Research Note

Efficacy of Mobile Apps in Teaching Foreign Languages: A Systematic Review

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With over 91% of Americans now owning cellular devices (PEW Research Center, 2019), mobile applications (apps), like those used for foreign language learning (FLL), are becoming increasingly popular (Yu, 2019). However, it is unclear what research has been conducted to determine how effective mobile apps are at teaching foreign languages. To address this gap in the literature, we conducted a systematic review on existing FLL app research to determine trends in the literature and identify studies with quantifiable efficacy measures (Olsen et al., 2021).

Although no current literature review to our knowledge has focused solely on FLL apps, Burston (2015) completed similar work by investigating literature on mobile-assisted language learning (MALL). In Burston's study, 291 papers on MALL were reviewed to determine whether the research design and methods were scientifically sound. Studies with uncontrolled variables, fewer than 10 participants, research design shortcomings (i.e., lack of a control group), or inadequate statistical analyses were excluded. Only 19 studies met the criteria, demonstrating the dearth of research investigating the efficacy of FLL apps.

Building on Burston's (2015) research, we conducted a systematic review using the same criteria to identify studies with quantifiable efficacy measures. Our review differed by including only research on mobile apps that focused specifically on FLL. An extensive search of databases beginning in 2008, which marked the beginning of mobile apps, to March 2020 resulted in 1786 studies being located. A total of 26 studies met the criteria, including having a quantifiable efficacy measure of any identified language area(s) such as vocabulary, pronunciation, or more general measures of language skills such as overall production or comprehension scores. This number was alarmingly low considering the popularity of FLL mobile apps, their claims to efficacy, and their sometimes-hefty cost to purchase.

The current review showed most of the FLL studies tested apps teaching English ($N = 19$, 73%), in classroom settings ($N = 13$, 50%), with college student participants ($N = 12$, 46%). In terms of efficacy, 21 (81%) articles reported the app intervention was effective in improving the targeted language area, with 5 (19%) studies reporting the app was partially or not effective. Another notable finding was that the most prevalent linguistic focus was vocabulary ($N = 14$, 54%). This aligned with research conducted by Heil et al. (2016), who after analyzing the 50 most popular

FLL apps found vocabulary to be the most commonly studied component of language learning, although it was often taught out of context and without corrective feedback. Considering that language also consists of areas such as grammar, pronunciation, and pragmatics, Bolgün and McCaw (2019) argued that knowledge of a language out of context is unlikely to lead to mastery and conversational use. Research supports this theory, demonstrating that apps which teach grammar and vocabulary in context, rather than being presented in isolation, increased foreign language retention (Heil et al., 2016; Sung et al., 2015). It should be noted that although studies may have measured progress made in an isolated area of language such as vocabulary, that does not mean apps were limited to teaching that area or that they taught certain linguistic skills in silos. Apps teaching a combination of linguistic skills in an integrated manner may still be evaluated by a study in terms of the measurement of a single skill to determine efficacy.

The results from our systematic review have multiple implications. First, individuals of varying native languages were using a FLL app to learn English. This suggests that FLL apps should consider how an individual's native language may inform how they learn a specific foreign language. Second, a majority of FLL apps have focused on teaching vocabulary knowledge which Bolgün and McCaw (2019) argued may not lead to language fluency. Third, although mobile apps may provide an accessible way to learn aspects of a foreign language, when choosing teaching materials and methods for FLL, educators should be mindful that few FLL apps have been rigorously studied for efficacy. Future research may help to identify apps with a sound evidence base that are worth investing time and resources in.

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