. Lai's (2013) framework for self-directed technology use in language learning captures this well, arguing that the pedagogical value of any technology, mobile or otherwise, depends heavily on whether learners are scaffolded in using it purposefully — a concern that applies as much to a 1970s drill program as to a 2020s vocabulary app, even though the devices themselves could not be more different.

6. Synthesis and Emerging Directions

Taken together, this literature suggests three broad conclusions about the CALL-to-MALL trajectory as it relates to vocabulary instruction.

First, the shift from CALL to MALL is better understood as an evolution in access and context than as a wholesale pedagogical revolution. The underlying instructional logics — drill, communicative task, authentic exposure — identified in Warschauer's (1996) three phases persist in recognizable form within contemporary mobile applications; what has changed is the device's portability and its prior normalisation in learners' everyday lives (Bax, 2003).

Second, the empirical picture on whether mobile delivery actually improves vocabulary learning outcomes, as opposed to simply making practice more convenient or frequent, remains less settled than popular enthusiasm for MALL might suggest, with Stockwell's (2007, 2010) findings serving as an important corrective against assuming mobile delivery is automatically superior.

Third, and following from the previous point, much of the theoretical work in MALL (Kukulska-Hulme & Shield, 2008; Kukulska-Hulme, 2009; Lai, 2013) has shifted attention away from device comparisons and toward questions of learner autonomy, self-direction, and integration into everyday informal learning contexts — suggesting that future research on mobile vocabulary instruction may be better served by asking how applications support sustained, self-directed engagement over time,

rather than asking whether a mobile screen is a better vocabulary-teaching surface than a desktop screen in the first place.

Gaps remain, particularly around secondary school and non-Western educational contexts, where much of the foundational MALL literature reviewed here was generated in university or adult-learner settings. Bax's (2003) normalisation concept also invites further empirical attention: relatively little research has directly assessed whether mobile vocabulary applications have achieved genuine normalisation within secondary EFL classrooms, as opposed to remaining a supplementary, teacher-initiated activity layered onto otherwise conventional instruction.

7. Conclusion

The path from behavioristic CALL drills to today's mobile vocabulary applications is continuous rather than a sharp break, with each phase inheriting instructional assumptions from the one before it even as the underlying technology has changed dramatically. Warschauer's (1996) three-phase historiography and Bax's (2003) restricted-open-integrated reassessment together provide a useful frame for understanding how vocabulary instruction has been treated across this history, while the MALL-specific literature (Kukulska-Hulme & Shield, 2008; Kukulska-Hulme, 2009; Godwin-Jones, 2011) highlights what is genuinely new about mobile delivery: portability, prior normalisation of the device itself, and the collapsing of formal and informal learning boundaries. At the same time, empirical findings specific to vocabulary instruction (Stockwell, 2007, 2010) caution against assuming that mobile delivery is inherently pedagogically superior to earlier CALL approaches, redirecting attention instead toward frequency, access, and learner self-direction (Lai, 2013) as the more plausible drivers of any advantage mobile vocabulary applications offer.

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