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A qualitative investigation of student perceptions of game elements in a gamified course

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ABSTRACT

As gamification grows in popularity, there has been increased interest in its potential as a motivating and engaging learning strategy. Yet, it is still a controversial issue in education and has received several criticisms. The existing literature suggests that when gamification is designed well and utilized correctly, it has potential to improve learning, but qualitative investigations are required in order to reveal how a wide range of game elements fit into different learning contexts. In order to address this gap, this qualitative study aims to explore students' overall perceptions about various game elements in a gamified instructional technology and material development course within a teacher education context. Based on the data gathered via interviews, observation, and documents ($n = 118$) for one academic year, the study examines possible impacts of game elements and how they should be designed and implemented from the students' perspectives. The results yielded nine main themes: *challenge*, *narrative*, *leaderboard*, *reward*, *badge*, *teams*, *win-state*, *points*, and *constraints*. This paper presents the gamification process, iterations made into the game elements, and main features of the game elements in a gamified teacher education course.

1. Introduction

Gamification has recently become more popular (Nah, Zeng, Telaprolu, Ayyappa, & Eschenbrenner, 2014) and prominent in everyday life (Klock, Gasparini, Pimenta, & de Oliveira, 2015). Many gamified solutions have developed in the market over the past few years (Burke, 2014; Huotari & Hamari, 2012), and have been implemented in many areas (Hamari, Koivisto, & Sarsa, 2014). As a result, gaming mechanics have become integrated into daily activities via mobile apps such as FourSquare, a reward system that motivates people to collect rewards in the form of badges (Hamari & Eranti, 2011; Johnson, Adams Becker, Estrada, Freeman, & The New Media Consortium, 2014).

Various definitions of gamification have been provided by the literature in various fields. Although there is still no broadly accepted definition of gamification (Seaborn & Fels, 2015), the existing definitions have common characteristics. Gartner defines gamification as "the use of game mechanics and experience design to digitally engage and motivate people to achieve their goals" (as cited in Burke, 2014, p. 6). According to Kapp (2012), "Gamification is using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems" (p. 10), whereas Zichermann and Cunningham (2011) defined gamification as "the process of game-thinking and game mechanics to engage users and solve problems" (p. 14). Moreover, Huotari and Hamari (2012) provides a definition from a service marketing perspective as "a process of enhancing a service with affordances for gameful experiences in order to support user's overall value creation" (p. 20). However, the most commonly used definition, provided by Deterding, Khaled, Nacke, and Dixon (2011), is "the use of game design elements in non-game contexts" (p. 2). Thus, gamification is an umbrella term focusing on the use of game elements instead of full-fledged games to improve user experience and engagement in non-game contexts (Deterding, Sicart, Nacke, O'Hara, & Dixon, 2011), including education. As in daily life, teaching practices can be enriched by elements of entertainment and reward when learning is gamified (Sharples et al., 2013). Although gamification seems fairly new, integrating game elements into teaching is clearly not new (Educause, 2011; Robertson, 2010). Since the industrial age, education systems have been based on

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status and points, i.e. assignment scores indicate points, graduation shows an achieved level, and a diploma signifies a badge of confidence given by an accredited institution (Smith-Robbins, 2011).

When gamifying environments, a one-size-fits-all approach is followed, assuming that all users will have the same reactions to the gamification elements (Klock et al., 2015). The design of effective gamification is not a simple direct process (Fitz-Walter, Johnson, Wyeth, Tjondronegoro, & Scott-Parker, 2017). It is essential to explore how game-like rule systems and player experiences can best be implemented in order to gain insights about the potential of gamification in education (Lee & Hammer, 2011). Exploring new ways to implement gamification in learning contexts so it is not limited to extrinsic rewards is particularly crucial. When gamification is well designed and correctly utilized, it has the potential to improve learning (Dicheva, Dichev, Agre, & Angelova, 2015). Nevertheless, using many gamification mechanics does not guarantee better learning performance (Chang & Wei, 2016). Qualitative investigations are required to reveal how a wide range of game elements fit into different learning contexts (Seaborn & Fels, 2015), as such studies can shed light on what conditions enable game elements to lead to learning (Lee & Hammer, 2011). Therefore, apart from its counterparts in the literature, this qualitative study aims to explore students' overall perceptions about a series of game elements in a gamified instructional technology and material development course within a teacher education context over a longer period of time. This study also provides a descriptive account of participants' perceptions of about the elements of gamification in order to create successful, useful, and effective gamified learning environments and, therefore, successful gamified experiences.

2. Theoretical background

2.1. Gamification and education

Many researchers believe that gamification has the potential to motivate and activate targeted behaviors while building loyalty to the gamified experience (Deterding, Khaled, et al., 2011; Kapp, 2012; McGonigal, 2011; Zichermann & Cunningham, 2011; Zichermann & Linder, 2010). Moreover, it has potential to make non-game activities more fun, motivate people to perform tasks and keep them in a state of flow (Zichermann & Cunningham, 2011). Gamification has been seen as a potential solution for engagement and motivation problems in educational settings (Dicheva et al., 2015; de-Marcos et al., 2014; Lee & Hammer, 2011). Gamification in education incorporates a wide range of approaches to teaching and learning (Johnson et al., 2013). Educational gamification utilizes game-like rule systems, player experiences, and cultural roles for the purpose of shaping learner behavior (Lee & Hammer, 2011).

The benefits of gamification have been extolled in a number of studies. Briefly, gamification has positive influences on engagement (Barata, Gama, Jorge, & Gonçalves, 2013; Çakıroğlu, Başıbüyük, Güler, Atabay, & Memiş, 2017; da Rocha Seixas, Gomes, & de Melo Filho, 2016; Ding, Kim, & Orey, 2017; Hamari et al., 2014; Ibanez, Di-Serio, & Delgado-Kloos, 2014; Li, Grossman, & Fitzmaurice, 2012; Poondej & Lerdpornkulrat, 2016; Tan & Hew, 2016; O'Donovan, Gain, & Marais, 2013), motivation (Abramovich, Schunn, & Higashi, 2013; Barata et al., 2013; Hamari et al., 2014; Hamzah, Ali, Saman, Yusoff, & Yacob, 2015; Lister, 2015), participation (Barata et al., 2013; Cronk, 2012; Lister, 2015), achievement (de-Marcos, Domínguez, Saenz-de-Navarrete, & Pagés, 2014; Ibanez et al., 2014; Lister, 2015), learning (Alcivar & Abad, 2016; Buckley & Doyle, 2014; Cheong, Cheong, & Filippou, 2013; Landers & Landers, 2014), course grades and lecture attendance (Barata et al., 2013; Lister, 2015; O'Donovan et al., 2013), satisfaction (Alcivar & Abad, 2016; Armstrong & Landers, 2017), and enjoyment (Baxter, Holderness, & Wood, 2015; Li et al., 2012). Despite the benefits of gamification, opponents criticize it for being composed of irrelevant game elements while ignoring the critical aspects of game design that actually motivate and engage people (Bogost, 2011). Bogost (2011) also postulates that gamification lacks the core aspects of gaming, provides few rewards, and tries to build a fun element into a broken system. In agreement, Robertson (2010) adds that gamification should be called pointsification as it is mainly about adding points and giving badges to people. Hanus and Fox (2015) reported that students in a gamified course had less motivation, satisfaction, and lower exam grades than those in a non-gamified class.

Gamification aims to integrate more fun and engagement into education while providing positive feedback, which pushes students to be more interested, motivated, and stimulated to learn (Muntean, 2011). Since increasing motivation is not an easy task, the effective design and application of the gamification experience require great effort (Domínguez et al., 2013). Effective application of gamification in learning is complex (Dicheva et al., 2015; Hsin-Yuan Huang & Soman, 2013) because gamification does not merely mean the application of technology to distribute awards (Burke, 2014). The effects of gamification are largely reliant on the implementation (Hamari et al., 2014) and context (Buckley, Doyle, & Doyle, 2017). Gamification utilizes a wide range of game design elements, and appropriate alignment of gamification elements (mechanics, dynamics, and emotions) drive the success in gamification (Robson, Plangger, Kietzmann, McCarthy, & Pitt, 2016). Moreover, these game elements are extremely important for a better gamified experience, but despite the enjoyment a user can get from game elements, integrating game elements into non-game context might not always lead to a change of behavior (Fitz-Walter et al., 2017).

2.2. Game elements used in gamification

Werbach and Hunter (2012) compare games to a box of Lego with different pieces that can be connected to make various objects. Similarly, games include elements that can be conjoined to create different gaming contexts for diverse experiences. They further describe the categories of game elements as dynamics, mechanics, and components. While dynamics are the most abstract elements that form the overall characteristics of a game, mechanics are the concrete elements used in games, which guide the players to carry out specific actions in a bounded context. Therefore, it is through mechanics that dynamics are applied in a game context. Components, on the other hand, are the most concrete and visible form of game elements. The terms for these three elements have been used interchangeably in the literature because thus far there is no generally accepted classification of game design elements (Dicheva et al., 2015). For example, according to Burke (2014), game mechanics includes the common key elements of games, which are points, badges, and leaderboards, etc., whereas these elements are components according to Werbach and Hunter (2012).

Recently, the value of game-based mechanics in generating meaningful learning experiences has been more visible through gamification (Pesare, Roselli, Corriero, & Rossano, 2016). An effective choice of game mechanics and game elements is more likely to lead to success in gamification because these aspects can impact diverse psychological needs (Lombriser, Dalpiaz, Lucassen, & Brinkkemper, 2016). A review on gamification of education revealed that several game elements are used in studies to gamify education: points, levels/stages, badges, leaderboards, prizes, progress bars, storyline, and feedback (Nah et al., 2014). Despite an abundance of other dynamics, mechanics, and components, the