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Lucinda Bell
University of New South Wales, lucinda.bell1@student.unsw.edu.au

Christine Van Toorn
University of New South Wales, c.vantoorn@unsw.edu.au

Pedro Isaias
University of New South Wales, p.teixeira_isaias@unsw.edu.au

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Lucinda Bell
School of Information Systems & Technology Management
University of New South Wales
Sydney, Australia
Email: lucinda.bell1@student.unsw.edu.au

Christine Van Toorn
School of Information Systems & Technology Management
University of New South Wales
Sydney, Australia
Email: c.vantoorn@unsw.edu.au

Pedro Isaias
School of Information Systems & Technology Management
University of New South Wales
Sydney, Australia
Email: p.teixeira_isaias@unsw.edu.au

Abstract

Gamification is a developing approach to increase factors such as engagement, collaboration and motivation amongst learners. With the growing popularity of gamified learning experiences and shifting workplace demographics, the current study aims to shed light on the use of gamification by work integrated learning (WIL) participants within an organisational context. Previous studies have highlighted mixed levels of success when applying gamification techniques to educational settings and have often neglected the development of a conceptual framework to aid successful implementation of this. The current study will critically examine the use of gamification within new hire onboarding and utilise self-determination theory in the design of a gamified mobile application to facilitate this. Findings will add to the body of knowledge and extend practical understanding of the specific gamification features to promote effective outcomes in terms of user engagement and increased motivation in the new hire context.

Keywords gamification, WIL-participants, adaptive learning, engagement, new hire

1   Introduction

Gamification techniques have been implemented predominantly in the education sector, however there have also been examples of practical uses within areas such as health and sports with researchers seeking to capitalize on the motivational benefits of game design across these various domains (Seaborn & Fels 2015; Johnson et al. 2016). Although the use of gamification has been applied within the context of online educational settings, there is still a need for further empirical evidence to increase the validity of the effects of gamification in these learning environments and to develop more accurate methodologies to test and measure the overall effects. Despite these gaps in the field, gamification is an area with growing potential and has been proven to be a strategy that if well executed and designed, can produce significant benefit for engagement, motivation and adaptive learning outcomes for users (Dicheva et al. 2015). Previous studies have focused on short-term measurements such as motivation or engagement, however, researchers have suggested that studies should be extended to review the impacts on additional or complementary aspects such as social impacts from participating with peers in gamified platforms, or the effects of extrinsic rewards on intrinsic motivational behaviour (Hamari and Kovisto 2014). There is also a gap in the current body of research in terms of critically analysing the design of the gamification experience to identify the implications and impacts of certain aspects of the designs (such as potential unintended effects, be they positive or negative). This is especially the case within a corporate environment which holds a lack of exploration in relation to employee behaviour and responses to gamified learning experiences.

Gamification has assisted in transforming the use of game-based learning from being employee generated to being supported and encouraged by management (Mollick & Rothbard 2014). Using games within a corporate context has proven to provide substantial benefits to employee productivity and motivation allowing employees to engage not only in the game, but also in their role in the workplace (Mitchell at al. 2020). This has helped to define workplace gamification as "an employer-imposed game in a work environment where the goals of the game are designed to reinforce the goals and purpose of the employers" (Mollick, & Rothbard 2014, p.7). Previous studies have shown that many employees are not engaged in their work, resulting in a potentially negative impact on workplace culture and productivity (Osborne and Hammoud 2017; Pech & Slade 2006; Rodrigues da Costa & Maria Correia Loureiro 2019). Organisations need to adapt to the evolving learning needs of the workforce and implement innovative solutions to address these behaviours, hence the importance of introducing motivational strategies to sustain employee engagement (Sun and Bunchapattanasakda 2019). Despite the potential benefits of gamification for organisations, there is still a lack of clarity surrounding the specific use-cases across which to implement, as well as a framework for introducing gamification successfully in this context. As employees, millennials are characterised as being digital natives with differing needs related to their work and learning (Oprescu et al. 2014). This is something which must be recognised by organisations to enable millennials to work efficiently and productively from day one. Organisations must become accustomed to the behaviours and motivations from the new digital generation (Ronda 2016). This study will explore gamification within the organisational setting, specifically within the new hire onboarding journey for WIL participants, contributing to the overall understanding and knowledge-base of the effectiveness of gamification on engagement, motivation and learning.

1.1   Research Objectives

The aim of this study is to explore how a gamified mobile application can be used to increase overall engagement, motivation and facilitate learning for work integrated learning (WIL) participants during their new hire onboarding journey. A case study approach has been adopted within the financial services sector. The mobile application has been developed and tailored to the new hire training content for the case study organisation. The underlying features and functionality have aimed to be adaptable and scalable to suit other organisations and potential sectors. The study involves both the development of the mobile application as well as the creation of a conceptual framework to shed light on the optimal approach for implementing gamification in this context. Formal ethics approval has been obtained for the study and the proposed data collection methods are outlined in further detail in Section 3.

The key research objective underpinning the study is to explore how engagement, motivation and overall learning for WIL participants can be increased via the development of a gamified mobile application. This study also seeks to address the following research questions:

1. What are the key gamification features demonstrated to be effective in increasing overall engagement, motivation and learning?

2. What is the optimal approach and conceptual framework for implementing gamification in the context of an organisational new hire process?

1.2 Study Rationale and Potential Contributions

This study will add to the current body of literature and extend the application of gamification across the new hire (WIL) organisational context, an area of increasing interest and one which has not been extensively addressed in prior studies. The study will also provide greater insights into how gamification can complement the shifting demographics of the workforce and their corresponding learning needs through the development of a conceptual framework based on the research undertaken.

While prior research has examined how gamification can increase learning capabilities within a classroom and educational environment(s), its application within the new hire (WIL) organisational context has not been extensively addressed. The current study will specifically explore this area and how a gamified mobile application can be used to stimulate higher levels of engagement and other intrinsic factors such as motivation and satisfaction. The study involves the development of the mobile application as well as the creation of a conceptual framework to help inform and guide future studies.

1.3 Theoretical Lens

The study utilises the notion that gamification has a positive impact upon individual performance, engagement and motivation as evidenced by prior research (Nicholson 2014; Zichermann and Linder 2013; Huotari and Hamari 2016). The design of the mobile application follows the approach proposed by Werbach and Hunter (2012) to ensure that potential learning challenges can be mitigated, and all users are positioned to experience a positive and rewarding gamification journey. The Self-Determination Theory (SDT) proposed by Deci and Ryan (2004) has been leveraged and applied when linking the motivational potential of specific gamification features to differing psychological needs.

2 Background Literature Review

The modern education landscape has transformed significantly throughout recent decades with the addition of innovative technologies and the learners themselves now consisting largely of digital natives (Ronda et al. 2018). This applies to both educational institutions and organisations in sectors such as financial services. Learning is no longer restricted to a certain time or place, but now has a large degree of mobility which must be utilized to adapt and accommodate for the current mobile learners. There is a growing number of millennials entering higher education and the workplace who are accustomed to using mobile devices and gamified technology (Sun and Bunchapattanasakda 2019). The use of mobile applications and gamification techniques for learning and education has been proven to increase engagement and academic achievement with training and course materials (Kapp 2012; Landers 2014). However, the link between these two phenomena holds limited exploration, specifically in the context of work integrated learning (WIL) participants entering an organisation. Of particular interest for this study is how gamification and mobile learning can be utilized to enhance overall engagement and learning success of WIL participants during the new hire onboarding process. The ultimate goal is to identify the effectiveness on overall engagement, in particular, on increasing intrinsic elements such as motivation and satisfaction.

A number of theories and constructs relating to gamification have emerged which can be used to provide a foundation for formulating research questions, and in turn, progressing the theories and their applications. Research advises that there is a lack of clarity surrounding the effects of specific gamification elements on certain goals and user behaviours such as competition and cooperation Morschheuser et al. (2018). The study utilised the social interdependence theory articulated by Johnson (2003) as well as Lock and Latham's goal-setting theory (1990) to explore how crowdsourcing behaviours can be influenced by the use of competitive gamification. The premise of goal setting theory) is that behaviour is driven by individual goals which can be broken down into two key elements of content and intensity, which ultimately can impact how effective one is at self-regulation and leadership (Lock and Lathan (1990). It also highlights that an individual is more likely to accomplish a certain goal if it is clear and specific, as well as difficult enough to motivate them, but not too difficult so as to intimidate them or lose their belief in achieving the goal. They produced findings which highlighted that inter-team competition activities are more effective at promoting engagement and participation compared to pure gamification strategies. We therefore need to consider the impacts of cooperative versus competitive design approaches when implementing gamification. Van Roy and Zaman (2019) also explored another key theory relating to gamification in an attempt at progressing the understanding of the psychological influences which play a role in determining if game-design elements are successful

or not in the educational setting. The study suggested that the SDT Theory (Deci and Ryan 2004) can be used to more clearly identify the differing psychological needs to be catered for when designing and introducing gamification to users.

Gamification became a popular phenomenon to explore during the period 2012-2015, however, there has been a lull in research conducted in this area since 2015. A review of the literature has identified the need for research to review and address practical examples of how gamification can be used by organisations in the context of new-hire onboarding. In addition, there is a further need for a conceptual framework to help guide the adoption and implementation of gamified elements into the workplace. Such a framework could help explain how organisations can best facilitate successful adoption and user interaction with gamified learning techniques. Given the shifting demographics of the current workforce and the ever increasing proportion of millennials or digital natives, there is a growing need for a deeper understanding of how new technologies, such as gamified mobile learning applications, can facilitate learning and be designed to increase engagement and overall collaboration and motivation.

3   Research Design and Methodology

This study utilises a combination of both qualitative and quantitative research methods including targeted surveys and focus groups to facilitate the data collection. This mixed-method approach was deemed appropriate to answer the research questions and has been used previously in similar case study research in this emerging area (Lopez & Tucker 2019; Chen et al. 2015; Geelan et al. 2015). As part of the research, key stakeholder requirements were gathered using a survey targeted towards WIL participants. Qualitative analysis of this data was then conducted to assist in determining initial user requirements and preferred features of the mobile application. This was an iterative process and once the application had been developed, data relating to user feedback and insights was once again gathered and analysed. This data helped to identify the impact of the gamified learning application on factors such as engagement, motivation and overall learning. Further data was gathered via the use of focus groups with WIL participants, specifically to gather data on users' perceptions of the ease of use and efficiency of the application to facilitate their learning and engagement. Targeted surveys were used following the focus group which involved several numerical rating scales to gather data relating to the users' overall experience and satisfaction with the key gamification features. This quantitative data helped to determine users' acceptance of and attitudes towards the technology as well as the impact on overall learning, engagement, motivation and learning. The question format and wording structure for both the surveys and focus groups followed the best practices and approach as outlined in the literature (Kelley et al. 2003).

3.1   Participant Journey

The following section describes how the individual participant progresses through the phases of the research process:

Targeted survey 1 [this survey was crafted for qualitative analysis, and seeks to understand user requirements and desired gamification features for the mobile application] → Focus group [during the focus group, participants discussed their thoughts and feedback on the developed mobile application] → Targeted survey 2 [after experiencing the mobile application, participants shared their opinions on how useful the app was on overall levels of engagement, motivation and learning. This survey was crafted for quantitative analysis using rating scales]

The total sample size for the project was 25 participants for the initial survey, with 11 of these then undertaking the focus group and final survey. This sample size was deemed sufficient for the scope and scale of this project, and to meet the research aims in the context of organisational new hire onboarding for WIL participants. Guidelines on thematic analysis offered by Braun and Clarke (2013) suggest 6-10 participants for focus groups for smaller scale projects. There was an initial aim to contact at least 20 potential participants for the initial survey to account for an early drop-out rate of 10% which has been shown to be experienced in survey contexts (Hoeger, 2010).

3.2   Data Analysis

NVivo software was used for qualitative analysis (targeted survey 1 and focus group data). Qualtrics was used for quantitative analysis (targeted survey 2). This analysis was deemed appropriate to answer the research questions by highlighting key user requirements in order to build an optimal learning platform through the gamified mobile application. The analysis also assists in the development of a conceptual framework, specifically when looking at the discussion from the focus group regarding how gamification should be introduced/implemented.

3.3 Summary of Findings

From the initial survey which was sent out to gather requirements for the app, the results indicate that quizzes, videos, leaderboards and progressing through different levels are features which the respondents believe should be prioritised so as to allow aspects such as self-evaluation of learning progress. Videos and interactive quiz style games were also perceived as a much more effective learning method rather than traditionally being given written documentation to go through on your own. Thematic analysis of the focus group transcript using NVivo was conducted according to the methodology proposed by Braun and Clarke (2013) with the two research questions in mind. Through this a number of key themes were identified such as shaping the learning environment, centralised learning formats, implementing gamification and potential benefits to the new hire experience. The final survey sent out aimed to gather results on the user experience and impact of the app on participant engagement, motivation and overall learning. The results were positive, with a majority of participants believed the app did increase their engagement and motivation compared to their previous onboarding experience. Gamification features of levels and quiz style games were the top two most effective features on participant motivation and engagement.

4 Conclusion

The study has investigated the use of a gamified mobile application to support WIL participants during their new hire onboarding journey, with the aim of promoting increased engagement, motivation and overall learning. Focus group and final survey results have indicated a positive effect on engagement, motivation and learning for the WIL participants when using the app, compared to their previous onboarding experiences. This addressed the research question of which gamification features are most effective in increasing engagement, motivation and learning in this context, with levels and quiz style games identified as the top two preferred features. Through a discussion of how gamification should be introduced into this organisational context in the focus group, this has allowed the identified of some key elements such as proactive implementation and strategies to sustain usage of the app in the long term. These findings will aid the development of a conceptual framework to highlight how gamification can be implemented in the new hire context.

4.1 Limitations

The study has several limitations which need to be addressed. Firstly, the number of participants in the study was small due to a small sample population used. Also, voluntary participation in the study from WIL participants may have been perceived as additional unnecessary tasks to complete since there was no compensation being offered. The small sample size may will impact the generalizability of findings. It is suggested that future studies be undertaken with a larger sample size. The focus groups were also conducted only once with the participants in a relatively short time-frame. In order to analyse the sustained use of gamification, rather than a novelty experience, it would be more effective to test the gamified application over a period of time perhaps with varying participant groups and use-cases. This could be incorporated across future studies within this area.

4.2 Scope of Future Research

There are a range of other potential use-cases within the organisational context which the conceptual framework and design approach can be leveraged for, such as existing employees rather than new hires. As the fundamental design and features of the application have aimed to be scalable and adaptable, this can be leveraged as a learning tool across a range of other potential sectors. Understanding the impact of demographic differences upon measures such as engagement, collaboration and overall motivation would also be a welcome contribution for future research. Prior literature has alluded that aspects such as gender may also have an impact on learning outcomes (Khan et al., 2017). Hence how this subsequently impacts the design and approach for implementation also needs to be considered and an analysis of demographic influences on gamification effectiveness should be undertaken. It would also be beneficial to assess the impacts of gamification in the long term to determine whether the short-term benefits can be effectively sustained when using gamification on a regular basis rather than as a novelty experience, for example having participants use the app for 2 months versus 2 weeks.

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