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The Effectiveness of an Innovative Tool for Teaching Published Financial Statements

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Abstract: Accounting is often presumed as a tough and boring subject. This is due to the fact that accounting course comprises professional papers that require many standards to be applied and many transactions to be recorded especially when preparing the financial report. Therefore, an innovative accounting tool was developed and integrated with interactive elements for teaching and learning. The objectives of the study are to investigate whether students who were taught using innovative accounting tool (experimental group) performed better than those students who were taught using the conventional method (control group) and to explore students' perception on the usage of innovative accounting tool in learning published financial statements. A sample of 90 students was selected for this study to determine the effectiveness of the tool. The researchers used descriptive statistics and independent t-test based on the test scores of students in the experimental and control groups. The findings indicate that students who were exposed to teaching tool performed better than those taught using conventional method. The required perception data was obtained by using questionnaires designed for a descriptive analysis. Most of the students (96.7%) agreed that the innovative accounting tool is an interesting, interactive and effective way of learning published financial statements. The results provide some valuable information to the university that may help lecturers ease up their difficult task of teaching advanced accounting courses.

Keywords: published financial statements, game-based learning, teaching and learning, accounting, innovative tool

INTRODUCTION

Teaching and learning accounting courses have always become great challenges to the educators and students at the university level. The failure rate in the examination results of these courses is always high (Husin, Din, Jamaluddin, Fadzillah & Ahmad, 2015; Osogbe, 2010), thus they are known as the most challenging or killer courses among students. This is based on the nature of accounting courses that constitute professional papers that require many standards to be applied and also many transactions to be recorded (Mahmud, Nasir, Abu, Sulaiman & Aziz, 2015). The most challenging topic is to prepare the financial report especially the statement of financial position where at the end of the process, the total assets must be balanced with total equity and liability. The introductory financial accounting and reporting course for the Bachelor of Accountancy (Honours) programme offered by the Faculty of Accountancy of Universiti Teknologi MARA (UiTM) is the *Principles and Applications of Financial Reporting Standards 1* (FAR400). The course has consistently reported poor performance at 20-30% failure rate (Mahmud et al. 2015). Financial Reporting 2 (FAR160) course for diploma level seems to have the same high failure rate problem since it is one of the pre-requisite courses for FAR400.

According to Sanders, Goldfarb and Romeo (2001), from the year 1997 to 2000, there was a reduction in the numbers of students obtaining bachelors and master's degrees in accounting by 24%. Surprisingly, the reasons for such a cry off in enrolment are the accounting curriculum and teaching methodology have never changed or remained idle for several decades (Albrecht & Sack, 2000). Based on the observation made by the researchers for almost 20 years in the accounting courses especially in financial reporting, the factors that contributed to the poor performance of students in the examination are in line with those found by Mahmud et al. (2015). The factors include the background of students, nature of the subject, student effort and attitude, student learning style and external factors from lecturer.

Teaching accounting is quite perplexing primarily due to the nature of the subject as mentioned earlier. Furthermore, the time taken to complete a set of financial statement is quite time-consuming and students have a tendency to lose interest in the process. Therefore, an innovative teaching tool known as "Accounting on the Block" (AOTB) was developed by the researchers incorporating interactive elements for teaching and learning of Financial Reporting course. The solution proffered by this tool will provide an alternative way to accounting educators to make students' learning process become more engaging and promote two-way communications.

The need for AOTB teaching tool is due to the lack of innovative teaching tools in accounting education, particularly in teaching the topic of published financial statements. AOTB teaching tool is built with special features such as colour coded magnetic blocks and penalty cards that adapts gamification pedagogy approach. This tool is expected to make the process of teaching and learning of published financial statements more effective, thereby improving students' performance in this particular accounting course.

The AOTB teaching tool is created to replace the conventional teaching tool used previously such as Power Point, marker, white board and text book. The tool is actually a transformation of the

modified exam question to physical blocks, adopting the concept of colour coding. The blocks represent items derived from the final examination question that relates to the published financial statements topic. The items are colour coded to show the double entry rule to be applied in the preparation of published financial statements. The yellow colour represents “debit” and pink colour is for “credit”. This approach speeds up students’ understanding on the basic elements of financial accounting and helps students to remember the format of published financial statements which include the statement of profit or loss and other comprehensive income, statement of financial position and statement of changes in equity. The magnetic feature of the blocks enables students to attach them on the white board in order to prepare a complete set of the published financial statements. The colourful magnetic blocks, game-like and interactive activities provided by the tool have transformed the conventional teaching to become more lively, enjoyable and effective.

The objective of the study is to investigate whether students who were taught using AOTB teaching tool (experimental group) performed better than students who were taught using the conventional method (control group). In addition, this study explores students’ perception on the usage of innovative accounting tool in learning published financial statements. It is hoped that the application of AOTB teaching tool would contribute to the growing number of students getting excellent grades in financial accounting courses.

LITERATURE REVIEW

Study by Tham and Tham (2014) demonstrated that game-based learning or gamification is effective in engaging students to learning because the game can trigger the interest of the students. Numerous studies clarified the positive effects of students’ motivation, cognitive load and learning anxiety in gamification (Banfield & Wilkerson, 2014; Caponetto, Earp & Ott, 2014; Domínguez et al., 2013; Handani, Suyanto & Sofyan, 2016; Kapp, 2012; Koivisto & Hamari, 2014; Randel, Morris, Wetzal & Whitehill, 1992; Su, 2016; Tham & Tham, 2014). By using the element of competition and eliminating the “boring” feeling among the students, the game-based learning offers more excitement in the knowledge application. Good class attendance and active participation would prove that the game-based learning is favoured more by the students.

In addition, software games can benefit the students learning approach as digital games have become very popular among the children and youngsters nowadays. Virvou, Katsionis and Manos (2005) found that the poor performance of students had improved significantly after they played games together and at the same time had improved their attitude. These poor performance students seemed to enjoy the games as well as good performance students. Even though the results shown that there was no difference for good students in their performance with or without the games as they were already excellent, the students confessed that they had more fun while learning via the games.

Fripp (1984) explained further on the design of game-based-learning. To design game-based learning, the designer must be clear on the purpose of the games, consider the background of the participants and avoid assumption that the game will automatically be acceptable by the students. During the construction stage, designer must anticipate all the possible actions, decisions made by the players and avoid any too complex elements. Additionally, it is important to test the game on its logic and avoid assumption that it will work on everybody.

The advantages of the game-based learning such as to enhance students' motivation were discovered by Paisley (2013). This was proven when every student was motivated to participate in the game and the students had high perception when engaging the game. Therefore, game-based learning should be adopted to support learning in many context and this game-based learning style is able to groom the positive attitude among students such as collaboration, creativity and self-guided study (Albrecht & Sack, 2000). In addition to that, curricular knowledge and students' motivation can be generated while implementing the game in the classroom for the core academic subject (Papastergiou, 2009). Hamari, Koivisto and Sarsa (2014) whose study had proven that gamification in education create value of motivational affordances where positive behavioural were observed, had also agreed that game-based learning would motivate and enhance students' engagement in the classroom.

Interestingly, finding by Plass, Homer and Kinzer (2015) stated that the other good point on game-based-learning is graceful failure. The player can learn more while making mistakes, results of desirable outcome after the game such as encourage risk taking, happy to try new things and ready to explore new knowledge in the games. Games are also viable to enhance students' problem solving skill as the games enable the student-centred learning where the game plays a significant role in facilitating the learner to face authentic problems (Rodkroh, Suwannathachote & Kaemkate, 2013). It is also supported by Adachi and Willoughby (2013) who found that there will be higher self-reported problem solving skill after the implementation of the games and also indirect positive relationship between game and academic grades.

Jajairam (2012) suggested that there should be a combination between conventional method and games to enable the students to get engaged in the lesson with exciting emotion thus eliminate all the negative and boring elements in the subject as faced by students prior to the games. By utilizing the internet and multimedia, more affective teaching and learning can be achieved so that the accounting students are ready to face the real world of challenges. However, a study has found that there are different effects on gender toward game-based learning where the male achievement is significantly improved as compared to female, as male students enjoy more games than the female. Nonetheless, the study also found that there should be proper time for the students to spend on the game as the students who play too frequently showed lower performance, but those who play moderately during the class hour showed significantly good grades, as compared to the students with no games at all. Thus, it is important to the educators to ensure appropriate time is given to the students on playing the games (Kim & Chang, 2010).

From the discussions, there is one question needs to be asked: Is the application of AOTB teaching tool capable for improving students' performance in a financial accounting course?

Thus, the research hypothesis is students who were exposed to AOTB teaching tool performed better than those taught using conventional method.

METHOD

The sample consists of 90 students of Diploma in Accountancy from semester 2 at UiTM Pahang Branch, Jengka, Malaysia during the academic session of December 2015 – April 2016. The sample was selected because these students must sit for Financial Reporting 2 (FAR160) where one of the main requirements of the course is to prepare the published financial statements. A total of 90

students was divided into two groups which were identified as experimental and control groups. The experimental group has 37 students and control group consists of 53 students. The number of students for each group were different based on the number of students for two classes were different. The AOTB teaching tool was designed based on the topic of published financial statements. The published financial statements was the last topic taught for the semester. The topic contributes the most marks, that is 20% out of 40% total continuous assessment of the course. Furthermore, the topic also contributes 25%-30% in the final examination questions that is the highest mark of all the questions.

The conventional teaching method in this study refers to the use of marker, white board and text book to teach the students. The researchers have experienced this traditional method for almost 20 years. During the first hour of the class session, the lecturer would write all the notes on the white board and explain to the students. During lectures, the students were allowed to ask questions, but this practice was rarely applied by the students. On the second hour, after a five-minute break, the lecturer would assist the students in solving the questions related to the topic by using past years' examination questions. From the researchers' observations, the students with good performance would ask a lot of questions while the poor performers would remain silent in the class.

The conventional method was applied to both control and experimental groups for 3 to 4 weeks in teaching published financial statements topic. Then a test was given to all the students and their results were analysed. The results of the independent sample t-test revealed no significant difference between the mean test scores of the experimental and control group under conventional teaching method. The test showed that the difference in scores between control group ($N = 53$, $M = 41.5$, $SD = 22.256$) and experimental group ($N = 37$, $M = 38.4$, $SD = 18.486$) was not statistically significant, $t(88) = 0.127$, $p > 0.05$. This test was conducted so as to show that both groups had equivalent performance when conventional method was used. All respondents were homogenous based on their average previous achievement as shown in the analysis previously. The experimental study was utilized by the researchers to achieve the objective of study which is purposely to test the effectiveness of new method of teaching the topic of published financial statement. Besides, this experimental study is the best technique chosen due to cost and time constraint to complete the syllabus in the given time frame.

After that, the experimental group was taught using AOTB teaching tool and the control group proceeded with conventional way for a two-week period. For the experimental group, each student must participate to construct the published financial statements using the AOTB tool. Any students who failed to arrange the items correctly on the whiteboard were given penalties such as Zumba dancing, frog jumping, star jumping, singing and acting. The penalties were intended to create fun element whilst competing with other students and also to educate students to learn from their mistakes. Furthermore, the mistakes done by students were corrected immediately and learnt by other students in the class. After a two-week period, another test was conducted for both experimental and control groups on the topic of published financial statements. The test scores for the topic were recorded and analysed.

In addition, questionnaires were distributed to all 37 students in the experimental group to determine their perceptions on learning accounting via AOTB learning tool. However, only 33 questionnaires were returned and 3 were rejected due to incomplete data. The questionnaire

comprised ten questions which was constructed using a five-point Likert scale (1-strongly disagree to 5-strongly agree), adapted from previous related research (Huang & Cappel, 2005; Seow & Wong, 2016) and subsequently modified to fit the students' learning experiences. The data later was analysed using descriptive statistics.

Before conducting any formal statistical analyses, preliminary steps to guarantee the quality of data were conducted to ensure it worthy further analysis (Field, 2009; Hair, 2006; Sekaran, 2003). It was found that the missing data was not caused by the research design but it was due to zero score. Therefore, the extent of missing data is not substantial enough to warrant any action. Then, the test of normality was performed. The mark scores for both groups were analysed using descriptive and independent t-test.

RESULTS AND DISCUSSION

This study focuses on the application of AOTB tool in teaching published financial statements for diploma in accountancy students taking Financial Reporting 2 (FAR160) course. The aim of this study is to assess whether students who were taught using AOTB teaching tool (experimental group) performed better than those who were taught using the conventional method (control group). A total of 90 students were involved in this study. Each experimental group and control group consisted of 37 and 53 students, respectively. Table 1 shows information about central tendency and variability of scores for this study.

Table 1
Descriptive

	Group	Statistics
N	Control	53
	Experimental	37
Mean	Control	60.5
	Experimental	71.1
Median	Control	60
	Experimental	71
Standard Deviation	Control	14.189
	Experimental	14.578

Referring to the values of mean, median and standard deviation in Table 1, it clearly shows that the experimental group scores higher marks with mean of 71.1 marks compared to 60.5 marks for the control group when AOTB tool was used. Furthermore, analysis on normality indicates that the skewness and kurtosis are majority close to zero and within +/- 1.96 for both control and experimental groups' scores, indicating that the scores are reasonably normally distributed (Allen & Bennett, 2010).

Next, a t-test was performed to investigate whether students who were taught using the AOTB teaching tools performed better than students who were taught using the conventional method. The result of the independent sample t-test is shown in Table 2.

Table 2
Independent t-test between Mean Test Score of Experimental and Control Groups

M (SD)		Independent sample t-test(df =88)	95% Confidence Interval of the Difference	
Experimental (n=37)	Control (n=53)		Lower	Upper
71.1 (14.578)	60.5 (14.189)	3.075**	12.022	11.739

**p-value < 0.01

Referring to Table 2, there is a significant difference between the mean test scores of the experimental and control groups. The test shows that the difference in scores between control group (N = 53, M = 60.5, SD = 14.189) and experimental group (N = 37, M = 71.1, SD = 14.578) was statistically significant, $t(88) = 3.075$, $p < 0.01$. Thus, it can be concluded that students who were taught with the AOTB tool achieved better results compared to those taught using conventional method. Hence, the hypothesis is supported.

30 completed questionnaires were also analysed to determine students' perception on AOTB teaching tool. The instrument internal consistency is acceptable since the value of Cronbach's Alpha is more than 0.80 for all ten questions which is considered acceptable; hence the instrument is appropriate for use in this study (Field, 2009; Hair, 2006; Nunnally, 1978; Sekaran, 2003; Smith, 2011). Table 3 shows the frequency distribution of the students' responses on how they perceive the use of AOTB tool in learning published financial statements.

Table 3
The Frequency Distribution, Mean and Standard Deviation Students' Perception on AOTB Teaching Tool

No.	Questionnaire item	Tool			M(SD)
		Unsure Freq (%)	Agree Freq (%)	Strongly Agree Freq (%)	
1	This tool makes learning published financial statements interesting	1(3.3)	15(50.0)	14(46.7)	4.43(0.57)
2	I found this tool worth the time and effort	4(13.3)	19(63.3)	7(23.3)	4.10(0.61)
3	This tool enhances understanding on the published financial statements topic	2(6.7)	21(70.0)	7(23.3)	4.17(0.53)
4	This tool allows learning process to be interactive	1(3.3)	11(36.7)	18(60.0)	4.57(0.57)
5	I felt motivated to learn about published financial statements using this tool	6(20.0)	19(63.3)	5(16.7)	3.97(0.61)
6	I become more participative in the classroom when this tool was used	4(13.3)	12(40.0)	14(46.7)	4.33(0.71)
7	This tool helps me identify concept that should be learned in more detail	5(16.7)	19(63.3)	6(20.0)	4.03(0.61)
8	I enjoyed using this tool in learning the published financial statements topic	3(10.0)	19(63.3)	8(26.7)	4.17(0.59)
9	This tool helps me to prepare for the test/exam	5(16.7)	18(60.0)	7(23.3)	4.07(0.64)
10	This tool should be used in the financial accounting courses.	4(13.3)	12(40.0)	14(46.7)	4.33(0.71)

In Table 3, the findings demonstrate that majority of the students with the average score more than four for all items except item number five. The tool designed had successful made learning published financial statements in interactive way with the highest average score of 4.57. The process of learning was interesting (M=4.43), where students had to participate in the classroom (M=4.33). The lowest mean score is 3.97 indicate that students approximately agreed to feel motivated since published financial statements is the most challenging topic for this course.

96.7% of the students agreed that learning published financial statements with this tool was interesting and interactive. Thus, students became more participative in the classroom using this tool with 86.7% of the students agreed. Besides, this tool enhanced students' understanding with 93.3% of the students agreed and was helpful in identifying the concept learned in more detail for test or exam with 83.3% of the students agreed. Students enjoyed learning with this tool with 90% agreed because it was worth the time and effort with 86.7% agreed.

In conclusion, 86.7% of students agreed that the AOTB teaching tool should be used in financial accounting courses with the average score 4.33. This tool successfully motivated 80% of the students to learn published financial statements.

CONCLUSION

The findings of the study show that the use of innovative teaching tool in an accounting course contributes to higher students' performance and participants perceived that the learning process was more interesting, interactive and engaging using the tool. The results are consistent with those of Husin et al. (2015) who found that game-like teaching tool gave students opportunity to learn more effectively. In addition, other studies such as Hamari et al. (2014), de-Marcos, Domínguez, Saenz-de-Navarrete and Pagés (2014) and the latest study by Ahmad, Jamaluddin, Din, Fadzillah and Jabar (2017) also reveal the effectiveness of incorporating game elements in teaching and learning process. Thus, the results of the current study further support the use of innovative teaching tool that contains game element and demonstrate its usefulness to make the teaching and learning process more enhanced and flexible.

The results provide some valuable information to the university that may help lecturers ease up their difficult task of teaching advanced accounting courses. The tool used for teaching and learning should be easy to understand and has the potential to be an alternative method of teaching. Its capability to capture student's attention and interest is a winning formula to inculcate technical accounting knowledge and encourage them to learn effectively.

In terms of limitations, this study examines only students' test scores as a measurement. There are many other variables that can influence the students' performance, such as students' learning styles, individual attributes and external factors. Furthermore, the sample of this study was drawn only from UiTM Pahang Branch. Future research might extend studies across several higher learning institutions so that the findings can be further generalized to a larger institutional perspective. For our future research, we are looking on how accounting mobile apps assist lecturers in teaching accounting courses.

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