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How to Engineer Gamification:
The Consensus, the Best Practice and the Grey Areas

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ABSTRACT

Gamification refers to the use of game elements in a business context to change users' behaviours, mainly increasing motivation towards a certain task or a strategic objective. Gamification has received a good deal of emphasis in both academia and industry across various disciplines and application areas. Despite the increasing interest, we still need a unified and holistic picture on how to engineer gamification, including the meaning of the term, its development process, the stakeholders and disciplines which need to be involved in it, and the concerns and risks that an ad-hoc design could raise for both businesses and users. To address this need, this article reports on empirical research which involved reviewing the literature and a range of gamification techniques and applications as secondary research, and an expert opinion study of two phases, qualitative and quantitative, as primary research. Based on the results, we provide a body of knowledge about gamification and point-out good practice principles and areas of gamification that are debatable and need further investigation.

KEYWORDS

Expert Study, Gamification, Human-Centered Design, Persuasive Technology

1. INTRODUCTION

Games have long been a part of culture as a means of entertainment, building relationships, and learning and training (McGonigal, 2011). In recent times, the digitization of games has caused a spike in their use and involvement in everyday lives of many people. According to ESA (ESA, 2014), the average game player is now aged 31 years, 48% of players being female thus shaping the gamers population. The success of games in keeping their users engaged and motivated has led researchers studying the phenomena in more depth to identify constructs in games that enable such engagement and sustainability in users' motivation and utilize them for goals beyond mere

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entertainment (Seaborn & Fels, 2015). These studies have resulted in various strategies, such as gamification, to pursue these goals.

Gamification is used to increase motivation and engagement in its target users in favor of changing their behaviors towards desired ones. There are several successful applications of gamification available in the literature encouraging various goals, such as adopting a healthier lifestyle (Johnson et al., 2016; Pløhn & Aalberg, 2015), increasing students' engagement with class activities in order to achieve better results (O'Donovan, Gain, & Marais, 2013; Simões, Redondo, & Vilas, 2013), or increasing quality and productivity in a business environment (Robson, Plangger, Kietzmann, McCarthy, & Pitt, 2016; Rodrigues, Oliveira, & Costa, 2016). For example, in a business environment, such as a call center, various game elements such as points and leader-boards could be used to reflect the performance of employees, e.g., the number of calls answered, the number of issues solved, the time taken for finishing tasks, and the customers' satisfaction (InterAksyon, 2012).

In order to understand gamification, the differences between play and game need to be addressed. According to Caillois & Barash (1961), play (paidia) is described as free-form, expressive, improvisational behaviors and meanings. Game (ludus), on the other hand, is rule-based engagement with pre-determined goals. Gamification, as the name suggests, is more focused on ludus, nevertheless, as (Alfrink, 2011) suggests, users are not given much flexibility to improvise their behaviors, and they have to do/achieve pre-determined tasks/goals. Despite the opinions of (Abt, 1987; Bogost, 2011) for excluding playfulness, playful design, and playful interaction from gamification, it is believed that gamification can also facilitate playful behaviors and entertainment to achieve its goals (Groh, 2012). However, including entertainment in a gamification design does not guarantee its success (Berkling & Thomas, 2013).

Since coining the term, several attempts have been made to establish a standard and commonly accepted definition (Deterding, Dixon, Khaled, & Nacke, 2011; Huotari & Hamari, 2012; Werbach & Hunter, 2012). However, there are still many gaps, debates, and ambiguities within the literature that are yet to be investigated. For example, it is not clear which constructs and properties shape gamification, and how it can be differentiated sharply from other similar concepts, such as serious games or games with purpose. Moreover, despite some attempts made towards introducing a methodology for designing gamification from a business-oriented point of view (Herzig, Ameling, Wolf, & Schill, 2015a), it is not yet clear which stakeholders and which fields of study need to be involved in the design process of gamification in a wider perspective, e.g., impacts on social and mental aspects. In addition, there are several debates on when gamification can be introduced to an environment, what concerns it produces and which considerations may lead to a successful design of gamification in that environment. Finally, what issues, from legal or ethical perspective, may arise by the use of gamification and how these issues need to be tackled.

In this paper, we conduct empirical research to gather opinions from experts in the domain of gamification and reflect on that to identify best practice guidelines and point out dissimilarities and areas that need further investigation. Finally, we provide a body of knowledge with regards to gamification design, which informs researchers and practitioners in their future work.

2. LITERATURE AND RESEARCH MOTIVATION

Deterding et al., (2011) define gamification as "the use of game design elements in a non-game context", emphasizing that the final product will not be a game. Despite this emphasis, there are several instances of considering gamification as serious games or even considering both to be the same concept (Kapp, 2012). An alternative definition of gamification is introduced by Huotari & Hamari (2012) as a rules-based service system that provides feedback and interaction mechanism to the user with an aim to facilitate and support the users' overall value creation. In addition to increasing motivation and engagement, their definition of gamification emphasizes that adding gamification to a working environment should lead to the creation of added value to the business, for example.,