Chapter 17

The Effectiveness of Gamification on Student Engagement, Learning Outcomes, and Learning Experiences

Kenneth C. C. Yang
https://orcid.org/0000-0002-4176-6219
The University of Texas at El Paso, USA

Yowe Kang
https://orcid.org/0000-0002-7060-194X
National Taiwan Ocean University, Taiwan

ABSTRACT

Gamification has been widely used in the higher education to enhance users’ learning experiences through the integration of game-like elements into the course materials. This study explores whether and how different levels of gamification in the instructional methods will influence student engagement with the course, overall learning experiences with the course, and learning outcomes with the course materials. The findings suggest that, among four indices to measure the success of gamification, three out of four show the positive gamification effects with a highly gamified class leads to higher level of student engagement than no or lowly gamified classes. The same positive gamification effects can be found in students’ overall learning experience. Highly gamified classes result in better student learning outcomes as measured by their grades at different data collection points. Limitations of this study include small class sizes and no statistically significant results and only two gamified elements used. Implications and discussions were presented.

DOI: 10.4018/978-1-7998-0115-3.ch017
INTRODUCTION

The Rise of Digital Game Industry

According to Entertainment Software Association (henceforth, ESA) (2019), 65% of American adults play video game and the average age of gamers is 33 years old. Fifty-four percent of American gamers is male, while forty-six percent is female (ESA, 2019). Sixty-two percent of Millennial gamers (aged between 18 and 34 years old) who are attending college believe video games can be educational, while 68% of them believe playing video game can stimulate mental capacity (ESA, 2019). The video game industry has accumulated $43.4 billion in 2018 from three major categories: contents ($35.8 billion), hardware ($5.1 billion), and accessories and VR ($2.4 billion) (ESA, 2019). Nine out of the top 20 best-selling video games are classified as Mature, such as *Call of Duty: Black Ops III*, *Red Dead Redemption II*, *Grand Theft Auto V*, *Far Cry 5*, *God of War 2018*, etc. challenging previous perceptions that digital games are played by teenagers (ESA, 2019). The growing importance that digital games have played in Generation M’s life has lent support to the integration of digital games into the higher education pedagogy.

Rapid growth of the digital game industry have generated enthusiasm among scholars from different disciplines to explore this phenomenon and its impacts in a variety of application contexts (Kang, 2015; Raessens & Goldstein, 2005; Wolf & Perron, 2003). Some emerging areas of digital game research include media effects of digital gameplay, addiction to digital games (Chuang, 2006), adoption behaviors of new game technologies (Chang, Lee, & Kim, 2006), methodological implications in researching digital games (Boellstorff, Nardi, Pearce, & Taylor, 2012), and educational applications (Adukaite, Zyl, Er, & Cantoni, 2017; de-Marcos, Dominguez, & Saenz-de-Navarrete, 2014; Gee, 2004; Leaning, 2015; Prensky, 2005). This book chapter will particularly focus on the applications of digital games in the higher education context (Adukaite et al., 2017; de-Marcos et al., 2014; Leaning, 2015).

Gamification as an Educational Tool in the Higher Education Context

The popularity of digital games and widespread applications have led educators to integrate game elements into their instructional methods and materials, in order to make the best of users’ own desire for achievement, competition, and self-expression (Hamari & Eranti, 2011; Hamari, Koivisto, & Sarsa, 2014; Kang, 2015; Reeve & Read, 2009; Swallow, 2012). To study many game-like applications in the educational context, a comprehensive term, gamification, has been developed to address how educators take advantage of users’ desire for achievement, education, entertainment, and stimulation through the use of game design elements in non-game contexts (Deterding, Sicart, Nacke, O’Hara, & Dixon, 2011a; Kang, 2015; Morschheuser, Rivera-Pelayo, Mazarakis, & Zacharias, 2014).

Gamification is also defined as “the application of game design principles in non-gaming contexts” (Robson, Plangger, Kietzmann, McCarthy, & Pitt, 2015, p. 411). The term, gamification, mainly refers to “an approach to enhancing people’s experience of a service or system through incorporating game-like experiences into the service or practice” (Leaning, 2015, p. 159). As conceptualized by Leaning (2015), the process of gamifying a course “involves adding a different form of experience to an activity, adding a new layer to an existing process that incorporates a new level of symbolic or ludic meaning above and beyond the merely instrumental activity of the task. The new layer of meaning provides a greater experience for the user and encourages participation with the transformed activity” (p. 159).