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Review

How effective are mobile devices for language learning? A meta-analysis

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ABSTRACT

Language learning has undergone rapid changes over the past several years, from computer-assisted learning to the more recent mobile-device-assisted learning. Although mobile devices have become valuable language-learning tools, the evident substantial contribution of mobile devices to language learning have not yet been investigated. The present meta-analysis of 44 peer-reviewed journal articles and doctoral dissertations that were written over a 20-year period (1993–2013), with 9154 participants, revealed that mobile-device-assisted language instruction has produced a meaningful improvement with an overall mean effect size of 0.55. Different effect sizes for moderator variables, such as learning stages, hardware use, software used, intervention settings, teaching methods, intervention durations, learning skills, target languages, and L1/L2, were also reported. The results are discussed, together with their implications for future research and practices on the use of mobile devices in language learning.

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1. Introduction

1.1. Integrating computers with language learning and instruction

Computer-assisted learning has been a focus of educational research for years, and computer-assisted language learning (CALL) has been a major topic of research within the field of computer technology since the 1960 s. Despite claims of the benefits of CALL (Gamper & Knapp, 2002; Hwu, 2013), some researchers (Garrett, 2009; Golonka, Bowles, Frank, Richardson, & Freynik, 2012; Warschauer, 2004) have proposed that CALL remains limited in its ability to assist in language learning and teaching, including problems such as shallow interactions, inaccurate feedback, distraction from learning tasks, overemphasis on the delivery modality, extra workload, inadequate teacher training for developing quality CALL programs, and insufficient software available for effectively training language skills. Mobile technologies offer a potential solution to aforementioned limitations of CALL (Kukulska-Hulme, 2009; Stockwell, 2013).

1.2. The features of mobile devices and their applications in language learning

In recent years, a large body of literature has documented attempts to develop alternative learning tools for computer-assisted learning. The emergence of wireless technology and a variety of mobile-device innovations have received a great deal of attention in the field of education. Mobile devices offer features of portability, social connectivity, context sensitivity, and individuality, which desktop computers might not offer (Chinnery, 2006). Mobile devices have made learning movable, real-time, collaborative, and seamless (Kukulska-Hulme, 2009; Wong & Looi, 2011), and the use of these devices may be called "mobile learning" in general. Our research adopted a broader definition of mobile learning (Burston, 2014; Sharples, Taylor, & Vavoula, 2007), which focused on the mobility of learners or learning and proposed that the features making mobile learning distinctive from traditional learning are its integration of both movable and embedded technologies, its ability to function in both formal (e.g., classroom) and informal (e.g., zoo) settings, its enhancement of both individualized and collaborative/networked learning, and its capability to transform teacher-centered instruction into learner-center learning. The unique properties of mobile devices have also been incorporated into language learning and teaching, forming the emerging research field of mobile-device-assisted language learning (MALL). The main features of mobile devices and their applications in language learning are briefly described below.

Mobility and portability. Mobile devices are small and lightweight, and are easily carried. Several researchers (e.g., Thornton & Houser, 2005; Wood, Jackson, Hart, Plester, & Wilde, 2011) used the portability of mobile phones and text messaging during after-school hours to facilitate students' English reading, spelling, and phonological awareness. These features not only enable learning/teaching to happen anytime and anywhere, but also stimulate the needs of new teaching/learning styles for settings/situations different from traditional classrooms.

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