

IS BASIC LEVEL GAME-BASED APPROACH SUITABLE FOR ACCOUNTING STUDENTS WITH PREVIOUS ACCOUNTING KNOWLEDGE?

Humairaa Hasan¹, Nurul Hassanah Hamzah², Suliza Suhaimin³, Mohamad Azmi Nias
Ahmad^{4*}, Norlaila Mohd Din⁵, Junaidah Jamaluddin⁶, Nur Syazwani Mohammad Fadzillah⁷,
Faizan Abdul Jabar⁸

^{1,2,3,4,5,6,7}Faculty of Accountancy
Universiti Teknologi MARA Pahang, 26400 Bandar Jengka

⁸Faculty of Business and Management
Universiti Teknologi MARA Pahang, 26400 Bandar Jengka

**Corresponding author: mohdazminias@uitm.edu.my*

Abstract

The three important components of a company's Statement of Financial Position are the assets, owner's equity and liabilities. The accounting equation depicts the interrelationships between these three components and aids in determining if a company's business operations are accurately reflected in its books of accounts. From the accounting education's point of view, students should master this fundamental concept in preparing financial statements, yet for most students, accounting can be a challenging subject. Students should not only show their competency in knowing the accounting process, but also a comprehensiveness of knowledge and understanding of the accounting concepts and fundamentals. Accounting is traditionally taught by textbooks-based lectures with all the workings being illustrated on the blackboard or whiteboard, while the students passively listen or jot down notes. Some says that this is the most effective way to learn accounting whereas others prefer teaching tools to help them improve the students' views of learning, exam performance and the learning curve. To feel certain of whether the differentiated learning methods would affect the student's understanding and performance, a study is conducted to shed some light in this area. A survey method is used, focusing on samples which are obtained from 69 closely selected diploma accounting students, with previous accounting knowledge. The results have disclosed that with the presence of their previous accounting knowledge, both traditional and game-based learning methods are suitable for accounting students.

Keywords: accounting, game-based learning, learning method

Introduction

Generally, people believes that accounting education gives the greatest foundation for professions in business and related fields (Albrecht & Sack, 2000). With the rapid growth of technologies and market advancement, the role of an accountant has been widened and diversified (Albrecht & Sack, 2000). Accounting courses are being taught in higher education to adequately prepare future accountants for the unpredictable prospect of local and global environment. To match the shifting needs arising from the modern business environment,

accounting professionals must expand their knowledge and abilities, especially in this COVID-19 era. It is as doubtlessly stated by the International Federation of Accountants [IFAC] (2020) that accounting, like every other profession, will undergo changes as a result of the COVID-19 occurrence.

Even with the vigorous changes in the business environment, not many changes have been happening in the teaching and learning process of accounting. Changes happen mostly due to the updates in accounting standards (Purnamasari & Advensia, 2014). Accounting educators have been constantly using the traditional method that emphasizes on the usage of textbook materials and one way communication, which is found to be ineffective in preparing skilled accountants in today's generation (Putz, Hofbauer & Treiblmaier, 2020). It has been extensively criticized, as it may result in students with a strong academic background but not yet prepared for the workplace (Mohammed & Abdullah, 2018). That being said, the lack of interest and involvement in the traditional method for teaching and learning accounting may also result in problems for the students to grasp the basic accounting concepts and the broader accounting process (Jaijairam, 2012).

To ensure an exact understanding by the students, educators should consider different ways to convey accounting knowledge to suit the students' learning styles. This is to encourage students' engagement during the learning process. Gameful learning, game-based learning or gamification of learning, as a potential solution has received significant interest from the education sector, as well as academics and industry, since it presents innovative chances to cultivate skills and improve knowledge (Putz et al., 2020). As according to _ENREF_1Al-Azawi, Al-Faliti and Al-Blushi (2016), game-based learning is defined as incorporating fun elements to motivate kids to participate in learning while playing, as well as to make the learning process more interesting. Besides, Putz et al. (2020) have found that game-based learning is proved to be beneficial for students' knowledge retention. Sometimes, gaming skills are even regarded as relevant technical and social competencies for job applications.

In this study, we have introduced a game-based method of learning, known as 'Accounting on the Block' (AOTB), which is a basic card game to teach accounting equation at the diploma level. The game focuses on the three important components of the company's Statement of Financial Position, which are the assets, owner's equity and liabilities as the accounting equation eventually depicts the interrelationships between these three components. The purpose of this study is to assess whether a differentiated learning method would affect the students' understanding and performance in learning basic accounting. The research question of this study:

1. Is basic level game-based learning approach suitable for accounting students with previous accounting knowledge?

Literature Review

Game-based Learning Approach

Game-based learning is the process of incorporating game features such as point systems, leader boards, badges, and other game-like components into the "traditional" learning sessions to boost students' engagement and motivation. Game-based learning's popularity has grown in the previous decade, and there are countless examples of organizations, web designers and educators whom have successfully employed it to engage and encourage a targeted market (Chou Y, 2017). For example, to implement active learning, educators must employ various teaching methods, approaches, unique ideas, and techniques that allow students to be active participants with strong motivation and interest in their own learning (Furdu et al., 2017). This

is due to the fact that the goals, interaction, feedback, problem solving, competition, storey, and enjoyable learning surroundings can all be incorporated into games to increase learner engagement and motivation (University of Waterloo, 2021). This has been approved by Dixit et al. (2018), as the findings reveal that the students' ability to solve problems have improved alongside with their escalation of learning levels.

Moreover, students' surveys and university findings have also confirmed the experiment's efficacy. The game is regarded as an essential aspect of enhancing students' knowledge and involvement in the classroom. Adopting game-based approaches in learning scenarios is one crucial way to add fun and enhance student engagement. Kapp (2012) discusses the topic of game-based in teaching and learning techniques, asserting that every educator already collaborates with his students by posing problems and suggesting solutions. These features demonstrate that game-based education should not be limited to just only awarding points for visualizing a lesson or completing an assignment. It is worth noting that adopting various game tactics helps students to unleash their creativity, leave some room for mistakes, encourage collaborative learning, and create learning environments in which they have complete control (da Rocha Seixas et al., 2016).

Accounting is one of the subjects that most students struggle with, regardless of whether they are doing introductory or advanced courses (Moncada & Moncada, 2014). Welbers et al. (2019) have stated that new students sometimes feel disoriented, having difficulty in making new acquaintances and figuring out what services and events are available on campus. They claim that games could help ease this situation, as students must quickly grasp the discipline's terminology and principles to learn and apply the concepts successfully. It has been demonstrated that game-based method can assist students in to quickly understand the material since it can foster excellent relationships and teamwork among new students due to their interaction during the gaming process. The suggestive idea is that game-based method for learning can only work if students play for an extended period, allowing them to digest enough information to learn. Furthermore, research demonstrates that distributed practice also improves understanding (Boudadi & Gutiérrez-Colón, 2020; Welbers et al., 2019; Ahmad et al., 2017). This means that when using game-based learning method, it is more beneficial to stretch the learning process out across several days in short time intervals rather than in one long session (Welbers et al., 2019). This is approved by Ahmad et al. (2017), that students who are taught by utilizing game-based learning techniques earlier in the semester performed better than students taught later in the semester.

In addition, game-based technique also transforms learning into an instructional game by including the game elements to motivate and engage pupils, and game-based learning activities are used (Furdu et al., 2017). This is an excellent opportunity for students to gain experience and learn quickly. In New York, game designers in a charter school collaborate with the instructors to create a new curriculum that provides pupils with fun activities throughout the day (Corbett, 2010). Via game-based method, students' activity during lectures are found to be improved beyond their expectation. Besides, to know the students' learning level, their engagement with the activities during the learning process is the most important part.

The concept of game-based learning has been investigated by da Rocha Seixas et al. (2016), who discovered the usefulness of game-based learning mechanics in stimulating engagement and increase the level of understanding among primary school students. According to the research, game-based learning has a good impact on students' involvement. A study by Boudadi and Gutiérrez-Colón (2020) have also proven that those with the highest levels of engagement on the indicators had the most badges awarded by the teacher. Contrarily, those with the lowest indexes on the hands had the fewest badges. It is worth remarking that the development process for this game-based learning strategy must also relate to the educational

goals. Nevertheless, a student's lack of engagement frequently signals that he or she is about to leave school. The concept is associated to how students interact with school activities that are proposed to them. When they are devoted in their actions, they are more likely to stick with them through challenges and obstacles (Boudadi & Gutiérrez-Colón, 2020).

Traditional learning approach

Accounting is a difficult subject for most students to grasp. The subject itself focuses on the measurement, processing and communicating of financial and non-financial data concerning businesses and corporations. Students with the previous accounting knowledge from the secondary school will have an advantage, since they can gain a better understanding due to previous experience and it will also help them to enhance their performance in the subject at a higher level of education. This is supported by Lynn et al. (1994), that students with previous accounting knowledge will significantly improve in overall performance during their first year of accounting studies. However, once the subject becomes more integrated in the second and third years of study, the previous knowledge is no longer be adequate to get students through the subject at a higher level (Papageorgiou et al, 2014).

According to Dimitrios et al. (2013), the approach and method of providing education in the broad field of accounting, particularly in higher education, has recently attracted a lot of attention and discussion. Commonly, the accounting educators are teaching their students traditionally by providing notes and PowerPoint slides based on the textbook rather than using the modern applications or techniques for teaching (Jamaluddin et al, 2020). As traditional method is defined as classroom based, teacher dominant, exam oriented, and static learning (Titthasiri, 2013), it makes the students rely on their educators more, rather than being self-initiative.

Primarily, accounting has been taught through traditional or slightly sophisticated teacher-centred methods rather than the modern student-oriented applications and techniques, with knowledge and information being transmitted through the usual form of lectures or discussions requiring both student and teacher physical presence (Velinova-Sokolova, 2020). Simply put, most students are familiar and already exposed to the traditional method since primary up to the secondary school. However, it is proposed that a variety of creative teaching approaches should be implemented to improve the educational element of accounting (Albrecht & Sacks, 2000).

Due to the occurrence of COVID-19, Malaysia's educational field is one of the most affected areas. According to Shenoy et al. (2020), the teaching and learning process has changed to include the online learning environment. The utilized teaching techniques must be consistent with the current situation, principally because accounting is such a complicated subject where in learning accounting principles, students must actively participate rather than simply listen and write down notes (Jamaluddin, 2017). Therefore, taking into consideration that students require the accounting knowledge, the teaching methods and tools must also be on the same par as they are influential towards the performance of accounting students.

Method

To collect the data, the online distribution for a set of questionnaires via Google Form is used. It consists of questions regarding the three components of the company's Statement of Financial Position, which are the assets, owner's equity and liabilities, as well as the accounting equation. For this study, the samples have enclosed 69 Diploma of Accountancy students with previous accounting knowledge who are studying in Semester 1 (October 2021– February

2022). The samples are divided into two groups, based on the differentiated learning methods. Via pre-recorded videos and the same content of basic accounting knowledge, the first group of students ($n = 35$) is taught using traditional lectures, while the second group is taught using AOTB games ($n = 34$). After that, both groups are given time to answer the priorly prepared questions to assess their understanding and performance. The scores are then tested and analysed using the IBM SPSS Statistics version 27, to evaluate the difference between the two means of learning method.

The following hypothesis is developed for this study:

H1: There is a difference between mean scores for the two groups.

Results and Discussion

A descriptive statistic is carried out to show the number of students according to their learning method, of either the Traditional or Game-based Learning method. To ensure that this study has quality data before initiating the analysis, preliminary steps such as monotones response, missing data, test of normality, and inspection of outliers are performed (Ahmad et. al., 2013). The returned questionnaires are found to have no monotones responses and it is also discovered that there were no missing data from the returned questionnaires. Following that, a boxplot is used to identify outliers to ensure that the data is approximately normal. Outliers are then discovered and removed from the analysis. The Independent Sample t-test is used to analyze the data.

Table 1: Group Statistics

	Learning Method	N	Mean	Std. Deviation	Std. Error Mean
Quiz Score	Traditional	35	17.89	1.605	.271
	Game-based	34	17.06	1.825	.313

According to Table 1, the Independent Samples t-test is used to compare the two average score point of 17.89 and 17.06. The highest mean score is displayed by the traditional learning method ($M=17.89$), followed by the game-based learning method ($M=17.06$). The mean different shown is insignificant.

Table 2: Descriptive Statistics

	Learning Method	Statistic	Std. Error	Z Score
Quiz Score	Traditional	Skewness	-.528	.398
		Kurtosis	-.356	.778
	Game-based	Skewness	-.792	.403
		Kurtosis	.480	.788

Alternately, Table 2 displays the Skewness or the measurement of symmetry and the Kurtosis, which measures the peakedness of a distribution. The z-scores shown for the variables are within the ± 3.29 range, which are used for medium-sized samples ($50 \leq n < 300$). This indicates that the assumption of normality is not violated. Thus, the data is validated to have an approximately normal distribution.

Table 3: Independent Samples t-test

		Levene's Test		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI of the difference	
Quiz Score	Equal variances assumed	.089	.766	2.000	67	.050	.827	.413	.002	1.652
	Equal variances not assumed			1.997	65.388	.050	.827	.414	.000	1.654

As indicated in Table 3, the Levene's Test is insignificant, thus equal variances can be assumed. The t-test for equal variances assumed too is not significant. Therefore, the null hypothesis is accepted, and it can be concluded that there is no difference between the two groups' scores. Typically, both learning methods are suitable for accounting students with previous accounting knowledge.

Conclusion

The purpose of this study is to assess whether differentiated methods of learning would affect students' understanding and performance in learning basic accounting. Both traditional and game-based learning methods positively affect the students, while also attempting to demonstrate that AOTB game-based learning is suitable for accounting students with previous accounting knowledge to learn the basics. Based on the results, it can be summarized that the scores for the two groups is approximately the same. For accounting students with previous accounting knowledge, both learning methods are pertinent.

Limitation and Future study

The data for this study is acquired at a single university, limiting its applicability to other situations. Consequently, future research might explore different demographic groups to broaden the findings. While this study has examined only one influencing factor on students' performance, future research can perhaps focus on a different aspect in complementing the current study.

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