Review Paper

GAMIFYING A FLIPPED FIRST YEAR ACCOUNTING CLASSROOM USING KAHOOT!

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Abstract

Accounting is often perceived as boring, difficult, methodical and being all about number crunching by a lot of students and society in general. These negative perceptions impact on students’ learning and their approach to the study of accounting. Additionally, studying accounting in English as a second language as well as in the first year of university compounds the amount of problems students may face, adversely affecting their performance. In a bid to address these problems, the flipped classroom approach was employed and its benefits complemented and enhanced by gamification using Kahoot! The aim of this paper is to share with accounting educators and other educators dealing with similar issues on how to engage students in a large lecture setting, in a flipped classroom model. Whilst a lot of studies have been conducted and much has been written on the use of Kahoot! in the classroom, not much has been done in the context of using the tool in a flipped accounting lecture. The benefits of gamification, flipped classroom, quizzes and feedback have been validated in the literature and have been reviewed in this paper. Kahoot! offered several benefits to
the teaching team as well the students including instant feedback for the students, an opportunity for the lecturer to elaborate on this feedback, a communication tool between the lecturers and students regarding problem areas, reflection on the lecturer’s part as to what was working well and what wasn’t; and last but not least, students enjoyed learning whilst playing!

**Key terms:** student engagement, student perceptions, game-based learning, instant feedback, accounting education

1. Introduction

The impact of student engagement on learning and achievement is being increasingly recognised and research on the topic is more widespread (Trowler & Trowler, 2010; Kahu, 2013). While it may be easier to engage students in a smaller class size, large lecture settings require a different set of skills and techniques to keep the environment engaging and conducive for learning.

It may be argued that some courses are more engaging and easier for the students to relate to than others and therefore student engagement and satisfaction may be greater. Accounting education has a different set of issues to deal with as students are coming in with the perception that accounting is boring, difficult and is usually associated with mathematics (Tan and Laswad, 2009, McDowall and Jackling, 2010, Dalcı et al., 2013, Knight, 2015, Anis and Hanafi, 2015). At the same time, there are issues related to transitioning to the first year of university and these also impact the performance of students.

Studying in English as a second language also affects how students engage with curriculum as well as their levels of engagement in the classroom.

The aim of this paper is to share with practitioners how Kahoot! ([https://getkahoot.com](https://getkahoot.com)) was used in a flipped large lecture room setting to engage students, provide feedback and reinforce learning.

Kahoot! an online game-based educational tool allows teachers to create online quizzes which students can play and compete against each other. The students can join the game using the game pin which is displayed at the beginning of the game. The teacher can set the time from 5 to 120 seconds for each question depending on the level of difficulty. Points are allocated based on accuracy and speed. The scoreboard displays who is leading at the end of the question and the top three scorers are displayed at the end of each game. A background audio is played as the students attempt the questions. It is interesting to note that studies from Wang and Lieberoth (2016) show the use of audio has a positive impact on the classroom dynamics.

As the Accounting course was experiencing high failure rates and poor attendance, the research team introduced some innovations to encourage the students to read, attend classes and be engaged and improve their overall learning experience.

The key issues addressed were:

- low student engagement
- lack of preparation before class, which in turn affected student engagement
- High failure rates.

After exploring the benefits of the flipped classroom, changes were made which shifted the responsibility for learning from the teachers to the students. The teacher was no longer the source of all knowledge but rather a facilitator and instructor during the learning process thereby promoting independent learning and active participation ((Marks et al., 2014).

There are a number of studies that show huge benefits in using Kahoot! in classroom teaching (Johns, 2015; Iwamoto et al, 2017; Plump and Larosa, 2017; Wang & Lieberoth, 2016) and at the same time there are also evidence in researches that explain the benefits of flipping the classroom (Strayer, 2007, Schlairet et al., 2014; Zappe et al., 2009, Kim et al., 2014). Therefore the two
approaches are complementary tools and worth exploring for the Accounting course. This paper seeks to highlight how the use of Kahoot in a flipped classroom environment benefit both the students and the lecturers. The authors share their experience of using Kahoot! in a large lecture to engage first year accounting students.

There were several features of gamification that were introduced with Kahoot: leaderboards, time pressure, points and competition.

The first section of this paper introduces several benefits of using flipped classroom and the next section examines the game-based learning which was the key engagement tool for students in the classroom. Student engagement in a large lecture is also discussed, followed by the role of feedback in learning. This is followed by a discussion on the benefits of using quizzes and immediate feedback and finally the practical implications of using Kahoot! to engage students in a large lecture.

2. Literature Review

2.1 Benefits of the flipped classroom

In the traditional approach of learning and teaching, students attend lectures, are exposed to a lot of information delivered by the lecturer, and then try to comprehend this information by conducting homework outside the classroom. However, this approach has several limitations which can affect the learning of students and their capabilities to grasp, analyze and practice what they learn (Sams and Bergmann, 2013). Some of the disadvantages are limited amount of interaction between lecturer and students, the inflexibility of lectures, and the use a rigid ways of transferring knowledge (Goodwin and Miller, 2013, Toto and Nguyen, 2009).

The flipped classroom teaching approach has garnered interest from many educators aiming to bridge the gap between information delivery and student learning. Strayer (2007) conducted an investigation on the outcomes of an inverted classroom and showed there were differences in the learning environments between the flipped and traditional classrooms. Students in the flipped classroom experienced more innovation and cooperation in their classroom learning in comparison with the traditional one (Strayer, 2007). In addition, the flipped approach appears to be more successful if its attention is on providing students the freedom to interact with the course content pursuant to their own learning preference (Strayer, 2007). Moreover, students have more control of their studies than those in the traditional setting because of the distinctive structure of the flipped classroom approach (Strayer, 2007, Schlairet et al., 2014).

The flipped classroom model provides diversified numbers of teaching methodologies to be utilized in the form of videotaping or voice-over Powerpoint slides, videos accompanied by some kind of quizzes or visual aids, or online video from platforms such as Youtube or social networks (Roehl, 2013, McLaughlin et al., 2014). These methodologies support teachers in improving connection and communication with students, and vice versa. Additionally, they are intended to promote team working, leadership, problem solving and decision making skills (Zappe et al., 2009, Kim et al., 2014). The inverted method can reinforce the responsibility of students for their knowledge acquisition and the lecturers as instructors, responding to students’ enquiries as they arise (Marks et al., 2014).

Besides, there are many potential benefits associated with these methodologies. Potential advantages embrace the following: lectures could be separated into smaller units, and students can learn at their own convenience (Forsey et al., 2013); students can watch the digital videos outside of the classroom at their own pace and study them many times (Goodwin and Miller, 2013); one-on-one tutoring and deeper connections between lecturers and students (Goodwin and Miller, 2013); and active learning can be adopted during the class hours (Daniel and Braasch, 2013, Freeman et al., 2014). In other
words, unlike the traditional model whereby teachers are only aware of students’ progress when they are tested, the inverted approach allows a deeper understanding of students’ knowledge acquisition due to the greater lecturer-student interaction. The time saved by breaking down the lecture units can be used for one-on-one sessions between instructors and students. Additionally, students have a chance to review the lectures many times to find answers on their own before formulating their questions to teachers.

Other benefits of the inverted classroom approach are the opportunity to continue the lecture regardless of the absence of both lecturer and students. Inverted classroom pedagogy incorporates the ability to deal with the circumstances where students miss the class because of sickness and for those involved in other school-supported activities such as athletics (Roehl et al., 2013). This model helps the no-shows to keep on track with the course without overly long discussions with lecturers. Likewise, it also helps the lecturers to provide necessary information to cover the course material when absent. This approach allows the course to advance on schedule without any delays.

In this research there were video recordings for each topic which required students to watch to help them understand the topic before coming to class. This was coupled with discussion questions for the students to practice before coming to class.

Game based learning using Kahoot! was part of the teaching approach aimed in capitalizing the benefits of the flipped classroom approach. The following section discusses the game-based learning in more detail.

2.2 Game-based learning

Game-based learning (GBL) pertains to utilizing games for educational purposes instead of entertainment. GBL characterizes a context under which the gameplay and content of the game enrich the acquisition of skills and knowledge, and in which gaming activities are concerned with problem solving situations and challenges, providing the learner with a means of attainment (Kirriemuir and McFarlane, 2004, McFarlane et al., 2002, Prensky, 2003). Education theorists working on the field of game-based learning concentrate on pinpointing the environment and circumstances which facilitate the integration of computer games with the learning environment. Several authors have suggested some gaming features that can be used as effective learning devices. Some examples describe games as learner-centered (Gee, 2007; Dickey, 2015), motivating (Prensky, 2003), interactive (Squire, 2008), providing experiences (Arena and Schwartz, 2014), providing context (Gee, 2014), providing substantial feedback on students’ performance (Ke and Shute, 2015) and providing just-in-time learning (Shaffer, 2006).

Within an excellent educational game environment, students develop learning skills in order to crunch multifaceted problems. The in-game problems are normally introduced in an easy mode and level and move up to more difficult modes and levels for savvy players (Hamari et al., 2016). Students are encouraged to learn to a certain extent since the learning is integrated with activities that require postulating, analyzing and reflecting on the simulation of the game. Additionally, the objective to finish the game is obvious, and information provided to students is right on time and needed to meet the objective, which ultimately becomes an intrinsic goal to the player. Digital games have been spotted to scaffold learning in a way that make players play on the edge of their skill level, creating the urge to play the game for long (Mochocki, 2011). Players enhance their skills and gain knowledge as long as they still engage in the game. Some case game developers such as Valve (Valve, 2011) have developed a practical design model of ‘layered learning’ attempting to enhance learning attributes compatible with interconnected principles of engagement, challenge, immersion and skills.
In addition to the learning affordances of GBL, empirical studies have demonstrated that educational games show a good impact on conceptual understanding, spatial ability, automaticity, and higher order thinking skills such as problem solving and critical thinking (Denham, 2015, Gee, 2014, Habgood and Ainsworth, 2011, Ke and Shute, 2015). Previous studies show that most recurrent conclusion researched within the context of educational games was knowledge acquisition (Connolly et al., 2012, Li and Tsai, 2013) with less than one third of those examining problem solving skills (Li and Tsai, 2013). Moreover, there is growing interest on investigating motivational and affective outcomes within the educational game studies (Connolly et al., 2012). Even though the digital game studies within the educational context show a number of successes depending on the academic topics, students’ preference and age (Hays, 2005, Young et al., 2012), game-based learning is likely to affect positive cognitive achievement and attitudes (Connolly et al., 2012, Dempsey, 1994, Hays, 2005, Vogel et al., 2006, Young et al., 2012). Moreover, extant research has found that educational games influence the development of 21st century skills such as creativity, communication, collaboration and critical thinking skills (Qian and Clark, 2016, Binkley et al., 2014).

GBL enhances the development of 21st century skills that emphasizes in the new digital economy (Gee, 2014, Squire, 2011, Spires et al., 2008) and deliver a toolbox to assess those hard-to-evaluate skills (Ke and Shute, 2015). In specific terms, digital games lay in the context where effective learning and problem solving are located (Boyle et al., 2011). Exemplars of educational games include Quest Atlantis (Barab et al., 2009), The Radix Endeavor (Cheng et al., 2017) and Kahoot! (Johns, 2015; Iwamoto et al; 2017; Plump and Larosa, 2017; Wang & Lieberoth, 2016) which provide multifaceted holistic problem based learning context supporting situated and active learning, requiring authentic collaboration, and offering challenges and providing immediate feedback (Gee, 2014, Squire, 2011) There are different ways of promoting student engagement in the classroom. Since most of students bring their own laptops, smartphones and tablets to class every day, it is logical to use technology to engage students (Jonh, 2015; Iwamoto et al; 2017). It is important to understand why student engagement is crucial for learning and this is highlighted in the next section.

2.3 Student engagement in a large lecture

Engagement is termed as an indication of emotional quality and intensity of individuals once they take up and participate in an activity, for instance learning activities in classrooms (Reeve, 2014). Once highly engaged, Students are more likely to be active in learning, putting sturdy and determined efforts on the assigned tasks, showing positive emotion and utilizing high levels of metacognitive strategies. In contrast, disengaged learners tend to passively behave, showing unfavorable emotions and employ superficial cognitive strategies (Greene, 2015). The engagement level of students is dependent upon the conditions which they experience. According to Furrer et al. (2014), students are highly engaged when they are provided a supported learning climate which promotes meaningful interactions, encourages the value of learning and delivers ideal challenges.

Increasing student engagement in the classroom is very important, and it is a matter to which general education courses in particular ought to aspire. Large lecture courses can be effective means of instruction, however, they might create pedagogical and curriculum barriers to student’s satisfaction and engagement. Due to its nature of content transmission to a large number of students, large lecture courses can decrease the student’s collaborative engagement with the content information (Mollborn and Hoekstra, 2010). In an effort to solve this issue, a new model of teaching has been developed from theory of behaviorism to constructivism under which students experience active learning and construct knowledge via meaningful interactions within the learner-centered environment (Russell et al., 2017).

In constructivism, new ideas and experiences are matched against existing knowledge, and the students forms adapted rules to make sense of the world (Kovalchick and Dawson, 2003). Thus, the
focus on learning has been shifted from delivering content information to creating activities involving students. The constructivist learning environment provide multiple representations of reality and complexity of the real world which are relevant to the learners (Jonassen, 1999). Since these standpoints on learning have been widely acknowledged by a number of educators, the engagement of students within the classroom has become of utmost importance in large lecture courses. Additionally, lots of attention has been paid to the large lecture courses to construct an active learning environment by taking advantage of the increasing numbers of instructional technologies.

There are numbers of studies reporting different modifications of large lectures and their positive impacts on students’ performance and engagement. The degree of modification varies from embracing a new technology to remodeling the structure and assessment of the course. One of instructional technologies frequently used to promote active learning is a personal response system, called Clickers, and a plethora of published research showed its effectiveness on students’ performance and engagement (Denker, 2013, Blasco-Arcas et al., 2013, Bonaiuti et al., 2015). Besides fostering the interaction between learners and instructors, such a system can facilitate the peer and group interaction with further strategies (Taylor et al., 2015). According to Bailey et al. (2012), utilizing clickers in combination with the implementation of think-pair-share strategy can promote interaction between one student and another throughout their learning sessions.

Other components of online learning are also usually integrated in the large lecture course to offer holistic and comprehensive studying materials to learners as well as encourage learners to develop self-regulation skills (McKenzie et al., 2013). A lot of published research has demonstrated that video lectures prolong learners’ attention span, trigger interest in the subject, elucidate questions (Eick and King Jr, 2012, Buzzetto-More, 2015), and enhance learners’ initial learning (Brech, 2012). Specifically, video lectures are useful device to support low-performance students (Owston et al., 2011). Not only clickers and video lectures are used in the large lectures, online quizzes are also used to provide preparation for in-class activities. Generally, the quizzes often depend on given reading tasks for specific lessons and are being attempted before the lecture. Since students are able to attempt on-line quizzes anywhere, they do not perceive it as a valid assessment device but rather as a supporting tool to facilitate reading before the lecture (Aitken, 2005). According to Bryans Bongey et al. (2005), running online self-tests without assessment might help increase the students test score substantially.

Majority of researches bear out that various changes to large lectures result in a positive outcome in comparison with orthodox teaching methods. Learners attained better results (Walker et al., 2008), favoured the reformatted lecture against the traditional format, and rated the redesigns higher than the latter (Persky and Pollack, 2010). Freeman et al. (2014) conducted a comprehensive meta-analysis of STEM education and emphasized on the significance of adopting evidence-based teaching strategies.

While multiple studies indicate there are no substantial improvement in students’ outcomes from the reformatted large lectures, a number of the studies however proved students acknowledged their positive learning experience throughout the redesigned courses (Kapp et al., 2011). Rutledge (2008) scrutinized the impact of different instructional approaches on learners’ attitude and postulated that learners within the instructor-centred large lectures considered it more compelling than the student-centred approach in developing understanding of biological content, whilst student-centred approach was considered to be more compelling in the engagement and studying activities of students which evidently helped them formulate their knowledge.

Kahoot! offers a tool that not only engages students, but also be used to assess students learning and engagement. Enjoyable assessments can help students with test anxiety and give them assurance
about their abilities and boost their self-esteem (Johns, 2015) Kahoot! is a great assessment tool which can be used to provide instant feedback to students.

### 2.4 The role of feedback in learning

Feedback is a term originated from cybernetics, which depicts an action under which a response is caused by its impact (Hill, 1997). In the context of learning, feedback is information provided to students in regards to aspects of their understanding or performance, with the expectation it will lead to improved performance (Hattie and Timperley, 2007, Chappuis et al., 2011). Apart from providing information, feedback also plays an emotive role in motivating learners (Elliott et al., 1998). Positive feedback denotes a correct response and implies successful accomplishment of the task, while negative feedback indicates an incorrect response and might imply unsatisfactory performance. Even though feedback most often has a positive impact, not all feedback is equitably effective (Hattie and Timperley, 2007). It is only effective once it generates successful outcomes, in other words, once learners can progress their own learning forward. In order to determine its benefits, many researchers have concentrated primarily on three feedback characteristics: cognitive or achievement-oriented (Mason and Bruning, 2001, Jonassen, 2004), others have focused on motivational (Deci and Ryan, 2013, Hoska, 1993), and metacognitive effects (Butler et al., 2008).

Based on the cognitive information processing principle, feedback needs to be clarified adequately to support the receiver to adjust inaccurate information mechanisms, therefore, increase achievement (Mason and Bruning, 2001, Jonassen, 2004). Extant research has indicated an increased understanding as consequence of detailed feedback (Krause et al., 2009, Narciss and Huth, 2006). It is suggested that the form of feedback should be elaborated in a way that can help the learner correct procedural problems, task strategies and misunderstandings (Mason and Bruning, 2001). According to Hattie and Timperley (2007), feedback needs to mitigate the gap between current knowledge and the learning objective. It should concentrate on task achievement and meta-cognitive processes (Hattie and Timperley, 2007). Empirical evidence has shown that feedback on the learner’s performance in comparison with an individual or specified criterion reference standard is more likely to have a better effect on attainment than the comparison between a learner’s performance with the performance of their peers (Harks et al., 2014).

Other studies have examined the motivational aspects of feedback influencing the neural processing and consequent learning. Motivation is the basic drive for all of our actions, therefore for feedback to motivate learning, it should be treated by learners as helping to achieve their goals and master learning tasks. In general, it is perceived as containing a two-side values which is positive or negative feedback (Tricomi and DePasque, 2016). However, the perceived significance of feedback to a learner varies based on the level of motivation and effort to avoid negative feedback and achieve positive feedback. Congruently, feedback has been found to be controlled by the perceived significance of the feedback to an individual when there are no extrinsic reinforcers (DePasque and Tricomi, 2015, Swanson and Tricomi, 2014). According to DePasque and Tricomi (2015), the reasons for learners’ achievement of successful outcomes are more driven by intrinsic motivation rather than externally provided reasons.

In terms of monitoring self-regulated learning, Butler et al. (2008) argued that elaborated feedback improved the monitoring criteria deeper than less detailed feedback, and therefore initiating monitoring to a greater extent. Particularly, diagnostic information provided to students about their performance and the connection between task performance and conditions was expected to support learners enhance their monitoring processing. Thus, self-evaluation is more likely to be accurate as a result of increased monitoring. The role of feedback on self-evaluation related outcomes was explored extensively in research papers in terms of calibration. Calibration is described as an extent to which a learners’ self-evaluation of their own capabilities truly represented their competency
(Pieschl, 2009). It is therefore connected with the metacognition aspect of self-evaluation (Stone, 2000). According to Stone (2000), enhanced feedback should help learners evaluate themselves better, leading to more careful self-evaluation, and in turn learners become better calibrated. Labuhn et al. (2010) asserts that elaborated feedback has better impact on calibration than the case of less detailed feedback provided to students.

This principle was demonstrated in our lectures as feedback provided by the quizzes on Kahoot! was further elaborated by the lecturer clarification as well as further explanation of the related concepts.

### 2.5 The benefits of using quizzes and immediate feedback

Frequent quizzing can lead to better learning outcomes, make students more test-wise and reduce failure rates. The benefit of using quizzes for education purposes has long been studied and validated by several authors (Farhady et al., 1994; Geist and Soehren, 1997; Wilder, 2001; Woit and Mason, 2003; Kibble, 2007; Angus et al., 2009; Basol and Johanson, 2009; Johnson et al., 2009; Lyle and Crawford, 2011; Turney, 1931; and Keys, 1934). A study conducted by Gholami et al., (2013) on how weekly quizzes impacted his sample of 70 high school students confirmed that frequent quizzes reduced students’ sense of test anxiety. In addition, quizzes help students become more familiar with the materials, the tests and better remember information during the course (Roediger and Karpicke, 2006). Interestingly, it was observed that weaker students benefited more from frequent quizzes than the stronger students (Dineen et al., 1989). Students can process and prepare more deeply and meticulously for only small amounts of materials in quizzes, which stimulates practice and review and encourages reading of lecture materials (Standlee et al., 1960, Williams et al., 2006; Gholami and Moghaddam, 2013). To some extent, frequent quizzes may reduce stress (Dustin, 1971) and create extrinsic motivation to obtain good grades in the course (Martin and Srikameswaran, 1974), which may clarify the positive correlation between frequent quizzes and student attendance in classes (Zarei, 2008; Kibble, 2007). As implied by McDaniel et al., (2012) and Spanjers et al., (2015) even unsupervised online quizzes are beneficial not only in traditional education environments but also in the blended learning approach. Several quiz type questions such as multiple choice, true/false or even fill in the blanks can easily be created and embedded on any website by web-based learning platforms for example Kahoot!, Blackboard, Moodle and Quizizz. These web-based platforms also allow students, lecturers and parents to send and receive useful feedback on student performance regardless of time and place, minimizing class time and administrative costs significantly (McDaniel, Wildman and Anderson, 2012).

As stated by Butler et al., (2008) and Hattie et al., (2011) feedback is among the crucial factors that magnify the overall benefits of quizzing. Feedback enhances learning outcomes by informing the students about their abilities, their accuracy of performance and their solidity of understanding (Zimmerman and Labuhn, 2012). When their biases and inconsistencies of understanding are clarified, students may probably adjust their attitudes, knowledge and skills more adequately (Mory, 2004). Although instructors can easily give feedback to their students via modern web-based learning platforms, the effectiveness of feedback mostly depends on their type, level, and timing. In previous studies about the timing variable, there is still disagreement over the definitions of immediate and delayed feedback. In the context of computer-based assessments, Van der Kleij et al. (2012) defines “immediate” as “occurring directly after the learner responded to an item, and delayed means directly after responding to all the items in a test”.

With the definition of Van der Kleij et al., (2012), recent studies seemingly prefer immediate feedback to the delayed one. Immediate feedback is supposed to be more effective in helping students, especially low-ability learners with difficult tasks to achieve higher performance (Bangert-Drowns et al., 1991, Attali and van der Kleij, 2017). It would be more plausible to give immediate feedback about acquisition of verbal materials, motor skills, and procedural skills (Anderson, Magill,

Using quizzes as a means to assess and measure growth in knowledge, abilities and skills of students has become more popular in modern education programs. Teachers and educators are now more equipped with specialized learning platforms to design high pedagogical quizzes. Additionally, student’s engagement and academic performance are better enhanced and hence is the key reason for applying quizzes in education.

As envisioned by Brothen and Wambach (2000), educational quizzes designed with immediate feedback is a promising way to improve students’ knowledge and test-taking ability and therefore, academic achievement. Upon examining the benefits and research associated with this, the research team felt that using immediate feedback with online quizzes and gamification technique is most appropriate for the Accounting course, as historically students were underperforming and disinterested in the course as most of them came in with the notion that accounting is difficult and boring.

2.6 Students perceptions of accounting and accounting education – Is accounting boring?

Recent studies on both high-school and university students have demonstrated that the choices of accounting as a major as well as their learning outcomes significantly depend on how the students perceive accounting profession and education (Holland, 1973, Ahmed, et al., 1997, Allen, 2004, Hartwell et al., 2005, Sugahara et al., 2008, Dalcı et al., 2013, Anis and Hanafi, 2015). In other words, positive perceptions of accounting highly motivate and inspire students to move forward not only on their learning path but also on the career ladder.

It has been observed that students who have very little exposure to accounting or have no experience with the field hold some common stereotypes about the accounting profession. In fact, students capture the images of accounting job and practitioners initially from their family, movies and social media (Hunt et al., 2004, Tan and Laswad, 2009, Byrne, 2012). In terms of intrinsic values, accounting is usually associated with heavy workload, mathematics and lots of numbers; boring and time-consuming activities; precise, static and compliance driven (Cohen and Hanno, 1993; Saemann and Crooker, 1999; Hunt et al., 2004; Byrne and Willis, 2005; Sugahara et al., 2008, Tan and Laswad, 2009, McDowall and Jackling, 2010, Dalei et al., 2013, Knight, 2015, Anis and Hanafi, 2015). Accounting practitioners are frequently described as impersonal and inflexible, dull, orderly and introverted, cautious, methodical, systematic and number crunchers (Ahmed et al., 1997, McDowall and Jackling, 2010, Hunt et al., 2011, Uyar and Kuzey, 2011, Zakaria et al., 2012). However, students believe that extrinsic values such as high social prestige, prospects of financial rewards, potential for high advancement and job opportunities are the benefits of pursuing an accounting career (Auyeung and Sands, 1997, Fallatah and Talha, 2009, Jakling and Kenely, 2007, Zakaria et al., 2012, Demagalhaes et al., 2011, Byrne et al., 2012, Odia and Ogiedu, 2013, Stivers et al., 2014, Anis & Hanafi, 2015).

Students with dissimilar backgrounds and personalities either differently perceive the attributes or have contrasting attitudes about the accounting profession. In order to examine how students decide to major in accounting, Sugahara et al., (2008) found that Australian students with higher level of
creativity perceived the accounting profession to be more precise and more procedural than what their Asian and Chinese peers felt. Although they all consider accounting as a static and structured occupation, only Asian students are likely to major in accounting for these attributes. In the same vein, Germanou et al., (2009) found that both English and Malaysian students in their sample held the same perceptions that accountants worked under high pressure and stressful conditions, with strict deadlines and instructions. However, English students considered the accounting profession to be more beneficial in terms of economic output. Malaysian students, on the other hand, perceived accounting as an interesting job with high opportunities for job securities and advancement. The story is similar in Ireland, where social prestige and high salary potential are more meaningful to students who tend to work in accounting field (Byrne, Willis, and Burke, 2012). In New Zealand, only non-accounting students consider accounting profession as dull and boring while their peers who intend to major in accounting are more interested in dealing with numbers and not discouraged by heavy workload (Ahmed et al., 1997, Tan and Laswad, 2009).

It is also worth noting that beside cultural and ethnic factors, students’ perceptions of the accounting profession are considerably impacted by their experience with accounting courses (Anis and Hanafi, 2015). Negative feedback from students about accounting education rarely lead to positive impressions of the accounting profession. Although accounting students show more favourable attitudes toward accounting courses than their non-accounting peers, they all realize heavy workloads with relatively difficult number-oriented cases in traditional teaching classes probably cause stress and boredom (Cohen and Hanno, 1993, Geiger and Ogilby, 2000). Ironically, while students are thirsty for conceptual skills and judgement, they perceive learning accounting at university as a “rule-based type of educational experience characterized by courses consisting of collections of rules to be memorized” (McDowall, and Jackling, 2010, Byrne and Willis, 2005). Their daily activities in classes seem like a loop of “scorekeeping, processing and recording of transactions in a structured and repetitive manner” (Wells, 2010). Fortunately, modern teaching approaches with hi-tech supportive tools may help accounting courses be more dynamic and intellectually stimulating. According to Chen & Jones, (2007), students have stronger perceptions of their improvement in analytical skills with blended learning. The rate of interest in managerial accounting course is usually recorded to be low though it may be different for accounting majors. Therefore, Krom, (2012) suggests using the free Zynga computer game FarmVille to facilitate active learning. His solution gained positive results with high level of student satisfaction with the assignment and accounting content.

The quality and quantity of students who pursue accounting as a career had dramatically declined over a decade (The American Institute of Certified Public Accountants, (2000); Wells, 2005). Many researches blamed partial negative perception of students about accounting profession for this trend. Hence, accounting practitioners and educators are responsible for helping students capture accurate perceptions of the accounting profession so that people with high potential for accounting may not choose alternative careers. This is the primary reason why Kahoot! was introduced in the Accounting in Organisations and Society (AOS) lectures to support students learning by providing them with instant feedback as well as gamified quizzes to eliminate the perception that accounting is boring and difficult.

3 Discussion

3.1 Using Kahoot to engage students in a large lecture

The course Accounting in Organisations and Society(AOS) is a foundation course in accounting and is offered as one of the core courses in the Bachelor of Business degree program. It was also offered to students pursuing the Diploma of Commerce. The enrollments were usually high with several tutorial groups available every semester. When Kahoot! was first trialled, there were 242 students
enrolled on the Bachelor program and 76 students enrolled on the Diploma program. The delivery mode was lecture-tutorial, with a maximum tutorial class size of 35.

Usually, the week would start with a 1 hour lecture, followed by 2 hours tutorials later on in the week. There were two separate lectures for those on the diploma program and those on the bachelors program. In a week there were a total of 3 contact hours per class.

The flipped classroom approach was introduced in a bid to promote independent learning and get students to read and prepare for classes on their own. Instead of starting off with a lecture, a two one-hour tutorials were introduced in which students were led with interactive discussions and tutorial exercises. Prior to the class students were provided with a preparation guide which included discussion questions. This communicated with the students what was expected of them and the questions helped them test their understanding. The questions were easy enough for students to answer independently but at the same time challenging enough to get the students thinking and be analytical. The level of difficulty was given extra attention so that students did not feel discouraged by the level of difficulty of the questions.

During the tutorials the lecturers would take note of any problem areas and reported them to the course coordinator, who conducted the lectures. The lecturer would then focus on clarifying the problem points. Students were also encouraged to let the lecturer know what they wanted to see covered in the lecture either through email or informing the lecturer at the beginning of each lecture, before the class commences.

If there weren’t any problem areas reported from the tutorials, the lecturers used their own judgement in deciding what was to be covered during the lecture, usually based on past experiences especially areas the students found to be difficult. This is followed by quizzes in Kahoot! to enhance student engagement during the lecture. Usually, 10 multiple choice questions were included in each quiz. Having a word limit on the questions and answer options in Kahoot! encourages the lecture to keep the questions short, concise and straight to the point, leading to clearer questions, easy for students to read and understand in a short period of time.

The lecture would usually begin with a game of Kahoot! and this would serve several purposes as follows:

- It was used as a communication tool to help the lecturer understand what areas needed clarification based on students’ performance.
- It allowed students to evaluate their own understanding and identify areas for improvement.
- It was a way of providing instant feedback as well as initiating the provision of detailed feedback through expansion and elaboration of the problem areas.

Students loved Kahoot! learning games and those who were slumped in their seats would suddenly sit up when the game pin was displayed. Students enjoyed watching the screen to see what sort of ‘nicknames’ their friends were choosing and this set up the mood for the game, and added some humour to the class.

After each question, the lecturer would take note of the number of students who got it wrong and used this information to decide whether to focus on that area or not. The students also got an opportunity to get instant feedback on how they were doing and allowed them to identify areas that needed improvement and ask for clarification where needed.
At the end of each game, the teacher can download the detailed results. The results are broken down from question by question to show how each student performed in terms of overall points, which questions they got wrong or right and how fast they were able to answer each question. The problem areas were further identified and would serve as a starting point and provided guidelines as to how the questions could be improved next time around as well as the teaching technique for the identified areas. In this sense Kahoot! promoted reflective practice. Being able to see how long it took the students to address each question is also useful in adjusting the time allocated for each question for the next time when the game is played. Furthermore, after each game, the lecturer has an opportunity to collect feedback from students on how they felt about the game regarding whether they found it useful or not, allowing the lecturer to make improvements where necessary. The questions could be evaluated even further by looking at the number of responses, average speed and the percentage of correct answers for each question.

In the model that was followed, the whole lecture was all about feedback and clarifying problem areas. The topics and concepts to be covered depended on students’ feedback, lecturers’ feedback as well as the feedback coming through from Kahoot!

4 Conclusion
Using the flipped-classroom approach has proven to provide positive outcomes on students’ learning and academic performance. The same applies to the game based learning. Therefore combining the two approaches should have positive outcomes for students learning and academic performance. Game based learning also reinforces positive behaviours and students learn and pick up key concepts in a fun way. It takes the stress out of learning.

It is important to keep students engaged in a large lecture setting to promote active learning since a large lecture setting is likely to encourage passive learning from students. Kahoot! Is one way of adding humour to the classroom. It is a way of providing feedback and checking students understanding, allowing the lecturer to engage with large number of students. Based on the cognitive information processing principle, feedback needs to be clarified adequately to support the receiver to adjust inaccurate information mechanisms, therefore, increase achievement (Mason and Bruning, 2001; Jonassen, 2004; Krause et al.; 2009, Narciss and Huth, 2006). Studies also suggested that the form of feedback should be elaborated in a way that can help the learner correct procedural problems, task strategies and misunderstandings (Mason and Bruning, 2001). The research team followed these practices in teaching the Accounting course for the first year students.

Inverting the classroom through flipped teaching and using gamification method provided an opportunity to engage students, reinforce their learning as well as provided them with immediate feedback on their learning. As a result encouraged independent and active learning as well as encouraged students to form a different perception about the Accounting course in general. This is also validated through other studies that explain game-based learning has a positive impact on accounting education (Krom, 2012) as it impacts students’ perceptions of accounting and accounting education, which in turn may influence their performance.

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