

Towards Interactive Learning Style in Accounting: The Game Approach

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ABSTRACT

Students nowadays often inattentive with typical lecture-based approaches to introductory accounting courses. The VARK (Visual, Aural, Read/Write and Kinesthetic) model learning style adopted in developing a game to attract students' interest to the subject. The game consist of more than 50 colorful cards inspired by real life business transactions within the context in accounting textbooks on a fundamental level. These approaches allow students to engage in experiential and social learning while capture different preference of students' learning style. The result showed that the game approach was both more effective in improving students' knowledge of accounting principle, encourage competitiveness, teamwork, decision making ability and more motivational than the traditional approach.

Keywords: *Accounting, Innovation, Games, Interactive learning style*

INTRODUCTION

Accounting seems to be viewed as a boring, pencil-pushing subject, mechanical, repetitive, quantitative, involve application of logical thinking, number crunching, introverted, methodical, tedious and many others negative judgement. Whereas, student millennial generation are considered highly social, preferring face-to face and online interaction and instructors to solitary learning. Thus, introductory accounting courses usually confirm millennials' fears particularly those have to undertake accounting course while majoring in others. In University Teknologi MARA (UiTM), students majoring in science policy, business studies, plantation and agriculture, sport science and few others course required them to enroll accounting course as part of their plan of study. Accordingly, instructors of accounting courses face significant challenges in capturing students' attention and interest to evade their bad perception eventually will effect on their poor

academic results. Thus, by incorporating new learning approach and discovering or identifying different methods of learning, negative perception on accounting subject may be reduced.

Many studies have been done on interactive learning style including game approach. Tobias et al. (2014) concludes that there is a call for development of games integrating kits and technology to stimulate students' interest with good instructional design because people do learn from games. Therefore, this paper mean to materialize the game approach to teach accounting subject to ensure that learners will acquire the specific knowledge and skills. Each generation of educators brings new idea to pedagogic development, the rise of learning style by game approach cannot be ignored. Over the past 35 years, the emergence of various learning style models has brought increasing attention to the idea that students learn in numerous ways. Thus, one approach of teaching does not work for every students or even most of the students. As such, this game incorporate VARK learning style model to ensure students with varying preference on learning style will get implicate on the whole by joining the game.

LITERATURE REVIEW

Educational games include many type of games such as board games, video games, cards, mobile apps, simulation games and etc. The games are designed to help students to learn about certain subjects, strengthen and develop the concepts and able to understand a past event or culture. Other benefits of using educational games in the learning process include promote teamwork, increase motivation, improve attention and interest, develop problem solving skills, increase reaction time in decision making process, boost active self-regulated learning, enhance communication with peers, alternative learning approach, improve social skill such as negotiating and leadership; and playing game are fun too (Buckley & Anderson, 2006; Gunter & Kenny, 2008, Ke, 2008, Annetta et al, 2009, Dalgarno & Lee, 2010, Muratet et al, 2011, Kapp,2012, Hess & Gunter, 2013). Game-based learning approach has improved learning in various areas such as in language (Aguilar & Qian, 2015), medical education (Wang et al, 2016), science (Ahmed & Parsons, 2013), music (Turnbull,2007), mathematics (Waiyakoona et al.,2015), engineering (Ebner & Holzinger, 2005) and so on and so forth. It is proven that game based approach actually help in learning process and it is essential to adopt in this millennial era. Learning accounting likewise moving towards game-based approach to facilitate with the need to be competitive and adaptive with up-to-date pedagogy.

Nitkin (2011) had develop an accounting simulation to provide a hand-on as well interactive approach to review the accounting cycle, while emphasizing the transactions based on types of business activity and the cash flows. The game execute during the class required all students to participate and thus, those students who rarely do homework not able to escape in the learning process. The survey results capture student feedback from 62 students indicate that the game helped them better understand how to actually complete the accounting process, working with peers helped them better understand and apply the accounting concepts and the game was viewed as a positive and a value-added exercise. While, Seow & Wong (2016) cultivate an app in mobile phone as a target to empower students to learn accounting in a fun way, outside of the classroom. The app namely ACE is a combination of mobile learning and game-based learning to create interest and increase students' motivation. The games test on basic accounting concept and classifications of accounting. Majority of the students whom voluntarily fill up the survey have positively rated ACE as engaging, challenging them intellectually, the design is appealing and highly motivating to use.

Moncada & Moncada (2014) design games with PowerPoint adaptations of the popular television game show Hollywood Squares® and Connect Four® to create a collaborative and active learning style

from a traditional accounting lecture. Accordingly, the simplicity of the television games make these games ideal for reviewing of basic accounting concepts. As a result, students more proactive using laptops and mobile phones to search for information, they engaged through team collaboration and discussion. Moncada & Moncada believed that the game based approach when designed and effectively structured is capable to supplement accounting lessons not only a practical alternative, but as well occasional assistance to the classroom lecture. Shah (2017) reiterated that playing game in accounting course will help a complex and quantitative subjects become easy to understand while enjoying the learning process. She suggest that the game become sort of homework and practice for students but not as introductory of accounting concept. The game will develop students' interest and motivational factor throughout the course constantly. An effective game approach would change students' behavior and attitude towards learning in order to develop their interest as well their motivation and engagement. Hence, the game based approach in this paper presenting a combination of card games, using visual aid of PowerPoint, and simulation of accounting game that purposely to integrate different learning style of students and indirectly it is hope that able to enhance students' soft skill.

The game: Bet on Accounting

The game namely 'Bet on Accounting: The Opportunivore Card' is a set of kit which consist of cards, dice, replica money, and a visual aid. The instructor or facilitator to conduct the game required those with accounting knowledge such as accounting teacher or lecturer. The person will give instruction, handling the dice session, the cards and the money. It is recommended to have four facilitators to conduct the game if it plays by many groups of students. Each facilitator for each task. For example, Facilitator 1 giving instruction, Facilitator 2 to handle the dice session, Facilitator 3 and 4 to control the card and the money respectively. The game can be played by four or five groups consist of four to five members each group.

The game started with students to refer the instruction from the visual aid using PowerPoint. The instruction begin with a capital and able to acquire a loan to start a business and followed by business transactions day by day for a month. The transactions consist of purchase of assets, purchase of stocks, sales revenue, discount received and allowed, other expenses such as rental, utility, wages and salary represents by the cards indicate evidence or source of documents. If paying expenses, they have to pay exact amount to the facilitator and if they generate income, they will claim money from the facilitator who control the money. The game also exposed on cash and credit term of business transaction to comprehend students with debtor and creditor.

The luck and opportunity apply here as the students need to decide their turn to pick the card offered based on throwing the dice. This solely depends on their luck. Then, the students will be given five options of cards, and the card they will pick based on their knowledge on accounting. This is their opportunity. Basically, the group with highest number on the dice to pick the card first and the lowest number will be the last to choose the untaken cards. Technically, the first group to choose the card is able to grab the opportunity to earn higher income or to incur lower cost. However, this is based on students understanding the classifications of each items and the effect of asset or liability or revenue or expense on their business. The group might have a good opportunity but unfortunately make a wrong decision due to lack of understanding on the accounting principles. Finally, students are required to proceed with recording process from journal to a financial statement. The winner of the game is based on the highest asset to liability ratio and group with minimal error in the recording process.

Application of the VARK learning style into the game

The VARK models adopt in the game aim to stimulate students' interest on the accounting subject as well to capture their different learning style. The acronym VARK stands for Visual, Aural, Read/write, and Kinesthetic sensory to take in and give out information. Fleming and Mills (1992) suggested the four senses that seemed to reflect the learning modes excluding taste and smell. Below diagram showing how the VARK learning style incorporating in the game:

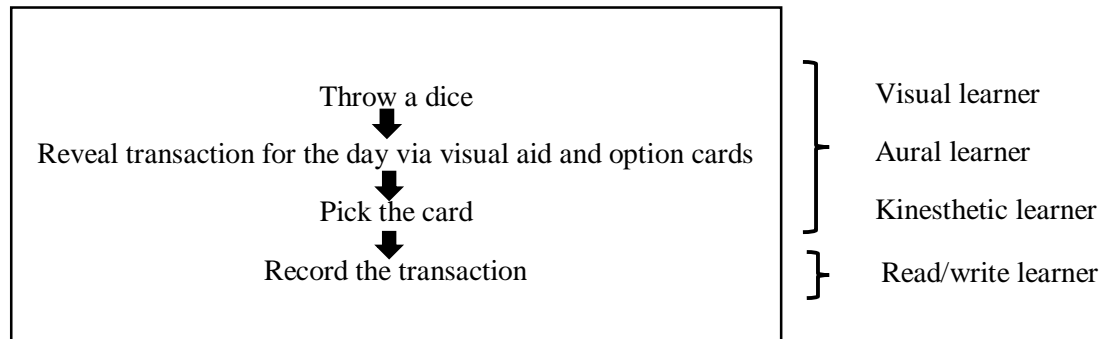


Fig 1 Diagram of VARK learning style apply in the game

Hawk and Shah (2007) describe VARK learning style and preference activities to accommodate their learning style. Accordingly, visual learner usually remember from what they read and see. They attracted to different colors, pictures and thus, this game represent by card with picture and colors which intend to expose students with common item in business transaction. An aural or auditory learner is a student which is excel at processing information and able to recall information by simply hearing it. Therefore, by joining in the group, the student able to discuss and explain to others since the game required them to make a decision and problem-solving. While, read/write learner prefer wordy information as the most important way for them to remember. Therefore, by involving in recording process student will be able to digest more accounting information. Finally, for kinesthetic learner, basically it is a combination with visual and/or auditory learning techniques, producing multi-sensory learning. It is also known as hands-on approach. This game is very suit to kinesthetic learners as the aim of the game is to expose with real life business transactions and students need to be actively participate whether to lead the group or become a follower.

RESEARCH METHODOLOGY

Sampling

The sample investigated here was a subsample taken from a larger number of 137 students. The students were chosen based on quota sampling represented by those with poor result in the mid semester test for Financial and Cost Accounting (ACC166). This subsample consisted of N = 33 (30 males, 3 females) from the Sport Science and Recreation Faculty. During the semester, only students from the faculty of Sport Science and Recreation were sit for ACC166 course and as this game is intend to attract students' interest to the accounting subject, therefore those with poor result is chosen. Mean age of participants was 18.67 years (SD = 2.35; range: 18–19 years). ACC166 is a course consist of introductory financial accounting whereas sport sciences' students are chosen for data survey of this study as they are expected those who are attracted to physical activity type of learning style.

Statistical Analysis

All 33 subjects filled up the accounting-game questionnaire. The survey had been grouped into five categories. That is, the categories “strongly disagree” and “disagree” were collapsed into the category “1” and “2” while “agree” and “strongly agree” were collapsed into the category “4” and “5”. Whereas, “3” indicate neutral neither disagree nor agree. Participants were asked to rate their level of agreement with a set of statements about the effectiveness of the game including understanding of the five accounting classification (Capital, Asset, Liability, Revenue and Expenses), the soft skill engagement and the innovation criteria.

FINDINGS

Qualitative assessment such as students’ perception on the game to be an ex ante consideration in the game design in order to identify whether students are relate with that particular skill (Lavoie and Rosman 2007). Table 1 below present a result of students’ response on survey of the game.

Table 1 Students’ survey response

	Score Mean	Score SD
Effectiveness		
1. The game increase my understanding on accounting classification	4.8	0.89
2. I understand what is CAPITAL	4.0	0.86
3. I understand what is ASSET	4.2	0.83
4. I understand what is LIABILITY	2.5	1.16
5. I understand what is REVENUE	4.5	0.98
6. I understand what is EXPENSES	4.8	1.13
Soft skill engagement		
7. The game require me to be competitive	5.0	0.00
8. The game test me on problem solving ability	3.0	1.12
9. The game engage me in teamwork	4.0	0.86
10. The game involve me to practice my communication skill	3.3	1.07
11. The game require me to make effective decision making	4.0	0.84
12. I able to practice my leadership skill throughout this game	2.0	1.18
Innovation		
13. I prefer this learning style rather than traditional teaching in a classroom	5.0	0.00
14. The game is different from other learning games and its fun and useful to increase my accounting knowledge	4.0	0.81
15. I would recommend this game for those undertaken accounting course	4.3	0.83
16. I believe that this game is one of innovative learning style that I ever experienced	4.0	0.92

The survey separated into three part. The first part represent perception of the students on the effectiveness of the game, second part is on the soft skill engagement and the final part is on innovation criteria. For effectiveness part, student score 4.8 out of 5 for the statement of the game increase their

understanding on accounting classification and understand on 'expenses' item. However, student rank 2.5 out of 5 which indicate 50% understanding on what 'liability' means. This can be explain that students did not require to make a loan repayment for that particular accounting cycle, although they acquire loan. Thus, there is no obligation to pay the debt until the end of the game. This indicate lacking nature of a liability in the game which suggest area to be improved. For other categories of accounting classification shows that most of them rank between 4 to 4.5 implied that they were agree that they understand what its' means. The soft skill engagement part of the survey shows that 100% of the respondents feel that the game require them to be competitive. Whereas, the other criteria indicate 4 out of 5 which means respondents agree that the game promote teamwork and able to make effective decision making. For communication skill indicate 3.3 and problem solving ability only 3 which indicate that students neither agree nor disagree with engagement of these two soft skill into the game. Technically, the game to be played in group which require students to interact with team mates and discuss with each other. However, based on the result, it can be explained that each member of the group assigned accordingly their task and deliver it without the need for them to communicate and able to solve problem individually. That is why teamwork rank higher than these two criteria. However, the respondents do not agree that this game able to enhance their leadership skill (ranked 2 out of 5). This might be due to in one group normally only one leader will be appointed. Thus, not all respondents able to exercise their leadership skill. Finally, the last part of the survey on innovation criteria show that overall the respondents agree on all statement. 100% of them prefer this game rather than traditional method. They would recommend this game for accounting course, it is fun and useful; and they recognized it as innovative learning style they ever experienced.

CONCLUSION

Game-based approach in education has improved interactive learning style in various areas such as in language (Aguilar & Qian, 2015), medical education (Wang et al, 2016), science (Ahmed & Parsons, 2013), music (Turnbull,2007), mathematics (Waiyakoona et al.,2015), engineering (Ebner & Holzinger, 2005) and etc. It is proven that game based approach actually help in learning process and it is essential to adopt in this millennial era where students are more advanced native. To adapt with this, learning accounting as well moving towards game-based approach to facilitate with the need to be competitive and adaptive with up-to-date pedagogy. This paper present on development of the accounting game namely 'Bet on Accounting: The Opportunivore Card' and to investigate the effectiveness, the soft skill engagement and innovation criteria of the game.

The research focuses on the effects of this instrument as a medium in teaching accounting to non-accounting students, 33 students were surveyed after their mid-term test. The results show that this game improve their understanding on accounting classification except for liability. For soft skill part, the findings of competitiveness, teamwork and able to enhance their decision making ability is consistent with most of other studies (for example, Buckley & Anderson, 2006; Gunter & Kenny, 2008, Ke, 2008, Annetta et al, 2009, Dalgarno & Lee, 2010, Muratet et al, 2011, Kapp,2012, Hess & Gunter, 2013). However, most students did not agree with leadership skill being practice during the game. Accordingly, Ibarra et al (2010) emphasize that prior study identify leadership as skills that are learned through practice and observation which also known as learning by doing. As such, not all students able to be a leader in a group for this particular game which explain the result of the survey. Finally on innovation part, it can be conclude that innovative teaching and educational games particularly in accounting course is recommended.

There are few limitations of this study as there is no data for pre and post of the game implementation of the students. This is due to the purpose of this paper to investigate the perception of the students on the game itself as the traditional method of teaching is already been done. The game is only supplement to the traditional method to attract students' interest on accounting subject. Suggestion for future research is to explore for empirical evidence in analyze the relationship between the game approach and the determinants or factors that influence student's performance.

REFERENCES

- Aguilar, F.R. & Qian, K. (2015), Design and user evaluation of a mobile application to teach Chinese characters, Vol 11 No 1, 19-40
- Ahmed, S. and Parsons, D., (2013) Abductive science inquiry using mobile devices in the classroom. *Computer & Education*, 63, pp. 62-72
- Annetta, L., Mangrum, J., Holmes, S., Collazo, K. & Cheng, M.-T. (2009). Bridging reality to virtual reality: investigating gender effect and student engagement on learning through video game play in an elementary school classroom. *International Journal of Science Education*, 31, 8, 1091-1113.
- Buckley, K. E. & Anderson, C. A. (2006). A theoretical model of the effects and consequences of playing video games. In P. Vorderer & J. Bryant (Eds), *Playing video games -- motives, responses, and consequences* (pp 363-378). Mahwah, NJ: LEA.
- Dalgarno, B. & Lee, M. J. W. (2010). What are the learning affordances of 3-D virtual environments. *British Journal of Educational Technology*, 41, 1, 10-32.
- Ebner, M. and Holzinger, A. (2005), Successful implementation of user-centred game-based learning in higher education: an example from civil engineering. *Computers and Education*.
- Fleming, N.D. & Mills, C. (1992). Not Another Inventory, Rather a Catalyst for Reflection. *To Improve the Academy*, 11, 137-155
- Gunter, G. & Kenny, R. (2008). Digital booktalk: digital media for reluctant readers. *Contemporary Issues in Technology Mind Teacher Education*, 8, 1, 84-99.
- Hawk, Thomas F.; Shah, Amit J. (2007) Using Learning Style Instruments to Enhance Student Learning, *Decision Sciences Journal of Innovative Education*, v5 n1 p1-19
- Hess, T. & Gunter, G. (2013), Serious game-based and non game-based online courses: Learning experiences and outcomes. *British Journal of Educational Technology*. May 2013, Vol. 44 Issue 3, p372-385.
- Ibarra, H., Snook, S., & Ramo, L. G. (2010). Identity-based leader development. In N. Nohria & R. Khurana (Eds.), *Handbook of leadership theory and practice* (pp. 657-678). Boston, MA: Harvard Business Press

- Kapp, K. M. (2012). *The gamification of learning and instruction: game-based methods and strategies for training and education*. John Wiley & Sons.
- Ke, F. (2008). A case study of computer gaming for math: engaged learning from gameplay. *Computers & Education*, 51, 4, 1609-1620.
- Lavoie, D. and Rosman, A.J. (2007), Using Active Student-Centered Learning-Based Instructional Design to Develop Faculty and Improve Course Design, Delivery, and Evaluation. *Issues in Accounting Education*: February 2007, Vol. 22, No. 1, pp. 105-118.
- Mastilak, C. (2012), First-Day Strategies for Millennial Students in Introductory Accounting Courses: It's All Fun and Games Until Something Gets Learned, *Journal of Education For Business*, 87, pp 48–51
- Moncada S.M & Moncanda T.P.(2014), Gamification of Learning in Accounting Education, *Journal of Higher Education Theory and Practice* vol. 14(3), 9-19pp
- Muratet, M. M., Torguet, P. P., Viallet, F. F. & Jessel, J. P. (2011). Experimental feedback on prog & play: a serious game for programming practice. *Computer Graphics Forum*, 30, 1, 61-73.
- Nitkin, M. R. (2011). Game of business: A game for use in introductory accounting. *The Accounting Educators' Journal*, 21, 131–152.
- Seow PS & Wong SP (2016), Using a mobile gaming app to enhance accounting education, *Journal of Education for Business*, 91 (8), 434-439
- Shah, K.A. (2017), Game-Based Accounting Learning: The Impact of Games in Learning Introductory Accounting, *International Journal of Information Systems in the Service Sector (IJISSS)*, 9(4)
- Tobias S., Fletcher J.D., Wind A.P. (2014) Game-Based Learning. In: Spector J., Merrill M., Elen J., Bishop M. (eds) *Handbook of Research on Educational Communications and Technology*. Springer, New York, NY
- Turnbull, D, Liu, R., Barrington, L. and Lanckriet, G. (2007). A Game-based Approach for Collecting Semantic Annotations of Music. In 8th International Conference on Music Information Retrieval (ISMIR),
- Waiyakoona, S., Khlaisanga, J & Koraneekija, P. (2015), Development of an instructional learning object design model for tablets using game-based learning with scaffolding to enhance mathematical concepts for mathematic learning disability students, *Procedia - Social and Behavioral Sciences* 174, 1489 – 1496
- Wang, R. BA; DeMaria, S. Jr MD; Goldberg, A. MD; Katz, D. MD (2016), A Systematic Review of Serious Games in Training Health Care Professionals, *Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare*: February 2016 - Volume 11 - Issue 1 - p 41–51