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Teacher perceptions on the use of digital gamified learning in tourism education: The case of South African secondary schools

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ABSTRACT

With the global diffusion of digital gaming, there is an increasing call to establish to what extent games and their elements could be harnessed for learning and education. Most research in this field has been conducted in more economically advanced and developed regions, and there is a paucity of research in emerging country contexts. It is argued that gamification can be effectively utilised in these contexts to address learner engagement and motivation. The study investigated the extent to which six determined predictors (perceptions about playfulness, curriculum fit, learning opportunities, challenge, self-efficacy and computer anxiety) influence the advocacy to accept a gamified application by South African tourism teachers. Tourism education was selected for empirical study because of its popularity in developing countries and where the economy heavily depends on the sector. However, it is a highly under researched area. Data was obtained from 209 tourism teachers, and was tested against the research model using a structural equation modelling approach. Findings reveal that the constructs of perceived playfulness, curriculum fit have a positive, direct impact on the construct of behavioural intention. The exogenous constructs of challenge, learning opportunities, self-efficacy and computer anxiety have an indirect effect on behavioural intention via perceived playfulness or curriculum fit. The study may prove useful to educators and practitioners in understanding which determinants may influence the introduction of gamification into formal secondary education.

1. Introduction

The digital gaming industry is a powerful global business. Digital games have become a common and lucrative form of entertainment in contemporary culture (ESA, 2015; Curwood, 2014). Beyond purposes of pure entertainment, however, game mechanics and game thinking have been introduced and applied within a range of industries. This trend is generally referred

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to as 'gamification', defined by Deterding, Dixon, Khaled, and Nacke (2011:10) as "the use of game design elements in non-game contexts". Gamification has seen some utility in the education field, and has been shown to increase learner engagement and motivation (Hew, Huang, Chu, & Chiu, 2016; Da Rocha Seixas, Gomes, & De Melo Filho, 2016; Hanus & Fox, 2015).

While research related to gamification and education in economically developed regions (North America, Asia and Europe) is pervasive in the literature (Boyle, Hainey, Connolly, Gray, Earp & Ott et al., 2016; Dicheva, Dichev, Agre, & Angelova, 2015), few studies have been conducted in developing or emerging regions like the Global South (Da Rocha Seixas, Gomes, & De Melo Filho, 2016; O'Donovan, Gain, & Marais, 2013). In contrast, this research was conducted in South Africa, which is considered an emerging and newly industrialised economy (UNDP, 2015; IMF, 2015); one in which the digital game industry is growing annually (PricewaterhouseCoopers, 2015). However, the industry still lags behind mature markets such as those of Western Europe. This is mainly due to the low level of broadband access in South Africa as well as stark socio-economic inequalities in the country. As argued by Walton and Pallitt (2012), studying games in South Africa requires a more context-sensitive approach because youth in the country demonstrate highly differentiated adoption of technologies for gaming. Moreover, studies in gamification in education are mainly conducted in higher education institutions, typically involving computer science students (Dicheva et al., 2015). This study is proposed at the secondary education level and within the subject of tourism, which is an under-researched area (Adukaite, van Zyl, & Cantoni, 2016). Because of the sparse literature on the subject, the various and possible implications of digital gaming technology in the tourism education field in South Africa are unknown and require deeper examination.

Student engagement is usually the primary motivation to introduce gamified learning within formal education. Lack of engagement is also considered a key factor in poor graduation rates at secondary and tertiary institutions in South Africa (Strydom, Mentz, & Kuh, 2010; Titus & Ng'ambi, 2014). It is argued that increased engagement is likely to decrease apathy for specific subjects and even improve academic performance (Fitzgerald, Bruns, Sonka, Furco, & Swanson, 2012). As argued by Titus and Ng'ambi (2014:743), "to date, there is paucity of evidence within the South African education system with regards to games and its impact on student engagement". Several studies investigate digital games acceptance in the formal learning environment (e.g., Bourgonjon et al., 2013; Hamari & Nousiainen, 2015) and argue for the critical role of teachers in the adoption process. As argued by Teo, Milutinović, and Zhou (2016), if educators do not believe that using specific technology will help fulfil their needs, it is reasonable to assume that they will avoid adopting that technology. For the purposes of this study, South African in-service tourism teachers were asked to evaluate a specific gamified application. Respondents were asked to reflect on their behavioural intention to advocate for and accept the application for tourism teaching in the formal high school curriculum.

The literature points to various factors that affect the behavioural intention to adopt digital games or gamified applications for instructional purposes. This study specifically examined two types of factors. Firstly, constructs that pertain to the teacher's individual differences and experiences with the technology (self-efficacy, computer anxiety, and perceived playfulness), as they have been repeatedly emphasised in the literature as the main inhibitors of technology adoption for instructional purposes, which is especially the case in developing contexts (Agbatogun, 2010; Li & Huang, 2016). Secondly, influencers related to teachers' perceptions on whether the system addresses students' needs and may benefit them: the level of challenge the application provides (Padilla-Meléndez, Del Aguila-Obra, & Garrido-Moreno, 2013; Hamari et al., 2016), perceived curriculum fit (De Grove, Bourgonjon, & Van Looy, 2012), and learning opportunities offered by the application (Li & Huang, 2016). Thus, this study examined the structural relationships between selected individual differences and teachers' perceptions on how beneficial the specific gamified system could be to their students. This was done to enhance understanding of the effects that these relationships would have on the behavioural intention of teachers to advocate for the acceptance of a gamified application for tourism education.

The following research question guides our study:

> *To what extent do perceived playfulness, curriculum fit, learning opportunities, challenge, computer anxiety and self-efficacy influence the behavioural intention to advocate for and to adopt gamified learning applications for tourism education?*

This study contributes to the theoretical domain of gamified learning acceptance in education (e.g., Bourgonjon et al., 2013; De Grove et al., 2012; Hamari & Nousiainen, 2015). Moreover, there is still a paucity of quantitative research on gamification acceptance by educators, and this study will contribute new knowledge in this area. In addition, the study aims to enhance practitioner understanding in terms of how relationships of the tested variables may eventually inform the design of digital gamified learning systems.

2. Literature review

2.1. Gamification and learning

The relationship between digital games and learning has been studied from various perspectives, examining informal learning that happens during play (Sefton-Green, 2003; Williams, 2006) and exploring the incorporation of digital games in formal learning activities (De Freitas & Oliver, 2006). Yet, games, simulations, and gamification often bridge the distinctions