

Chapter 5

Application of Gamification to Blended Learning in Higher Education

Kamini Jaipal-Jamani
Brock University, Canada

Candace Figg
Brock University, Canada

ABSTRACT

Digital game-based learning (DGBL) has been identified as an effective digital teaching strategy to foster 21st century learning. The inclusion of digital game-based learning in instruction is challenging for educators to structure in higher education learning environments, often because of the lack of coherence with curriculum. Gamification is a recent DGBL strategy that enables the instructor to incorporate the motivational and engagement elements of games in ways that can be adapted to curriculum requirements. Gamification, supported with digital technologies such as web-based tools and learning management systems, offers the instructor the benefits of both face-to-face traditional instruction and online learning. An example of how blended learning in higher education incorporates gamification is presented. Study findings indicate that the blended gamified learning environment motivated learners and promoted cognitive, skill, and attitude development.

INTRODUCTION

Digital games have been identified as a teaching strategy that goes beyond conventional notions of pedagogy to create learning environments that feel “new, meaningful, and 21st century” (Johnson, Adams, Becker, Estrada, & Freeman, 2015, p. 34). The motivational aspects of games make them highly applicable in higher education to foster student engagement in learning (Connolly, E.A. Boyle, MacArthur, Hainey, & J.M. Boyle, 2012). However, a recent review shows that digital games are not being utilised to their potential in educational settings (Boyle et al., 2016). Research shows that the inclusion of digital game-based learning (DGBL) is often challenging for educators to implement in formal education

DOI: 10.4018/978-1-5225-7601-3.ch005

learning environments (Faria & Wellington, 2004; Ritzhaupt, Gunter, & Jones, 2010; Van Eck, 2015). This chapter proposes the use of gamification in a blended learning environment as a low-risk strategy to promote more widespread use of DGBL in higher education courses. While gamification is an emerging strategy with many definitions associated with it, there is consensus that it involves “the integration of game elements, mechanics, and frameworks into non-game situations and scenarios” (Johnson, Adams, Becker, Estrada, & Freeman, 2013, p. 20). In this chapter, the relevant literature on blended learning, gaming, and gamification are reviewed, and an empirical case is presented, to illustrate the application of gamification to blended learning in higher education. The design and implementation of a gamified blended course are discussed and future research directions are proposed.

BACKGROUND

Blended Learning

A current trend in higher education is the implementation of blended learning (Halverson, Graham, Spring, Drysdale, & Henrie, 2014; Johnson et al., 2015). According to Graham (2013, p. 334), blended learning is commonly used to “denote a combination of traditional face-to-face and online instruction.” Blended learning evolved from the research into effective teaching practices in higher education which indicated that teacher-directed, lecture-style instruction prominent in higher education learning environments often resulted in “surface-learning” of content (Marton & Saljo, 1976). Deep and meaningful learning promotes metacognitive and higher order thinking skills which are supported by learning strategies such as collaborative tasks, engagement in discourse, reflection, and self-regulated learning (Garrison & Vaughan, 2008). Nonetheless, it has been found that some learning strategies tend to be more effective in one learning environment compared to the other. For example, collaborative tasks in face-to-face learning environments provide emotional support through opportunities “to create a sense of community and connectedness more quickly,” which is lacking in the online environment (Garrison & Vaughan, 2008, p. 28). On the other hand, reflection and discourse through self-regulation of learning is not as strongly supported by face-to-face learning interactions. It is the asynchronous nature of online learning activities that encourages collaborative discourse, reflection, and self-regulation of learning outside of class (Vaughan, Cleveland-Innis, & Garrison, 2013). Blended learning environments are therefore beneficial for mitigating emotional distance (Vaughan et al., 2013) and developing metacognition and higher order learning skills (e.g., S. K. Taradi, M. Taradi, Radic, & Pokrajac, 2005; Tsai, 2014).

Various frameworks have been proposed for designing blended learning. For example, Wu, Tennyson, and Hsia (2010) found that a combination of the following factors: cognitive (e.g., computer self-efficacy), technological (e.g., flexible access to online activities) and social interactions, contributed to learner satisfaction. Another framework that has been most prevalent for informing blended learning design is Garrison and Vaughan’s (2008) community of inquiry (Halverson et al., 2014) where social and cognitive presence is addressed in the face-to-face and online environment. According to this framework, social presence is best promoted through learning activities (e.g., wikis, blogs) that engage students in small group discussions, collaborative research, and cooperative group work (Vaughan, Cleveland-Innis, & Garrison, 2013). Cognitive presence in the online environment is developed through inquiry with the community of learners, using ongoing reflection and critical discourse. Many online learning activities,

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