Chapter 63
Mobile Game–Based Learning

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ABSTRACT

The massive spread of mobile computing is undeniable with the draw of mobile games reaching epic proportions. This popularity, along with the anytime, anywhere, and on-any-device characteristics of mobile computing has ignited mounting interest in the use of mobile games in educational contexts, as illustrated by a growing number of articles on this topic. This chapter offers a review of the research on mobile game-based learning (mGBL), citing mobile games that have been experimented with and/ or used to explore learning. Although many of the studies to date have emphasized the location-based capabilities of mobile devices, the emerging research focused on mGBL is promising, showing that learning can take place through the use of these games. Future research, however, should look beyond individual devices and functionality, and place greater importance on pedagogy.

INTRODUCTION

The use of video games to enhance learning has been the subject of fierce debate (Guillén-Nieto & Aleson-Carbonell, 2012). Nonetheless, experts have long strived to comprehend the draw of these games and their potential role in education. Thus, there is increasing interest in the application of video games in primary, secondary, and higher education; government; financial services; healthcare; hospitality; science and technology; telecommunications; and corporate and military training (Garris, Ahlers, & Driskell, 2002), to achieve a variety of learning outcomes (Kebritchi & Hirumi, 2008). To date, findings point to the instructional benefits of video games in the areas of computer science, geography, language, mathematics, photography, and science (DaCosta, Seok, & Kinsell, 2015).

Advancements in mobile computing have helped pave the way for new video game research (DaCosta & Seok, 2017a, 2017b) in different areas of interest, to include social development, intellectual activities (Spikol & Milrad, 2008), and general learning (Facer et al., 2004; Rogers & Price, 2006). The anytime-, anywhere-, and on-any-device characteristics of mobile technology are of particular importance because they offer new opportunities to research game-based learning (GBL) that is free from space and time restrictions (DaCosta et al., 2015). That is, mobile games have the potential to bridge the gap between the classroom and the real world by placing students in authentic places and learning situations (Costabile et al., 2008). This has, in part, contributed to what is mounting research on what could be called *mobile game-based learning* (mGBL).

This chapter offers a review of the literature on mGBL. Extending the work of DaCosta et al. (2015), the discussion includes (a) a definition of mGBL in the context of game-based learning; (b) a review of the educational benefits of mobile games, building on what is known about video games and learning; and (c) identification of mobile game examples (called out in the literature) that have been experimented with and/or used to explore learning.

To ensure scholarly rigor, the research offered here was compiled in a staged approach similar to that of primary research (Cooper, 1998). The majority of the content comes from books, academic journals, and databases. While peer-reviewed materials were foremost, other resources were also used, including online articles, as supplemental information befitting their academic stature and to provide context regarding "practicing real world examples or an in-the-trenches view" (Kinsell, DaCosta, & Nasah, 2014, p. 161). Thus, this work presents the perspectives and findings of numerous scholars, practitioners, researchers, and experts in an effort to provide a well-rounded view of the educational possibilities of mobile games.

Throughout the chapter the term *video game* refers to a game played on a personal computer (PC) or dedicated game device, such as a game console (e.g., Xbox®, PlayStation®, Wii®) or handheld game device (e.g., 3DS®, Vita®). The term *mobile game,* on the other hand, is used to refer to a video game played on a mobile device (e.g., cell phone, personal digital assistant [PDA], smartphone, tablet). Finally, this work is not intended to debate the practice of video games in education or the use of these games in classrooms, but rather to drive forward the study of mobile learning.

BACKGROUND

What Is Mobile Game-Based Learning?

While game-based learning is a fairly recognized notion, attempts at offering a thorough description have proven difficult (Perrotta, Featherstone, Aston, & Houghton, 2013). Many explanations often consist of definitions attempting to identify the key principles and mechanics involved (e.g., Perrotta et al., 2013). At its core, GBL is rooted in the belief that games can be used in the learning process. This means that GBL is less about the games themselves and more about the educational contribution they can make, with focus on the social dynamics involved and how to best use these games to enhance learning (Perrotta et al., 2013). Building upon this idea, mGBL may be understood as an extension of GBL, fixed in the belief that games played on a mobile device (e.g., cell phone, PDA, smartphone, tablet) can be used to enhance the learning experience.

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