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Gamification in Accounting Education: A Literature Review

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Abstract

Despite the emerging of new pedagogical techniques in the recent years, there is little emphasis on the approach that could be integrated in stimulating accounting students to have more motivation and engagement in their learning process and experience. One of the approaches to reduce this gap is gamification technique in education. Thus, this paper aims to discuss gamification in accounting education. An extensive literature review method was utilized to identify and analyse relevant literature regarding the gamification. Specifically, this paper discusses the gamification in terms of its basic concept, gamification in education including Malaysian context and the role of gamification in accounting education. The implications of the paper theoretically and practically as well as suggestions for future research are also provided.

Keywords: Gamification, accounting education, literature review, motivation, engagement

1. INTRODUCTION

Over the last decades, motivation and engagement have been reported as crucial elements for completion of a task or encouragement of a specific behaviour (Huang & Soman, 2013). In education context, Lee and Hammer (2011) stress that students motivation and engagement in learning process becomes a major concern. Greater students engagement in the classroom has usually been addressed through active learning and the incorporation of activities into the pedagogical toolbox (Wood & Reefke, 2010). According to Wood and Reiners (2012), while the utilisation of new tools and approaches such as online learning is encouraging, many educators still realised that the level of engagement in the classroom is considered low. In addition, educators are more focus on improvement in curriculum design to meet the overall learning objectives, and adoption of learning technologies to ensure effective feedbacks (Wood & Reiners, 2012). However, there is little emphasis on the approach that could be integrated in stimulating students to have more motivation and engagement in learning experience (Wood & Reiners, 2012). One of the approaches to fill the gap is gamification technique in education (Deterding, 2012; Lee & Hammer, 2011) . This emerging approach has been used in various fields, for example in the fields of marketing and is being extensively applied in education context (Landers & Callan, 2011; Lee & Hammer, 2011). For example, gamification in education can help students to stimulate their skills in problem-solving and high order thinking (Kapp, 2012).

Prior gamification in education literature focuses more on computer science, healthcare education (Huang & Soman, 2013), engineering science (Reiners et al., 2012), logistic and supply chain (Wood & Reiners, 2012) and

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ICT contexts (Dominguez et al., 2013). However, little is known about gamification in accounting education perspective (Moncada & Moncada, 2014; Sagoro, 2016; Tanner & Lindquist, 1998). Meanwhile, in Malaysian setting, literature on gamification tends to focus more on computer science not accounting (Azmi, Iahad, & Ahmad, 2015; Sanmugam et al., 2016). Therefore, the objective of this paper is to discuss gamification in accounting education in Malaysian context. This paper has the following structure. Section 2 discusses the literature review related to the objective of this paper. This paper ends with conclusion, implications and suggestions for further research.

2. LITERATURE REVIEW

2.1 Basic Concept of Gamification

Generally, gamification can be defined as a new trend of introducing game mechanics (like points, levels, badges, virtual currency, activity feeds, challenges, quests) to areas that traditionally have nothing to do with games (Danowska-Florczyk & Mostowski, 2014). The mechanism itself is not innovation as the elements of it was used by Frequent Flyer program in 1980s (Danowska-Florczyk & Mostowski, 2014). Since then, gamification has been practice on a larger scale of business, ecology, mobile communications, coffee house services and recently in education (Danowska-Florczyk & Mostowski, 2014; Lee & Hammer, 2011; Moncada & Moncada, 2014). For example, gamification has been used in a variety of settings, including healthcare, business, education, and productivity (Barata, Gama, Jorge, & Gonçalves, 2013; Muntean, 2011; Pedreira, Garcia, Brisaboa, & Piattini, 2014). According to Deterding *et al.* (2011), the term 'gamification' was first used in 2008 but was not widely adopted until late 2010 and is frequently confused with other terms such as 'game layer', 'applied game', 'productivity games', 'funware', 'playful design' or 'behavioural games'. The concept is that a designer "*takes the motivational properties of games and layers on top of other learning activities, integrating the human desire to communicate and share accomplishment with goal-setting to direct the attention of learners and motivate*" (Landers and Callan, 2011, p. 421).

Gamification is particularly important to encourage desirable behaviours. For example, some applications that incorporated gamification include; *LinkedIn* (uses progress bars to boost users to complete their profiles); *EpicWin* (users acquire points to finish tasks from their to-do lists); and *Fitocracy* (users increase their points for in doing their exercise) (Cheong, Flilippou, & Cheong, 2014). According to Moncada & Moncada (2014), 'gamification', 'serious games' and 'stealth learning' are most common terms used to describe the pedagogical technique associated with gamed-based learning. However, Cheong et al., (2014) argue that there are differences between serious games and the use of gamification in education. The authors further state that serious games is more on full-pledged games, e.g. complete virtual environments with avatars. On the other hand, gamification use of game elements such as progress bars, points, and other similar approaches to achieve a non-game outcome like to increase motivation and engagement in order to improve learning outcomes. "*Gamification desires to combine intrinsic motivation with an extrinsic one in order to raise motivation and engagement*" (Muntean, 2011, p. 326). Typically, these game elements include items such as points, leader boards, and badges (Barata *et al.*, 2013; Mekler *et al.*, 2013). Deterding *et al.* (2011) further explain that game elements also can include avatars, three-dimensional environments, feedback, ranks, levels, competition, communication systems and time pressures.

2.2 Gamification in Education

Previous studies indicated that games is an effective tool in promoting learning process and experience (Annetta, Minogue, Holmes, & Cheng, 2009; Moreno, 2012; Papastergiou, 2009; Van Eck, 2006), and are more motivational for students than non-gaming teaching methods (Batson & Feinberg, 2006; de Freitas, 2006; Papastergiou, 2009). Games have been shown to be effective for learning "*partly because learning takes place within a meaningful context*" (Van Eck, 2006, p. 18) that encourage application and practice. However, studies show that the results on the impact on learning and student performance toward using gamification are mixed. For example, Barata *et al.* (2013) find that there was an increase in the number of students receiving the highest grades, as well as a decrease in the difference between the lowest and highest student grades. Similarly, Mekler et al. (2013) indicate that gamification "*significantly increased performance*" (p. 66). In contrast, Hanus and Fox (2015) suggest that learners who participated in the gamified environment had lower exam scores, while Goehle (2013) find little evidence of impact either positive or negative on student performance.

According to Cheong, Flilippou and Cheong (2014), gamification can be quite complicated and not easy process to implement correctly. Three vital areas of proper implementation of gamifications include: (1) understanding the target users (i.e., the players), (2) identifying the tasks to be complete by the users (e.g., the objective of the activity/system), and (3) using the suitable game elements for the users in order to motivate the users in completing

the tasks (Aparicio, Vela, Sánchez, & Montes, 2012). In the context of education, students are the users or the players in the system, therefore, it is important to properly implemented the gamification techniques by analysing the characteristics and the needs from students' perspectives. In doing so, it can achieve the objective of utilising gamification in learning, which are to improve their motivation and engagement (Cheong et al., 2014).

In their study, Huang & Soman (2013) state that examples of gamification in education had been applied at the National University of Singapore in programming courses, Healthcare University in healthcare consumer education and Deloitte Leadership Academy in corporate training education. Reiners et al. (2012) give example on the use of gamification for engineering science program at University of Toronto. Their findings indicate that students were found to be more motivated that resulted improving the learning transfer (faster development of skills). Wood & Reiners (2012) propose gamification approach/model to be used in logistic and supply chain program such as using leaderboard to achieve active learning and student engagement. A study by Dominguez et. al., (2013) applied gamification for information, communication and technology (ICT) course by using blackboard plugin to motivate students in completing optional exercises (rewards and competition mechanisms).

2.3 Gamification in Education: Malaysian Context

In Malaysia, the first gamification centre of excellence known as Media and Game Innovation Centre of Excellence (MaGICX) is established in 2016 (UTM News Portal, 2016). The centre is a strategic cooperation between Universiti Teknologi Malaysia (UTM) and Iskandar Regional Development Authority (IRDA), in which to support and promote the development and ecosystem of creative industry that focuses on gamification and enrichment of digital content including education sector. This indicates that gamification technique is gaining momentum that potentially could be integrated in Malaysia education system.

The research on the integration of gamification in education in Malaysia is also encouraging. This can be seen from the number of research that examine on the practicality of gamification in learning process. For instance, Ong *et al.* (2013) examine the effectiveness of gamification in education based on students' perspective. Based on a survey of 186 respondents, their study show that two factors, namely, past gaming experience and personality/learning styles were less likely to influence the effectiveness of gamification except for affecting academic motivation and stimulating intrinsic motivation. In a recent study, Azmi & Singh (2015) investigate the usefulness of gamification concepts to increase the use of Learning Management System (LMS). The findings of the study indicate that game elements embedded (as a prototype) into the system make the use of LMS more interactive and can attract engagement in learning of the students. Azmi, Iahad, & Ahmad (2015), provide a literature review on using gamification in online collaborative learning for programming course. Among of their findings suggest that there is still lack of systematic guidance on the methods and design to implement a proper gamified application in computer science education.

Another study by Sanmugam *et al.* (2016) examine utilising gamification platform as a mediator for students learning Science using mix-method. The results show that the game elements play a part in engaging the interest of students in learning particularly in the elements of badges and leaderboard. On the other hand, an investigation on game elements from gamification technique that positively affect learning in education is conducted by Khaleel *et al.* (2016). Based on mix method of interview and a survey to gamers and students, their findings state that all participants agreed to the use of game elements but each has different perspectives regarding their usage like to increase the level of fun and entertainment; as motivation to challenge other students and to improve their skills of gaming and learning. Overall, those studies mentioned above highlight the usefulness and benefits of gamification in education particularly from the user's/students' perspective mainly in the fields of technology such as science and computer programming not accounting education. Thus, the application of gamification in accounting education is still limited.

2.4 The Role Gamification in Accounting Education

One of the earlier study is conducted by Tanner & Lindquist (1998) using a game 'MONOPOLY' and 'Teams-Games-Tournaments in university accounting majors of a junior-level financial reporting issues course. The objectives of their study is for accounting educators to introduce team-based reasoning and problem skills without sacrifing rigorous academic content. A three-week financial accounting simulation is carried out where students formed company teams to compete 'MONOPOLY' game. Subsequently, the students achievement in the game is transferred into journals, ledgers and financial statements. Overall, the findings of their study show positive students' attitude toward financial accounting and learning. Another study by Nitkin (2011) surveyed students who played principles of financial accounting and business game for midterm review. The findings concluded

that the activity was a positive value-added experience which reinforced students' learning as well as the fostered of peer-to-peer interactions.

The first mobile-gaming app for learning accounting known as Accounting Challenge (ACE) is now widely been used Seow and Wong (2016). According to the author, the app was downloaded more than 23,000 times covering 90 countries and won three international teaching awards. A study by Moncada & Moncada (2014) proposed gamification activities by using Microsoft Office's PowerPoint software in financial accounting course. The authors argue that the capabilities of PowerPoint offered educators a viable, stealthy, teaching and learning strategy that capitalizes on collaborative play to engage students. Summary of previous studies on gamification in accounting education can be seen in Table 1.

Table 1: Studies on Gamification in Accounting Education

Games	Authors (Year)	Types of accounting education
Monopoly	Knechel (1989)	Financial accounting practice set
	Albrecht (1995)	Financial accounting and investment
	Tanner & Lindquist (1998)	Principles of financial accounting
	Ulstad (2005)	Principles of financial accounting
Jeorpady	Cook (1997)	Revenue Reconciliation Act of 1993 for tax
	Seda (2003)	Financial accounting and tax
	Bee & Hayes (2005)	Accounting information systems
	Murphy (2005)	Governmental accounting
	Moncada & Seda (2010)	Principles of accounting and accounting systems
Bingo	Haywood, McMullin & Wygal (2004)	Professional and ethical reporting
Puzzles	Moncada (2010)	Computer fraud word search in accounting information systems
Twenty-Questions	Fratto (2011)	Managerial accounting
Other	Pillsbury (1993)	Auditing softball game for internal control
	Busta and Kimmel (1993)	Intermediate accounting (stock market)
	Hoffjan (2005)	'Calvados' cost accounting simulation

Source: Moncada & Moncada, 2014

As shown in Table 1, integration of game in accounting education begun dated back in 1989. There are at least five types of game that been used, in which most of it in the field of financial accounting course. However, other subjects in accounting program that used game include computer fraud, auditing, information systems, and cost accounting. Among of the reasons on the need to used game activities as a viable teaching strategy include encouragement by the Accounting Education Change Commission (AEECC) and the American Institute of Certified Public Accountants (AICPA) for university accounting educators to adopt active learning teaching strategies that integrated the creative use of technology in the accounting (Fratto, 2011; Moncada & Moncada, 2014). Taken overall, gamification is beneficial for accounting students and their education process. However, the the above studies were oversea based, thus, research on gamification in education in Malaysian context is still understudied. Thus, a study that further explain this issue is extremely important.

3. CONCLUSION, IMPLICATION AND FUTURE RESEARCH

The purpose of this paper is to discuss relevant literature related to gamification in accounting education. Specifically, this paper describes in detail gamification basic concept, gamification in education setting including Malaysia and the role of gamification in accounting education. This paper has implications to theory and practice. The theoretical implication of this paper is that it develops a greater understanding about gamification in education including accounting setting. Practically, the information about the gamification can be utilized by relevant parties such Ministry of Higher Education (MOHE), universities, accounting schools, and accounting regulatory and professional bodies to improve learning process and experience of accounting students since they are future professionals who will support various economic initiatives implemented by government and private sectors. This paper is conceptual in nature; therefore, no empirical evidence is provided. Further research could study gamification in accounting education by focusing on accounting educators' and students' attitudes and beliefs of such gamification.

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